Overuse Injuries of Lower Extremity with Un-organized Sports Activities – malalignment as risk factor in Young Adults

[1]Dr.Ramkumar Reddy K; [2]Dr. Koneru Rao T; [3]Dr. Jaisingh R; [4]Dr. Venkatkiran P; [5]Dr Parinitha

[1]Associate Professor, Department of Orthopedics, Kakatiya Medical College, Warangal
[2]Assistant Professor, Department of Orthopedics, Kakatiya Medical College, Warangal
[3]Assistant Professor, Department of Orthopedics, Kakatiya Medical College, Warangal
[4]Postgraduate, Department of Orthopedics, Kakatiya Medical College, Warangal
[5]Postgraduate, Department of Orthopedics, Kakatiya Medical College, Warangal

Abstract

Overuse injuries in young adults present a unique challenge to the treating clinician. In this study, we studied the association of mal-alignment as a risk factor for overuse injuries of the lower extremity in young adults. This study examined all the adult patients presented with various lower extremity overuses injuries. Only those engaged in unorganized sports activity were studied. After making a clinical impression, all patients were subjected to relevant X-rays to diagnose the malalignment, if present or not. A total of 63 cases with overuse injuries was included, in which 81 per cent were male patients. The sprain ankle was the commonest overuse injury to both genders. In our study, the mal-alignment was seen in 64.3% of the total overuse cases, of which the commonest malalignment in both genders was internal tibial torsion. In conclusions overuse injuries in young adults are frequently associated with mal-alignments. Better understanding of these mal-alignments is better for the management of these injuries.

Keywords

Overuse Injury, Mal-alignment, Unorganized Activity, Risk factors of overuse injuries.

1. Introduction

There are various characteristics that can clue towards over training or overuse as the possible underlying cause of injury. Mild discomfort after physical activity is common. If the pain appears and exists during sports activity and persists even after the activity, then it indicates that the amount of sports activity (whether single time or after repeat of these activity) is perhaps "too much," "too fast," or "too soon" and may cause overuse injury [1]. The Unorganized exercises and physical activities include any sports or related exercises / physical activities being performed without any qualified supervision and / or protocol. These may include playing at local / university / college / office level, performing during an annual day of university / office / company or college, in a gym, at summer camps, during or before an interview / selection,

during a training period etc. Overuse injuries in the young adults vary from person to person, both anatomically and physiologically. It is difficult to estimate the actual impact of this problem. It has been observed that amongst all patients, approximately 5% of mature athletes seek their treatment for sports-related overuse injuries [2]. Even the incidence of overuse injuries also appears higher in young athletes (about 8% to 10%). Because of limited studies, the contribution of alignment abnormalities as a risk factor for overuse injuries is unclear. The rehabilitated players may also suffer re injury, if risk factors are not addressed properly. Most of the unorganized exercise and physical activities are being carried out for a common reason i.e. fun or recreation. But unfortunately these injuries not only take away the concerned person from fun, but also restrict most of them to perform similar activities in their future. Regrettably, due to fear of being removed from these activities or disappointing their parents, teachers and bosses, many young unprofessional players forcefully continue to perform, bearing pain. Though, all resources are being directed to the athletes who are trained in a controlled environment (sports college / stadium) while the real burden remains with unorganized sports and exercise activities. The study of these risk factors will open a new scope in the management of these injuries and by identifying these problems at an early stage, overuse injuries can be avoided by explaining the type of activities to be done and not to be done. In this study, tries to bridge this information gap by analyzing the association of mal-alignment with overuse injuries in wide variety of unorganized sports activities in the young adult population.

2. Materials and methods

In this study, the patients in the age group between 18-30 years of age with overuse injuries and exposed to unorganized exercise and physical activities were included in the study. Patients having obvious deformity of lower limb, with old history of injury of lower limbs (old fractures, burns etc), those engaged in organized sports (patients having qualified supervision, such as in sports colleges, in stadium or under sports teachers at schools etc), patients with catastrophic sports related injuries (head injuries, obvious fractures etc.) and person having apparent / known intrinsic factors (as list given above) making them more prone to overuse injuries were excluded from the study. A total of 64 patients were included in this study from 2010 to 2015. After the informed consent, demographic data of all enrolled patients were collected. Any anatomical abnormality in the relationship of the bones forming the joint and thus

affecting the joint kinematics was considered as 'mal-alignment abnormalities'. We diagnosed these malalignment only by standard clinico-radiological methods (mentioned below), as restriction of resources was our limitation. Certain characteristics can clue us in to the possible over training or overuse injuries. Mild discomfort or soreness after physical activity, rating no higher than 2 or 3 on a pain scale of 0 to 10, is common. If pain exists during the sports activity and persists even after activity rating to higher than 3 /10 on a visual pain scale (VAS),[1] then that amount of sports activity (whether single shot or after multiple episodes of these activities) is perhaps "too much," "too fast," or "too soon" and were considered as overuse injury in that particular adult.

Issues Clinical Assessment of individuals

i. Wt. bearing foot prints –planus / cavus
ii. Hallux valgus
iii. Valgus heel
iv. Clinical test for subtalar movements
v. Q-angle
vi. Distance between med. femoral condyles with both feet touching
vii. Distance between two med. malleolus with knees touching
viii. Lateral thigh / leg angle
ix. Patella Alta (LP/LT)
x. Tubercle Sulcus Angle
xi. Clinical tests for patella mobility
xii. Inter malleolar axis
xiii. Tibial torsion
xiv. Femoral Torsion
xv. Carrying Angle

Radiological Assessment

i. Genu Valgum / Varus (wt. bearing)
ii. Femoral Neck-Shaft angle
iii. Q-angle
iv. Tibial – Metaphyseal angle

Type of unorganized activity

i. Recreational running
ii. Short Running (100 mt)
iii. Longer Running (>100 mt)
iv. Recreational Jogging
v. Recreational Playing
vi. Cricket
vii. Football
viii. Badminton
ix. Lawn Tennis

Type of mal-alignment

i. Heel Varus
ii. Heel Valgus
iii. Flat Feet
iv. Tight TendoAchilis
v. Internal Tibial Torsion
vi. External Tibial Torsion
vii. Abnormal Q angle

Type of overuse injury

i. Planter fasciatis
ii. Osgood – Schlatter disease
iii. Osteochondritis
iv. Sprain Ankle
v. Stress fracture
vi. Sinding- Larson Johansson Syndrome
vii. Sever's Disease
viii. Stenosing Tenosynovitis Ankle
ix. Retrocalcaneal Tendinitis
x. Anterior Knee Pain

3. Results & Discussion

A total of 64 cases of overuse injuries was seen during the study period from 2010 to 2015. All the demographic data of the enrolled patients, divided on the basis on their gender show statistically non-significant difference. Out of total patients with overuse injuries, majorities of these were males (81.3%). The mean age at diagnosis of overuse injuries was 22.7years.The age of onset of overuse injury was earlier in females for all conditions. The most common overuse injury in both genders was sprain ankle (30.2%). The recreational jogging was the commonest unorganized activity in males (30.6%), whereas recreational running was common (6.3%) in females. Amongst all patients, most of the unorganized activity was performed on a hard surface (78.2%), than on soft surface (21.8%). Out of these 42 (67.0%) had overuse injuries performed on a hard surface and 07(12.7%) on the soft surface. However, the overall percentage of mal-alignment in total enrolled patients was 64.3%, in which the internal tibial torsion had the highest percentage both in male and female patients. In simple terms, overuse injuries can be defined as the product of an activity performed “Too much, Too fast, Too soon”. How much is too much? How fast is too fast? How soon is too soon? The answers vary from person to person. The acute injuries draw immediate attention, but as overuse injuries occur slowly and are not debilitating at an early stage, so these injuries are often neglected or misdiagnosed. Overuse injuries occur when a tissue is injured due to repetitive sub maximal loading. The process starts when repetitive activity fatigues a specific structure such as tendon or bone. With sufficient recovery, the tissue adapts to the demand and is able to undergo further loading without injury. Without adequate recovery, micro trauma develops and stimulates the body's inflammatory response, causing the release of vasoactive substances, inflammatory cells, and enzymes that damage local tissue. Cumulative micro trauma from further repetitive activity ultimately causes clinical injury. In chronic or recurrent cases, continued loading produces degenerative changes leading to weakness, loss of flexibility, and chronic pain . Thus, in overuse injuries the problem is often not acute tissue inflammation, but chronic degeneration (i.e. tendinosis instead of tendinitis). In the present study, we have been trying to find out the association of male-alignment as a risk factor for overuse injuries in wide variety of unorganized sports activities in the young adult population. The unorganized exercises and physical activities need more attention because of the following reasons, i.e. The incidence of these overuse injuries in unorganized activities is many fold more than the organized sports and affect a large

proportion of the population; No documented protocol is available or being followed during these activities and its real impact / burden on the society is not well documented. In the present study, most of the overuse injury patients were male (81.3%). We found that most of the overuse injuries are of lower extremity was ankle sprain (30.2%). Plantar fasciitis was the other most common injury and was the second most common overuse injury next to sprain ankle. It was commonly associated in individual having flat feet (13.2%). The present study shows that more than half (64.3%) of the overuse injury patients were also associated with some mal-alignments, which may imply that the mal-alignment may be a risk factor for the overuse injuries. We observed that, reliable findings will be obtained by designing the case-control study. This study had some limitations. Firstly, it was a cohort observational study and secondly, the sample size was less. Both of the above mentioned limitations affected the proper knowledge and reliability of the present study.

Conclusions

But even then our observations conclude that overuse injuries in young adults are frequently associated with mal-alignments. An adequate understanding of the anatomy of the adults may assist in better primary care treatment. It is also recommended that health professionals and sports trainers should be aware of organized and unorganized activities as well as their risk and safety factors.

References

1. Dalton SE. Overuse injuries in adolescent athletes. Sports Med, Jan, 1992; 13(1):58-70.

2. Giam CK, Teh KC. Sport Medicine Exercise and Fitness – A Guide for Everyone. In: Overview of Medical Problems in Sports. Singapore: PG Publishing for Singapore Sports Council, 1998, 111-7.

CONSUMPTION OF SPORTS DRINKS BY CHILDREN AND ADOLESCENT- EFFECTS

Dr. K. Manoher, Director, Nizam Institute of Medical Sciences, Hyderabad,
Dr. A. Vidyasagar, Principal, Kakatiya Medical College, Warangal.
Dr. V. Chandrasekar, Prof & HOD, Dept of Medicine, KMC, Wgl
Dr. Poonam Kumari Jha, Prof & HOD, Dept of Community Medicine, KMC, Warangal

Abstract: Children's and adolescents' consumption of sports drinks is increasing. As per the National Institute of Nutrition and medical investigations, many sports drinks sold in the India, contain high amounts of sugar, adding more calories to youths' diets. In limited quantities, sports drinks are recommended only for individuals engaged in prolonged vigorous physical activity for more than one hour. For most children and adolescents, consuming water before, during, and after physical activity provides the necessary hydration.

This research review examines the evidence about children's and adolescents' consumption of sports drinks and the related health implications. Parents, teachers, coaches, and children and adolescents need to know that sports drinks are not recommended for the vast majority of youths engaged in normal physical activity. Government agencies also need to monitor the effects of marketing sports drinks to children

Introduction: Over the past three decades, Indian children and adolescents have significantly increased their consumption of sugar-sweetened beverages (SSBs). The per-capita caloric contribution of SSBs to children's and adolescents' diets increased from 204 calories per day in 1988–1994 to 224 calories per day in 1999–2004. Adolescents now obtain 10 percent to 15 percent of their caloric intake from SSBs. Consumption of SSBs is associated with excess weight gain, poor nutrition, displacement of healthful beverages, and a higher risk for obesity and diabetes.

The term sugar-sweetened beverages is often associated with traditional carbonated beverages, such as sodas. However, this category of beverages also includes sports drinks or electrolyte drinks, sweetened tea, fruit-flavored drinks and punches, and other beverages that contain large amounts of added sugar.

Sports drinks were adopted to India in the year 1965 as dietary supplements for athletes in an effort to address certain sports-related physiological and nutritional issues. These beverages were designed for athletes or individuals needing replenishment of water as well as carbohydrates and electrolytes lost or utilized during prolonged vigorous physical activity, including activities performed in high temperatures and humidity. Although individual brands and products might vary, sports drinks typically contain nutrients such as water, electrolytes (primarily sodium and potassium), and carbohydrates. Carbohydrate options found in a number of popular sports drinks include high fructose corn syrup, fructose,

sucrose, sucrose syrup, brown rice syrup, cane juice, and maltodextrin. Depending on the brand, some sports drinks contain as much as 19 grams of added sugar, 200 milligrams of sodium, and 80 calories per 8 ounces.

While sports drinks were designed for athletes or individuals participating in prolonged vigorous physical activity, they are now commonly consumed by youths in the India. Based on data from the 2010 National Youth Physical Activity and Nutrition Study, 16.1 percent of high school students drank one or more servings of a sports drink during the seven days before the survey, and 9.2 percent drank sports drinks two or more times per day during the same timeframe. Adolescents who consume sports drinks more than once a day are more likely to be male, eat at fast-food restaurants more than once a week, and be physically inactive. One study examined why adolescents drank sports drinks. Adolescents' main reasons for drinking sports drinks included quenching their thirst, seeking a soda substitute, increasing their energy, and boosting their sports performance. None identified the exercise related rehydrating properties as the reason for their consumption. Increasingly, sports drinks also are being consumed by non-athletes—those who simply like the taste of sports drinks or who are looking for a different kind of beverage.

Summary of Methodology: Used in Gathering Evidence This research review summarizes the current literature on sports drinks trends, marketing of sports drinks to children and adolescents, and the health implications associated with sports drink consumption. Searches were carried out with a combination of terms and words in the title or text. Databases were searched with key terms such as: "sugar-sweetened beverages AND child health," "sports drinks AND health," "sports drinks AND physical activity"and"sports drinks AND marketing." Article titles and abstracts were examined, and relevant articles were retrieved. Additional articles were identified through searches of the references of the initial set of publications found through keyword searches. Position papers from organizations, such as Sports Medicine, Nutrition and Dietetics also were reviewed. Additional electronic database searches were performed to identify research specific to dental health and hydration. Search limits were confined to the English language. Searches were not restricted by date or study design.

Key Research Results: 1. Sports drink consumption is increasing. 2. Sports drink manufacturers are targeting children and adolescents. 3. Sports drinks are marketed as a healthy alternative to soda.

The benefits of sports drinks are appropriate only for athletes or individuals engaging in prolonged vigorous physical activity, and/or those activities performed in high temperatures and humidity. The average American child or adolescent does not engage in enough physical activity to warrant consumption of sports drinks. Water and a balanced diet are recommended and optimal for children and adolescents who do not participate in high-intensity physical activity lasting more than one hour. Sports drinks are a source of added sugars and contribute to excess energy intake. Consumption of sports drinks may increase risk for poor dental health. Sports drinks are a source of sodium and contribute to increasing sodium intakes among Indian youths. Sports drinks may displace necessary nutrients for growing youths.

Studies Backing Key Research Results Sports drink consumption is increasing. Between 1985 and 2005, the overall availability of SSBs in India increased by 8.5 gallons per capita per year; 40 percent of this increase was due to sports drinks and fruit-flavored drinks. While the number of people buying regular sodas fell by 16.5 million from 2003 to 2008, other non-alcoholic beverage segments, including sports drinks, grew during the same timeframe. From 1989–2008, the percentage of Indian children ages 6 to 11 consuming sports drinks increased significantly, from 2 percent to 12 percent. The amount of sports drinks consumed by these children also increased, from 255 milliliters per day to 289 milliliters per day during the same timeframe.

Sports drink manufacturers are targeting children and adolescents. Coca Cola developed a reduced-calorie, smaller-sized variety of Powerade sports drinks for younger children. Powerade Play is advertised with the tagline, “The sports drink for the young athlete.” Television ads were ranked among the top five most-advertised products seen by children and adolescents. The sports drink industry has employed a number of social media strategies to target young consumers. Sports drinks are marketed as a healthy alternative to soda. When sports drinks are the primary focus of ads, these ads often feature nutrition-related claims (e.g., vitamins, electrolytes) and hydration messages. They also promote physical activity and mental benefits of consuming sports drinks. Many parents are confused by the nutritional content of sports drinks. Even though the American Academy of Pediatrics recommends that most children and adolescents should not consume sports drinks, more than a quarter (27%) of parents believe that sports drinks are healthy for children, and 40 percent believe that sports drinks healthy. Since beverage manufacturers voluntarily phased out

selling full-calorie soda in schools, they have promoted sports drinks as a healthier alternative, with some success. According to the Institute of Medicine Committee on Nutrition Standards for Foods in Schools, sports drinks should not be available in schools except when provided by the school for student athletes in sports programs involving vigorous physical activity more than one hour in duration. The athletic coach should determine whether sports drinks should be available to athletes for the purposes of maintaining hydration during sports.

The average Indian child or adolescent does not engage in enough physical activity to warrant consumption of sports drinks. As per the recent of students participated in any kind of physical activity that increased their heart rate and made them breathe hard some of the time for at least 60 minutes per day on each of the seven days before the survey. In a nationally representative sample, the mean length of physical education classes for students in grades 8 through 12 was 56.6 minutes. While in physical education classes, students spend between 10 percent and 21 percent of class time in vigorous physical activity, depending upon the method of measurement (i.e., heart rate monitors, observation, or accelerometer data). A minority of youths participate in organized sports in schools. Only 33 percent of girls and 37 percent of boys participate in varsity sports. Even fewer students, 16 percent of girls and 19 percent of boys, participate in intramural sports in secondary school.

Water and a balanced diet are recommended and optimal for children and adolescents who do not participate in high-intensity physical activity lasting more than one hour. The 2010 Dietary Guidelines for Indians recommends consuming water and other fluids with few or no calories for adequate hydration. The sports organisations recommends water as the best and most economical source of fluid for activity lasting less than an hour for adolescent athletes in organized sports. A balanced diet may be enough to replace the water, carbohydrates, and electrolytes lost during exercise. Many of the electrolytes lost during exercise can be replaced with foods, such as soup, vegetable juice, and fruits and vegetables. Children and adolescents should be taught to drink water before, during, and after physical activity. Although the amount of water children or adolescents need may increase based on the duration and intensity of the activity and the environmental conditions (e.g., heat, humidity, sun exposure), drinking water is sufficient as long as daily caloric and other nutrient needs are met.

Sports drinks are a source of added sugars and contribute to excess energy intake. Sports drinks are a source of empty or nutrient-poor calories and are categorized as an SSB. Sports drinks contain 50 percent to 90 percent of the calories found in soda. Full-calorie sports drinks contain three to five teaspoons of sugar per 8-ounce serving. The carbohydrates in sports drinks can lead to excessive caloric intake, which can increase children's and adolescents' risk for overweight and obesity. A significant amount of research indicates a positive association between added sugars from beverages and increased calorie consumption. Serious and costly chronic diseases, such as type 2 diabetes and cardiovascular disease, as well as weight gain and obesity, are among the risks associated with excessive SSB consumption.

Consumption of sports drinks may increase risk for poor dental health. Citric acid, which is often included in sports drinks, erodes tooth enamel. Erosion of the enamel continues even after the pH has been neutralized. Saliva serves as a natural buffering agent to neutralize acids. Athletes may compound dental erosion by consuming sports drinks when rates of saliva are decreased after exercise.

Sports drinks are a source of sodium and contribute to increasing sodium intakes among Indian youths. Combined with the typical Indian youths' diet, which is already high in sodium, modest increases in sodium consumption from sports drinks may be harmful. The Dietary Reference Intake for sodium is no more than 1,500 milligrams to 2,300 milligrams per day for children and adolescents (depending on age). The National Health and Nutrition Examination Survey (NHANES) data revealed that sodium intake among children and adolescents exceeds the level.

Sports drinks may displace necessary nutrients for growing youths. Many foods and beverages that contain added sugars, such as sports drinks, supply calories to the diet, but contain few or no essential nutrients and no dietary fiber. Among children and adolescents, intake of SSBs has been shown to be negatively associated with intake of milk, as well as calcium, vitamin D, folate, and iron.

Future Research Needs Sports drinks are a large and growing segment of the beverage industry targeting youths. While much research has been conducted on soda consumption and health effects in children and adolescents, comparatively little research has looked at the role of sports drinks in relation to excess caloric intake, weight gain, and health

effects, so more research in this area is warranted. Many states and school districts across the country have restricted the sale of soda during the school day; however, many policies allow the sale of sports drinks. Research is needed to monitor the trends related to these restrictions and to determine how many calories are being consumed through sports drinks during the school day. Anecdotal evidence suggests that some schools and youth sports teams receive sponsorship from sports drink companies. Research is needed to document these sponsorships and to examine the effects of these sponsorships on consumption of sports drinks and implications for obesity.

Conclusions: Sports drinks, along with sodas, energy drinks, fruit flavored drinks, and other SSBs, account for percent of added sugars in the Indians diet. SSBs are the main source of added sugars in the diet of Indian children. Eleven percent of overall energy intake in children ages 2 to 18 comes from SSBs. Most children today consume four to six times more added sugars than the maximum recommended daily amount. Given the already elevated levels of added sugar in the Indians diet and its detrimental impact on health, the increased consumption of sports drinks in recent years is of growing concern for parents, health professionals, and public health advocates. Sports drinks contribute to this increased consumption of added sugar and excess calorie intake. They also add unnecessary sodium to children's and adolescents' diets, displace needed micronutrients, and may increase youths' risk for poor dental health. While sports drinks may be beneficial for athletes and individuals participating in prolonged vigorous physical activity in warm to high temperatures, for most children and adolescents, water is the recommended and optimal fluid for hydration. Parents, teachers, coaches, and children and adolescents need to understand the potential risks of consuming sports drinks. They also need to learn how to counteract marketing that leads youths to believe that consuming sports drinks will enhance athletic performance. Policy Implications. Fresh, safe, and free drinking water should be available at all times for children and adolescents, especially in schools and on athletic fields, recreational facilities, out-of-school time programs, and parks. Sports drinks should not be available or advertised throughout the school setting, and should not be available as options for purchase from school vending machines, school stores, the cafeteria, and other school facilities. Exceptions may apply for students participating in sports programs involving prolonged vigorous physical activity. School and community coaches, school nurses, physicians, dietitians, and out-of-school time staff and volunteers should help educate parents and youths about the need to consume water instead of sports drinks, except when participating in prolonged

vigorous physical activity. Federal agencies should monitor the advertising and promotion of sports drinks to ensure that product health and nutrient claims are accurate and not misleading. These products should not be advertised directly to children and adolescents. Beverages for sale in elementary and middle schools should be limited to water, non fat or low-fat (1 percent or less) milk or and 100 percent fruit juice with no added sugar

References:

1. Wang YC, Bleich SN, Gortmaker SL. Increasing caloric contribution from sugar-sweetened beverages and 100% fruit juices among US children and adolescents, 1988–2004. Pediatrics. 2008;121(6):e1604-e1614.

2. Brownell KD, Frieden TR. Ounces of prevention–The public policy case for taxes on sugared beverages. N Engl J Med. 2009;360(18):1805–1808.

3. Burke LM, Read RS. Dietary supplements in sport. Sports Med. 1993;15(1):43–65.

4. Snell PG, Ward R, Kandaswami C, Stohs SJ. Comparative effects of selected non-caffeinated rehydration sports drinks on short-term performance following moderate dehydration. J Int Soc Sports Nutr. 2010;7:28.

5. Manore MM, Meyer NL, Thompson J. Sport Nutrition for Health and Performance. 2nd ed. Champaign, IL: Human Kinetics; 2009.

6. Committee on Nutrition and the Council on Sports Medicine and Fitness. Sports drinks and energy drinks for children and adolescents: Are they appropriate? Pediatrics. 2011;127(6):1182–1189.

7. Centers for Disease Control and Prevention. Beverage consumption among high school students–United States, 2010. http://www.cdc.gov/mmwr/preview/ mmwrhtml/mm6023a2.htm?s_cid=mm6023a2_w. Accessed October 17, 2011.

8. Park S, Blanck HM, Sherry B, Brener N, O'Toole T. Factors associated with sugar-sweetened beverage intake among United States high school students. J Nutr. 2012;142(2):306–312.

9. O'Dea JA. Consumption of nutritional supplements among adolescents: Usage and perceived benefits. Health Educ Res. 2003;18(1):98.

10. Rouan R. Working out a new strategy–Sports drinks target serious athletes to rehydrate sales. Beverage Industry. 2010;101(5):18–21.

11. Sturm R. Stemming the global obesity epidemic: What can we learn from data about social and economic trends? Public Health. 2008;122(8):739–746.

12. Roberts Jr. WA. Beverages in flux. Prep Foods. 2009;178(6):13–20.

13. Lasater G, Piernas C, Popkin BM. Beverage patterns and trends among school-aged children in the US, 1989–2008. Nutr J. 2011;10:103.

14. Zmuda N. What's a sport? Gatorade redefines to broaden target. Advert Age. 2010;81(15):3–22.

15. Harris JL, Schwartz MB, Brownell KD, et al. Sugary drink FACTS: Evaluating sugary drink nutrition and marketing to youth. 2011. Available from: http:// www.sugarydrinkfacts.org/resources/SugaryDrinkFACTS_Report.pdf. Accessed November 7, 2011.

16. Bauerlein V. Gatorade's 'mission': Sell more drinks. Wall Street Journal–Eastern Edition. 2010;256(63):B6.

17. Sawka MN, Burke LM, Eichner ER, Maughan RJ, Montain SJ, Stachenfeld NS. Exercise and fluid replacement. Med Sci Sports Exerc. 2007;39(2):377–390.

18. Coyle EF. Fluid and fuel intake during exercise. J Sports Sci. 2004;22(1):39–55.

19. Welsh RS, Mark D. Carbohydrates and physical/mental performance during intermittent exercise to fatigue. Med Sci Sports Exerc. 2002;34(4):723.

20. Below PR, Mora-Rodriguez R, Gonzalez-Alonso J, Coyle EF. Fluid and carbohydrate ingestion independently improve performance during 1 h of intense exercise. Med Sci Sports Exerc. 1995;27(2):200.

21. Coombes JS, Hamilton KL. The effectiveness of commercially available sports drinks. Sports Med. 2000;29(3):181–209.

22. Convertino VA, Armstrong LE, Coyle EF, et al. American College of Sports Medicine position stand. Exercise and fluid replacement. Med Sci Sports Exerc. 1996;28(1):i–vii.

"A STUDY OF INTRA-ARTICULAR INJECTION OF PLATELET RICH PLASMA (PRP) IN OSTEOARTHROSIS OF KNEE JOINT_": A CASE SERIES

Dr. S. LAKSHMI NARAYANA, **Dr. VENKAT LAKAVATH, ***Dr. B. VISHWANATH NAIK, * Dr. MOHAMMED SALMAN, ***** Dr. VAMSHI KRISHNA**

*Associate Professor, Dept. of Orthopaedics, KMC /MGM, Warangal, TS,

**Assistant Professor, Dept. of Orthopaedics, KMC/MGM, Warangal, TS

PG, Dept of Orthopaedics, * PG, Dept of Orthopaedics, *****PG, Dept of Orthopaedics

ABSTRACT

Osteoarthritis (OA) is a widespread and degenerative, chronic disease that affects up to 80% of the population over 65 years of age. A report indicates that knee OA is likely to become the fourth most common cause of disability in women and the eighth most common cause in men [(7)]

Aim of this study the effect of "Intra-articular injection of Platelet rich plasma" in the management of knee joint osteoarthrosis.

50 patients with 54 knee joints of osteoarthritis 4 cases bilateral knee joint involvement of upto Kellgren-Lawrence garde 3 were treated with three intra-articular injection of autologous PRP(platelet rich plasma),each given with a gap of 3 weeks under local anaesthesia studied in the out and in patient department . Clinical examination, VAS, IKDC score were performed before and after PRP treatment at 6 months follow up.

Clinical features which showed significant improvement included joint line tenderness($p<0.001$) , local rise of temperature ($p<0.005$) , crepitus ($p<0.01$) , limited range of motion ($p<0.002$)The baseline VAS (visual analogue scale) scale score (maximum out of 10) was 5.94 +/- 0.79 (SD) has shown an improvement to 3.4 +/- 0.68 (SD) which is significant with Paired T test to <0.001 (highly significant) . The IKDC (international knee documentation committee) score (maximum 100) baseline was 38.56 and that at 6 months follow up was 76.12 which when compared with Paired T test was having a p value of <0.001 (highly significant).

The PRP procedure showed a higher degree of efficacy as well as significant findings of more and longer pain reduction, improved function, and patient satisfaction.

INTRODUCTION: Due to the longevity of working careers and the prevalence of OA in middle-aged persons, OA may cause a significant burden in lost time at work and early retirement. The non-modifiable risk factors include gender and age whereas the modifiable risk factors include body mass index (BMI), injury/trauma, among others.

Recent prospective studies have demonstrated that obesity is a primary risk factor for knee OA. Overloading the knee joints can lead to cartilage breakdown and failure of components of structural support.

In 2002 Ainger and Mckeena [6] found biochemical properties of articular cartilage rely on the biochemical composition and integrity of its extracellular matrix . In osteoarthritis, ongoing cartilage matrix destruction takes place, leading to a progressive loss in joint function. Beside the degradation of molecular matrix components, destabilization of supramolecular structures such as the collagen network and changes in the expression profile of matrix molecules also take place.

In 2005 F. Tesche and N. Miosge [5] found the role of fibroblast like chondrocytes in the late stages osteoarthritis .These fibroblast-like chondrocytes take part in tissue regeneration even in advanced stages of osteoarthritis, but only in as much as they form fibrocartilaginous or scar tissue, since, they mainly synthesize collagen type I and not collagen type II, typical for healthy cartilage. However, fibroblast-like chondrocytes also produce increasing amounts of the proteoglycans decorin and biglycan which physiologically are involved in the formation of collagen type II, as well as perlecan.

In early and intermediate stages of OA an enhanced expression of collagen type II was detected especially in the middle layers of osteoarthritic cartilage. However, with the progression of the disease, less collagen type II, but increasing amounts of collagen type I were produced . Furthermore, collagen type II mRNA expression was not detectable in the fibroblast-like chondrocytes of late stage osteoarthritic cartilage . Therefore, the fibroblast-like chondrocytes do not contribute to a restoration of the normal collagen type found in healthy cartilage during the regeneration efforts of late disease stages.

PRP contains high amounts of growth factors, which are available in the alpha-granules and can be delivered continuously by activation of the platelets. Amongst others, the a-granules may release growth factors such as PDGF, transforming growth factor-beta (TGFB), IGF1, platelet-derived angiogenesis factor (PDAF), VEGF, and epidermal growth factor (EGF) . In addition, chemokines are released like CCL3, CCL5, CCL 7, CCL 17, or CXCL 1 and CXCL 12 that may lead to the migration of progenitor cells from the bone marrow.

PRP causes Migration and Chondrogenic differentiation of human subchondral progenitors . Mesenchymal progenitor cells derived from the subchondral bone, cortico-spongious progenitors (CSP), are characterized by high proliferation capacity and the ability

to differentiate into bone, cartilage, and fat . In cartilage formation or chondrocyte differentiation, TGFB is known to induce chondrogenesis of mesenchymal progenitor cells, while PDGF helps chondrocytes to maintain the hyaline-like chondrogenic phenotype and induces proliferation and proteoglycan synthesis.

Many studies found platelet-rich plasma: intra-articular knee injections produced favorable results on degenerative cartilage lesions.

MATERIALS AND METHODS: 50 patients with 54 knee joints of osteoarthritis 4 cases bilateral knee joint involvement were studied in the out and In patient department of Orthopaedics, Mahatma Gandhi Memorial Hospital attached to the Kakatiya Medical College, Warangal . All patients were treated with intra-articular injection of autologous PRP (platelet rich plasma) under local anaesthesia on an inpatient and outpatient basis . All these cases were treated from September 2013 to august 2015. The American College Of Rheumatology (ACR) classification criteria of OA. The study was approved by the local ethics committee of the institution. An informed written consent was taken from all the participants.

Inclusion criteria for patients selection included 1) history of chronic (at least 4 months) pain or swelling of the knee, not responding to NSAIDs and/or physical therapy 2) radiographic findings of minimal (grade 1: definite osteophyte, unimpaired joint space) 3) moderate (grade 2: moderate diminution of joint space) OA of the knee joint, according to Kellgren- Lawrence scale.

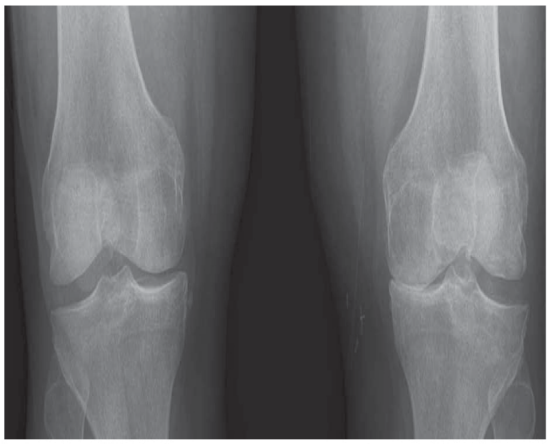
Exclusion criteria were systemic disorders, such as 1) diabetes 2) rheumatoid arthritis 3) major axial deviation (varus more than 5 deg, valgus more than 5 deg), 4)haematological diseases (coagulopathies) 5) severe cardiovascular diseases, 6)infections 7) immunosuppression 8) patients on therapy with anticoagulants–antiaggregants or use of NSAIDs within 5 days before blood donation.

Patients were asked to give a brief history of the disease , general physical examination and detailed knee examination was carried out . The severity of pain was assessed by VAS Patients were evaluated with the International knee documentation committee (IKDC) osteoarthritis scale in order to assess the function of the affected knee . Plain X-ray of the affected knee, anteroposterior and lateral views were done for grading of knee OA which was done according to the Kellgren–Lawrence grading system. Routine blood investigations were done in order to exclude any chronic systemic diseases like diabetes mellitus and infections.

Preparation of autologous platelet rich plasma (PRP). 20 ml of venous blood samples taken from every patient and collected in sterile sodium citrated tubes. The tubes with citrated blood were centrifuged at 1800 rpm for 15 min to separate erythrocytes, and at 3500 rpm for 10 min to concentrate platelets. By this method, 3 to 4 ml of PRP was obtained and injected immediately because it is found that using freshly-harvested PRP might preserve all the platelet functions better.

Technique: The injection was given in the supine position and with all aseptic precautions . The affected side was exposed upto the thigh and cleaned with betadine scrub (7.5%) and spirit . Then painted with 5% betadine solution and draped with linen towels. The knee joint was palpated and good understanding of anatomical configuration was made. 2% Xylocaine injection was given in the skin and soft tissues of the lateral aspect of knee joint. The leg was held firm in neutral rotation and intra – articular injection of autologous PRP(platelet rich plasma) was given by the lateral approach with knee in complete extension using 16 gauge needle

Technique of injection

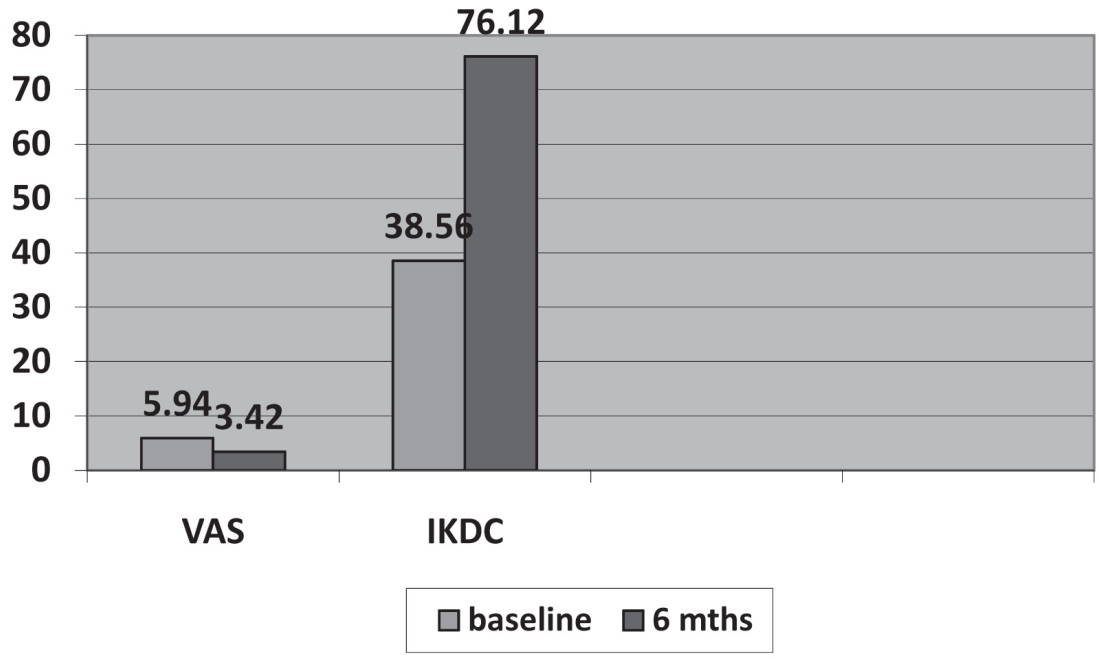


x ray showing grade 3v K-L osteoarthritis knee

Follow up assessment: After 6 months, after 3 prp injections all patients were re-evaluated by physical examination, assessment of Visual analogue scale (VAS) [11] for pain, International knee documentation committee (IKDC) score [12,13]

Statistical analysis:. Quantitative data were presented as mean and standard deviation, while the qualitative data were presented as number and percentage. Paired *t*-test and chi square test were used to assess differences between quantitative and qualitative data at baseline and after 3 PRP injections. Spearman's correlation coefficient analysis was done to identify factors associated with better functional outcomes. A statistically significant cut off value of spearman's correlation was set at $p < 0.05$.

RESULTS: Sex incidence showed the male were 36 % and female 64%. The average age incidence was 51.34 years (min 41 yrs and max 70 years). 66% of patients were overweight 26% were normal weight an d10% were obese. 8% were having garde 1 , 40% grade 2 , 52% grade 3 K-L (kellegren Lawrence OA). Clinical features which showed significant improvement included joint line tenderness ($p<0.001$) , local rise of temperature ($p<0.005$) , crepitus ($p<0.01$) , limited range of motion ($p<0.002$). The baseline VAS scale score (maximum out of 10) was 5.94 +/- 0.79 (SD) has shown an improvement to 3.4 +/- 0.68 (SD) which is significant with Paired T test to <0.001 (highly significant). The IKDC score (maximum 100) baseline was 38.56 and that at 6 months follow up was 76.12 which when compared with Paired T test was having a p value of <0.001 (highly significant).



DISCUSSION:

BMI (BODY AMSS INDEX):

In this study 33 patients (66%) were overweight (BMI 25-29.9) and 13 (26%) were normal weight (BMI 18.5-24.9) and 5 (10%) were obese (BMI >30) .D T felson (28) in his study found that overweight is the most potent risk factor (7 to 10 times of the lowest 20% weight) for knee osteoarthritis.

RADIOLOGICAL FINDINGS: Patients were selected less than or upto the grade 3 of kellgren-lawrence scale which included 4 (8%) grade 1 , 20 (40%) grade 2 and 26 (52%) grade 3 osteoarthritis cases and the improvement was particularly seen in the patients with grade 1 and grade 2 K-L osteoarthritis .

CLINICAL FEATURES: Clinical features which showed significant improvement included joint line tenderness ($p<0.001$) , local rise of temperature ($p<0.005$) , crepitus ($p<0.01$) , limited range of motion ($p<0.002$) . The joint effusion did not show any improvement ($p=1$) .The joint line tenderness is the parameter which was found to improved most significantly. With Ali Soliman Hassan a, Abeer Mohamed El-Shafey a, Hanan S. Ahmed [(4)] a statistically significant improvement was observed regarding most of the clinical aspects, such as, tenderness in joint line, crepitus and range of motion. There was, also, improvement in the number of patients having hotness, effusion and Baker's cyst, but this improvement did not reach a statistically significant level

PRE AND POST INTRA-ARTICULAR INJECTION STATUS OF THE KNEE

VAS score: The baseline VAS scale score (maximum out of 10) was 5.94 +/- 0.79 (SD) has shown an improvement to 3.4 +/- 0.68 (SD) which is significant with Paired T test to <0.001 (highly significant) . The baseline VAS score in female patients was 5.93 (baseline) and 3.45(at 6 months) and that in males was 5.98 (baseline) and 3.36 (at 6 months) thus showing that there is no significant difference in the response to treatment betweem males and females

IKDC score :The IKDC score (maximum 100) baseline was 38.56 and that at 6 months follow up was 76.12 which when compared with Paired T test was having a p value of <0.001 (highly significant) . The value of IKDC score in males was 38.75 (baseline) and 76.08 (at 6 months) and that in females was 38.42 (baseline) and 76.14 (at 6 months) therefore showing no significant difference in response to treatment in between males and females , Kon et. al. found IKDC subjective score improved markedly from the basal evaluation to the end of therapy and the follow ups at 6 and 12 months (P\0.0005), passing from 40.5 ± 10.4 before the treatment to 62.5 ± 15.9 at 2 months and 62.6 ± 18.6 and 60.6 ± 18.9 at the 6 and 12 month follow-ups, respectively.

THE OVERALL RESULTS: The overall results were promising without any major procedural complications. This was especially noticeable in the younger population and with less severe OA, as observed by Kon et al. older and more degenerative joints tend to have less viable cells and with that a smaller potential for growth factor response, might be the reason behind the low improvements in patients over the age of 50 and with severe OA. Yet despite lower results, patients with advanced OA still benefited from PRP.

LOW COST AND SAFE PROCEDURE; the PRP is found to be an effective and safe method which decreases pain in the osteoarthritis knee joint for long duration especially in

the young patients with early grades of osteoarthritis of the knee joint . The results in the more late grades of OA has found to be poor in some studies.

DIFFICULTIES FACED IN THIS STUDY AND COMPARIOSION WITH OTHER STUDIES: The method of preparation of PRP , the concentration of platelets achieved in PRP ant the amount of PRP injected may contribute to the differences in response to the level of improvement achieved

DIFFERENCES IN THE METHOD OF PREPARATION OF PRP: In this study PRP was prepared by using 20 ml of venous blood to which anticoagulant (CPDA) was added and centrifuged at 1800rpm for 15 mins to separate rbc and then at 3500 rpm for 10 min to obtain 3 – 4 ml of PRP to which calcium chloride was added for activation of platelets to release growth factors.

Ali Soliman , Abeer [4] used centrifugation at trhe same speed of 1800 rpm * 18min and then 3500 rpm * 10 min. Kon et al [1] separated the blood sample twice at 1480rpm x 6 minutes and again at 3400rpm x 15 minutes while Spakova et al [2] used a stepwise approach of three centrifugations to concentrate the plasma (3200rpm x15min, 1500rpm x 10min, 3200rpm x 10min). Sanchez et al [3] , on the other hand, centrifuged the plasma only once at 640g x 8 minutes.

CONCENTRATION OF PLATELETS IN PRP: concentration of the PRP achieved also affects the overall response. In this study platelet concentration was increased to about 500% to 600 %. Kon et [1] al mentioned a 600% increase in platelet concentration, Spakova et al [2] and Sanchez et al [3] only observed a 450% and 200% rise, respectively.

AMOUNT OF PRP INJECTED (IN ML): In this study about 3 – 4 ml of prp was injected and in other studies administered a different dose to their test subject. Kon et al injected 5ml of PRP, whereas Spakova et al administered 3ml of the tested material and Sanchez et al used 6 to 8ml of PRP in their injections.

AFFECTS OF OVER OR UNDERESTIMATION OF INTERPRETATION OF VALUES OF VAS SCALE AND IKDC SCORE BY THE PATIENTS:

There is also the possibility of over- or underestimation by the patient when answering the WOMAC, IKDC, EQ VAS, or NRS questionnaires which are subjective and hence resulting in recall bias, can influence the overall results.

LONGER FOLLOW UPS NEEDED FOR PROVING EFFICACY AND USE IN LONG TERM

In this study follow up was done at 6 months. Spakova, Timea; Rosocha, Jan [2] recommended further studies are needed to confirm these results and to investigate the persistence of the beneficial effects observed.

MANY OF THE STUDIES OF THIS KIND NEED CONFIRMATION BY RANDOMIZED CONTROLLED TRIALS:

M. Sánchez , E. Anitua [3] were of opinion that these preliminary results need confirmation in a randomized clinical trial

LACK OF COMMON CONSESUS WITH THIS TREATMENT

CONCLUSION

The PRP procedure showed a higher degree of efficacy as well as significant findings of more and longer pain reduction, improved function, and patient satisfaction . This was particular noticeable in the treatment of younger patients with less severe articular cartilage degeneration. All of the comparative studies suggest that PRP injections are a useful approach and alternative in the treatment of OA. This procedure appears to be safe and effective. It can be used as a reasonable treatment .

BIBLIOGRAPHY

1. Elizaveta Kon, Roberto Buda, Giuseppe Filardo, Platelet-rich plasma: intra-articular knee injections produced favorable results on degenerative cartilage lesions , Knee Surgery, Sports Traumatology, Arthroscopy , (2010) 18; 472-479.
2. Spakova T, Rosocha J, Lacko M, Osteoarthritis Treatment of Knee Joint Osteoarthritis with Autologous Platelet-Rich Plasma in Comparison with Hyaluronic Acid, American Journal of Physical Medicine & Rehabilitation: 2012; 91(5):411-7.
3. M. Sanchez , E. Anitua , J. Azofra, Injection of an autologous preparation rich in growth factors for the treatment of knee OA: a retrospective cohort study,Clinical Experimental Rheumatology 2008; 26: 910-913.
4. .Ali Soliman Hassan a, Abeer Mohamed El-Shafey , Effectiveness of the intra-articular injection of platelet rich plasma in the treatment of patients with primary knee osteoarthritis , The Egyptian Rheumatologist (2015) 37, 119–124.
5. F. Tesche and N. Miosge , New aspects of the pathogenesis of osteoarthritis: the role of fibroblast-like chondrocytes in late stages of the disease , Histol Histopathol (2005) 20: 329-337.

6. T. Aigner , L. McKenna , Molecular pathology and pathobiology of osteoarthritic cartilage , Cellular and Molecular Life Sciences (CMLS) ,2002 ; 59(1)5-18.
7. Lopez AD Murray CJL. The global burden of disease. In World Health Organization, 1997.

SEDENTARY LIFE STYLE, LACK OF PHYSICAL ACTIVITY, RISK OF OVER WEIGHT AND OBESITY IN HIGH SCHOOL CHILDREN

Dr. Morishetty Yogi, Associate Professor, Dept of paediatrics, KMC/MGM, Warangal, TS.
Dr. Kompally Vasudev, Assistant Professor, Dept of Paediatrics, KMC/MGM, Warangal, TS
Dr. MV Sangamesh, Post Graduate, Dept of Paediatrics, KMC/MGM, Warangal, TS.

INTRODUCTION

Over-weight and obesity represent a rapidly growing threat to the health of population in an increasing number of countries. Indeed, these are now so common that they are replacing more traditional problems such as under nutrition and infectious diseases as the most significant causes of ill health.

The fundamental cause of the obesity epidemic are sedentary life style, high fat and energy dense diets; both resulting from changes taking place in society and the behaviour patterns of the communities; as a consequence of increased urbanization and industrialization and the disappearance of traditional life styles. The present study was conducted in children belonging to Warangal city to determine the prevalence of childhood obesity, to study the cardiovascular risk factors and life style factors in obese children, so that the necessary steps can be taken to prevent the childhood onset of adult diseases.

AIMS AND OBJECTIVES:

1. To estimate the prevalence of obesity among school going children between 5 to 15 years, belonging in Warangal.
2. To compare the dietary habits and life style between obese and non-obese children.
3. To study the factors influencing over weight and obesity.

METHODOLOGY:

Data was collected from 50 Schools in Warangal, 5 schools were selected based on simple random sampling method (lottery method). A Cross Sectional Study was conducted in these 5 schools of Warangal after taking clearance from Kakatiya Medical College Ethical Committee.

Inclusion Criteria:

1. Children between the age group of 5-15 years.

Exclusion Criteria:

1. Children below 5 years and above 15 years.
2. Children diagnosed to be obese due to endogenous causes on clinical examination.

The age of the children was obtained from the school records. The height was measured by making the child to stand upright, barefoot on the ground with heels, buttocks and shoulder touching the wall and head in Frankfurt plane. The height was measured using sliding stadiometer (Johnson and Johnson) with an accuracy of 0.1mm.

Weight was recorded using spring balance (bathroom scale) calibrated to 0.5 kg accuracy.

Body Mass Index (BMI) was calculated based on the formula:

$$BMI = \text{Weight in kg / Height in mts}^2$$

Children were categorized based on BMI as per NCHS guidelines with respect to their age and sex.

Category BMI:

Normal	$5^{th} – 85^{th}$ percentile
Overweight	$85^{th} – 95^{th}$ percentile
Obese	$> 95^{th}$ percentile

In those children who were categorized as overweight and obese (cases), dietary habits and life style pattern were analyzed and compared with equal number of age and sex matched children with normal BMI (controls).

Resting Blood Pressure (B.P) was determined using mercury manometer with appropriate sized cuffs, by auscultating in right arm after a 5 minute resting period.

Systolic B.P is determined by the onset of "tapping" Korotkoff's sounds (K1) and

Diastolic B.P, as the disappearance of the Korotkoff's sounds (K5) as per Update on 1987 Task force report, National high blood pressure education programme coordinating committee.

For each subject, two recordings of B.P were taken and average of two was recorded. Second and third set of B.P of readings were taken at four weeks interval each for the students found to have high B.P. in the first sitting. Children with an average systolic or diastolic B.P $>90^{th}$ centile but $< 95^{th}$ centile with respect to their age, sex and height were classified as having Pre-hypertension. Children with average systolic or diastolic B.P $>95^{th}$ centile with respect to their age, sex and height were designated as

having Hypertension as per Update on 1987 Task force report, National high blood pressure education programme coordinating committee.

To analyze the life style factors and dietary habits in obese and non-obese groups, a pre-tested proforma was designed and explained to each individual parent and was asked to collect data regarding the child's dietic pattern including food given in between meals and snacks for a period of 3 days, when the child was healthy. Later, the mean calorie intake of each child was calculated and compared with normal calorie requirement of the child for age and sex and was entered in the proforma as calorie excess or calorie deficit. Child's physical activity (outdoor activity) and T.V. viewing/ video games/computer games were also recorded in minutes per day for 3 consecutive days including one Sunday, when the child was healthy. The number of hours of T.V. viewing was compared between cases and controls.

Statistical Methods Applied:

Following statistical methods were applied in the present study:

- Chi-square test
- Contingency table analysis
- Independent samples 't' test
- Analysis of variance-one way
- Analysis of variance-two way

OBSERVATIONS AND RESULTS:

Out of 3352 children included in the study, 2188 (65.27%) children were males and 1164 (34.73%) children were females. Most of children were in the age group of 15, 14 and 13 years and least number were in 5, 6, and 9 years age group.

Table – 1:Age Wise Distribution of Prevalence of Overweight and Obesity in the Study Population

Age	Normal	Overweight	Obese	Total
5	136 (76.4%)	6 (3.4%)	36(20.2%)	178 (100%)
6	172 (87.7%)	21 (10.8%)	3 (1.5%)	196 (100%)
7	204 (87.2%)	9 (3.8%)	21 (9%)	234 (100%)
8	179 (85.2%)	15 (7.2%)	16 (7.6%)	210 (100%)
9	164 (93.2%)	3 (1.7%)	9 (5.1%)	176 (100%)
10	170 (79%)	36 (16.8%)	9 (4.2%)	215 (100%)
11	213 (81.6%)	24 (9.2%)	24 (9.2%)	261 (100%)
12	233 (82.9%)	36 (12.8%)	12 (4.3%)	281 (100%)
13	466 (90.7%)	36 (7%)	12 (2.3%)	514 (100%)
14	429 (85.6%)	42 (8.4%)	30 (6%)	501 (100%)
15	499 (85.2%)	69 (11.8%)	18 (3.0%)	586 (100%)
Total	**2869 (85.6%)**	**298 (8.9%)**	**185 (5.5%)**	**3352 (100%)**

The above table shows the age wise distribution of prevalence rate of overweight and obesity. 85.6 % of children were in the normal range of BMI, 8.9% were overweight and 5.5% were obese. Thus, including both overweight and obese, a total of 14.4% of children come under the obese category. There was no significant difference in the prevalence of obesity with respect to age.

Table – 2: Sex Wise Distribution of the Prevalence of Overweight and Obesity in the Study Population

	BMI			
Sex	**Normal**	**Over-Weight**	**Obese**	**Total**
Male	1903 (87%)	154 (7%)	131(6.0%)	2188 (100.0%)
Female	966 (83%)	144 (12.4%)	54 (4.6%)	1164 (100.0%)
Total:	3190 (85.6%)	298(8.9%)	185(5.5%)	3352 (100.0%)

P < 0.05

The table shows 7% and 6% of males were over-weight and obese respectively. 12.4% and 4.6% of females were over-weight and obese respectively.

Thus, when over-weight and obese categories were taken together, females (17%) were found to be more obese than males (13%).

Table – 3: Age Wise Distribution of Cases and Control

	Group		**Total**
Age	**Cases (Ow and Ob)**	**Control**	
5	4 (3.8%)	4 (3.8%)	8 (3.8%)
6	5 (4.7%)	5 (4.7%)	10 (4.7%)
7	4 (3.8%)	4 (3.8%)	8 (3.8%)
8	7 (6.6%)	7 (6.6%)	14 (6.6%)
9	3 (2.8%)	3 (2.8%)	6 (2.8%)
10	8 (7.5%)	8 (7.5%)	16 (7.5%)
11	12 (11.3%)	12 (11.3%)	24 (11.3%)
12	12 (11.3%)	12 (11.3%)	24 (11.3%)
13	11 (10.4%)	11 (10.4%)	22 (10.4%)
14	22 (20.8%)	22 (20.8%)	44 (20.8%)
15	18 (17%)	18 (17%)	36 (17%)
Total:	**106 (100%)**	**106 (100%)**	**212 (100%)**

The table shows age wise distribution of cases and controls included in the study. 106 obese children were taken as cases and equal number of age and sex matched children, whose BMI was in normal range, were taken as controls.

Table –4: Sex Wise Distribution of Cases and Controls

	Group		Total
Age	Cases (Ow and Ob)	Control	
Male	61 (57.5%)	61 (57.5%)	61 (57.5%)
Female	45 (42.5%)	45 (42.5%)	45 (42.5%)
Total:	106 (100%)	106 (100%)	106 (100%)

P > 0.05

The table shows sex wise distribution of cases and controls included in the study. Out of 106 cases and controls in the study, 57.5% were males and 42.5% were females.

Table – 5: Distribution of Over-Weight and Obese in Cases

Cases	**Number**
Over-Weight	60 (56.6%)
Obese	46 (43.4%)
Total:	106 (100%)

Chi-Square = 1.849, P < 0.05

Out of 106 children in the cases, 60 (56.6%) were over-weight i.e. age and sex matched BMI between 85th-95th percentile and 46 (43.4%) were obese i.e. age and sex matched BMI greater than 95th percentile.

Table –6:Mean BMI in Cases and Control

Group	N	Mean BMI
Cases (Ow and Ob)	106	24.2472
Control	106	16.2280

t = 18.612, P < 0.05

The above table shows that the mean BMI in cases and controls were 24.24 and 16.22 respectively. The difference in BMI was statistically significant.

Table – 7:Distribution of Pre-hypertension and Hypertension in Cases and Controls

	Group		Total
Age	Cases (Ow and Ob)	Control	
Normal	60 (56.6%)	105 (99.1%)	165 (77.8%)
Pre Hypertension	20 (18.9%)*	0 (0%)	20 (9.4%)
Hypertension	26 (24.5%)*	1 (0.9%)	27 (12.7%)
Total:	106 (100%)	106 (100%)	212 (100%)

*P < 0.05

The above table shows the blood pressure pattern in cases and controls.

In cases, 56.6% were normotensive, 18.9% were pre-hypertensive (i.e. age, sex and height matched Blood Pressure between 90th and 95th percentile) and 24.5% were hypertensive (i.e. age, sex and height matched Blood Pressure above 95th percentile).

In control group, 99.1% were normotensive and 0.9% were hypertensive. This difference in value was statistically very significant.

Table – 8:Distribution of Pre-hypertension and Hypertension in Over-weight and Obese

	Over-Weight	Obese	Total
Normal	34 (56.7%)	26 (56.5%)	60 (56.6%)
Pre Hypertension	14 (23.3%)	6 (13%)	20 (18.9%)
Hypertension	12 (20%)	14 (30.4%)	26 (24.5%)
Total:	60 (100%)	46 (100%)	106 (100%)

P > 0.05

The table shows distribution of Pre-hypertension and hypertension in overweight and obese. In both almost equal percentages of children were normotensive whereas more number of pre-hypertensives were found in over-weight group and hypertensive in obese group though the value is statistically not significant.

Table – 9:Age Wise Distribution of Blood Pressure Pattern in Obese Children

Age	Normal	Pre Hypertension	Hypertension	Total
5-10	24 (77.4%)	4 (12%)	3 (9.6%)	31 (100%)
11-15	36 (48%)	16 (21.3%)	23 (30.7 %)	75 (100%)
Total :	60 (56.6%)	20 (18.8%)	26 (24.51%)	106 (100%)

P < 0.05

Table shows age wise distribution of Pre-hypertensives and hypertensives in Cases. There were significantly more number of pre-hypertensives and hypertensives in the age group of 11-15 years compared to 5-10 years age group.

This difference in value was statistically significant.

Table – 10:Sex Wise Distribution of Pre-Hypertensives and Hypertensives in Cases (Ow and Ob)

	Sex		Total
Age	**Male**	**Female**	
Normal	33 (54.1%)	27 (60%)	60 (56.6%)
Pre Hypertension	11 (18.1%)	9 (20%)	20 (18.9%)
Hypertension	17 (27.8%)	9 (20%)	26 (24.5%)
Total:	61 (100%)	45 (100%)	106 (100%)

$P > 0.05$

The above table shows the sex wise distribution of Pre-hypertensives and hypertensives. There was no significant difference found between males and females with respect to pre-hypertension and hypertension.

Table –11:Relationship between Birth Weight and Obesity

Group	Sex	Mean Birth Weight	N
Cases (Ow and Ob)	Male	3.20	61
	Female	3.07	45
	Total:	3.14	106
Control	Male	2.71	61
	Female	2.63	45
	Total:	2.68	106

F groups = 51.264, $P < 0.05$, t female = 4.445, $P < 0.05$, t male = 5.810 $P < 0.05$

The above table shows the relationship between birth weight and obesity. The mean birth weight of obese children was found to be 3.14 kg and the mean birth weight of controls was 2.61 kg. This difference was statistically significant and similar statistical significance was also found when birth weight was compared between similar sexes of cases and controls.

Table – 12:Mean Calorie Excess in Cases and Controls

Group	Sex	Mean Calorie Excess in KCal	N
Cases (Ow and Ob)	Male	150.7	28
	Female	158.6	19
	Total:	153.9	47
Control	Male	99.5	12
	Female	105.9	11
	Total:	102.6	23

F = 16.814, $P < 0.05$

Mean Calorie excess was compared between Cases and Controls. In Cases, 47 children had calorie excess and the mean calorie excess was found to be 153.9 Kcal. In controls, 23 children had calorie excess and the mean excess value was 102.6 Kcal. Thus, compared to cases, in controls, less number of children had calorie excess and the mean difference in calorie excess was found to be statistically significant.

Statistical significance was also found when calorie excess was compared between similar sexes of Cases and Controls.

Table – 13:Mean of Calorie Deficit in Cases and Controls

Group	Sex	Mean Calorie Deficit in Kcal	N
Cases (Ow and Ob)	Male	88.8	9
	Female	116.6	9
	Total:	102.7	18
Control	Male	109.2	28
	Female	107.7	22
	Total:	108.6	50

F = .230 P < 0.05

Mean Calorie deficit was compared between Cases and Controls. In Cases, 18 children had calorie deficit and the mean calorie deficit was found to be 102.7 Kcal.

In Controls, 50 children had calorie deficit and the mean deficit value was 108.6 Kcal. Thus, compared to cases, in controls, more number of children had calorie deficit but the mean difference in calorie deficit was not found to have statistically significance.

Table –14:Comparison of Physical Activity and Sedentary Activity in Cases and Controls

Group		N	Mean Duration in Min.	t-Value	p-Value
Physical Activity	Cases (Ow and Ob)	106	70.94	**-1.114**	**0.266**
	Control	106	75.75		
TV / Video Games	Cases (Ow and Ob)	106	100.04	**6.040**	**0.000**
	Control	106	68.91		

The above table shows the physical activity and sedentary activity in cases and controls.

The mean duration of physical activity (outdoor activity) in controls was slightly more than cases though this value was statistically not significant.

The mean duration of T.V viewing by cases was 100.04 min whereas that in controls was 68.91 min. This difference in value was statistically significant.

Table – 15:Comparison of Physical Activity and Sedentary Activity in Over-Weight and Obese

Group		N	Mean Duration in Min.	t-Value	p-Value
Physical Activity	Over-Weight	60	69.0	.301	0.54
	Obese	46	73.3		
TV / Video Games	Over-Weight	60	90.3	5.778	0.018
	Obese	46	112.7		

The above table shows the physical activity and sedentary activity in overweight and obese. The mean duration of physical activity (outdoor activity) in obese was slightly more than over-weight children though this value was statistically not significant.

The mean duration of T.V viewing by obese children was 112.7 min whereas that in over-weight children was 90.3 min. This difference in value was statistically significant.

Table – 16:Relationship of Father's BMI in Cases (Ow & Ob) and Controls

Group	Father's BMI		Total
	Normal	Over Weight / Obese	
Cases (Ow & Ob)	19 (27.9%)	49 (72.1%)	68 (100%)
Control	50 (73.52%)	18 (27.48%)	68 (100%)

P < 0.05

The above table shows the relationship of father's BMI in cases and controls. Only 68 fathers' BMI data was available in cases and control.

In Cases, 27.9% of children had normal paternal BMI and 72.1% of children had paternal BMI in the range of over-weight / obese. In Controls, 73.52% of children had normal paternal BMI and 27.48% of children had paternal BMI in the range of over-weight / obese. These values were statistically significant.

Table –17:Relationship of Mother's BMI in Cases (Ow & Ob) and Controls

Group	Mother's BMI		Total
	Normal	Over Weight / Obese	
Cases (Ow & Ob)	17 (25%)	51 (75%)	68 (100%)
Control	48 (70.58%)	20 (29.42%)	68 (100%)

$P < 0.05$

The above table shows the relationship of mother's BMI in cases and controls. Only 68 mothers' BMI data was available in cases and control.

In Cases, 25% of children had normal maternal BMI and 75% of children had maternal BMI in the range of over-weight / obese.

In Controls, 70.58% of children had normal maternal BMI and 29.42% of children had maternal BMI in the range of over-weight / obese.

These values were statistically significant.

Table – 18: Relationship between Over-Weight/ Obese Children and Parental BMI

Cases	Mother and Father-Normal BMI	Father-Obese Mother-Normal BMI	Mother-Obese Father Normal BMI	Mother & Father-Obese	Total
Over-Weight	2	8	6	18	34
Obese	0	2	5	9	16
Total:	2 (4%)	10 (20%)	11 (22%)	27 (54%)	50 (100%)

$P > 0.05$

The above table shows relationship between parental BMI and over-weight and obese children. Data regarding the BMI of both parents was available for 50 children.

In the cases, 4% of children had their parental BMI in normal limits (18.5 – 24.99); 20% of children had only obese fathers; 22% of children had only obese mothers and 54% of children had both obese father and mother (BMI > 25).

Table – 19:Relationship between Parental BMI and Obese Children

	Non-Obese	Obese
Both Parents Normal	23 (92%)	2 (8%)
Father Obese Mother Normal	12 (54.54%)	10 (45.46%)
Mother Obese Father Normal	13 (54.16%)	11 (45.84%)
Both Parents Obese	2 (6.89%)	27 (93.11%)

$P < 0.05$

The above table shows relationship between parental BMI and obese children.

On analyzing data for 100 parents, it was found that there was a significant relationship between parental BMI and childhood obesity. When both parents were normal, only 8 % of children were obese whereas when both parents were obese, 93.11% of the children were obese. This percentage reduced to 45.84% when only mother was obese and 45.46% when only father was obese.

DISCUSSION:

Over-weight and obesity represent a rapidly growing threat to the health of population in an increasing number of countries. Indeed, these are now so common that they are replacing the traditional problems such as under nutrition and infectious diseases as the most significant causes of ill health.

Childhood Obesity is a single marker of the child at risk for development of various non-communicable diseases later in life. Childhood obesity is associated with many long term complications like Coronary Heart Disease, Hypertension, Stroke, certain types of cancer, NIDDM, Gallbladder disease, Dyslipidemia, Osteoarthritis, Gout, Pulmonary diseases including Sleep apnea etc.

The present study was undertaken in 5 schools catering Warangal city. Using BMI as criteria and based on NCHS guidelines, prevalence of obesity was evaluated. Out of 483 children diagnosed as obese and overweight, based on BMI, 106 children were screened for cardio-vascular risk factors and analysis of life style factors, as only those many children gave consent for further evaluation. Equal number of age and sex matched children were taken as controls and further parameters were compared.

The present study (2014 -2015) was conducted in schools catering to children belonging to Warangal city. The age group included in the study was between 5-15 yrs. Here the prevalence of over-weight and obesity was 8.9% and 5.5% respectively. Females (17%) were slightly more obese than males (13%).

Our study shows less number of over-weight and obese children when compared to other studies. This may be due to fact that in India, the available studies were done in metro cities where there was total adoption of western culture, availability of fast food centers and sedentary life style behaviors. The schools selected in the previous studies were on the basis of school fees of approximately Rs.1000 to 2000 per month. Thus, the prevalence of obesity in these cities correlates with the prevalence in America and other developed countries.

Warangal, being a smaller city where the traditional cultures and practices are still prevalent along with newly adopted western culture, has a prevalence of obesity of 14.4%% which correlates with study done by Krutarath et al where the prevalence of obesity was 18.7% in 2012, if western cultures are adopted and if economic status improves, the prevalence of obesity may increase much more.

The prevalence of hypertension in the present study correlates with the study done by Mohan B, et al and Gillian S Boyd et al with some differences but deviates largely from studies done by Gupta A.K, et al, Verma M ,et al and Jonathan et al, as pre hypertension was not considered in these studies.

Birth Weight and Obesity:

In the present study, mean birth weight in the obese group exceeded the non-obese group by 0.5 kg and this was statistically significant.

Calorie Excess and Obesity:

In the present study, total calorie consumption more than RDA, in obese group and non-obese group was compared, and in the obese group 44.3% children had calorie excess when compare to non-obese group (21.6%). The obese group had mean calorie excess of 153.9 Kcal compared to non-obese group 102.6 Kcal

TV Viewing and Obesity:

In the present study, TV viewing was found to be significantly associated with obesity. On an average, an obese child watched TV 1½ times more than nonobese child. Probably, increase in sedentary activity and not the decrease in physical activity is the contributing factor for obesity.

Table –20: Relationship between Parental BMI and Obese Children

	Garn S M et al[65]	Present Study
Both Parents Normal	14%	8%
Father Obese Mother Normal	40%	45.46%
Mother Obese Father Normal	40%	45.84%
Both Parents Obese	80%	93.11%

Parental BMI and Obesity in Child:

Various studies available have shown the effect of parental obesity on the BMI of their child. Garn S.M et al showed that when both parents are over-weight, 80% of their children will be obese. When one parent is obese, this incidence decreases to 40%; and when both parents are lean, obesity prevalence drops to 14%. Gray G.A et al[35] showed that there is a 75% chance that children aged 3-10 years will be over-weight if both parents were obese. This drops to a 25-50% chance with just one obese parent.

CONCLUSION:

Childhood obesity is in increasing trend from past 20 years in both developing and developed countries. The prevalence of childhood obesity in school children in Warangal city is 14.4% with females (17%) being slightly more obese than males (13%).

Risk factors for childhood obesity like high birth weight, parental obesity, high calorie intake, increased sedentary behavior has been confirmed in the present study. The fact that obese children have higher cardio-vascular risk factors like hypertension when compared to non-obese children has been reinforced by the present study. These children are at a higher risk of "**childhood onset of adult diseases"**.

Thus, timely intervention will result in decreased adulthood morbidity and mortality due to obesity in these children.

SUMMARY:

The present study was undertaken in 5 schools catering Warangal city. The age groups included in the study were between 5-15 years of age.

- Out of 3352 children included in the study, 2188 (65.27%) were males and 1164 (34.73%) were females.
- 14.4% of the children were obese and in that, females (17%) were slightly more in number than males (13%)
- Obese children had significantly higher caloric intake than non-obese children.
- There was a significant relationship between Birth weight of the child and development of obesity in the later age.
- Significant relationship was found between obesity in children and their parental BMI.
- There was no significant difference in physical activity between obese, overweight and non-obese group.
- Sedentary behavior had a significant association with the obese group when compared to the non-obese group. There was a significant relationship between sedentary behavior with over-weight and obesity.
- Pre-hypertension and hypertension were found to be significantly higher in the obese group when compared to the non-obese group and in the obese group this was more predominant in the age group of 11-15 than the 5-10 years age group.

REFERENCES:

1. Polk SL. Definitions and demographics of obesity: diagnosis and risk factors. Anaesthesiology Clin N Am 2005; 23:397-403.
2. WHO consultation on obesity. Special issues in the management of obesity in childhood and adolescence. World health organization, ed. Obesity: Preventing and managing the global epidemic. Geneva: WHO, 1998: 231-247.
3. Obesity: Preventing and managing the global epidemic. Report of a WHO consultation. Geneva: World Health Organization 2000 (WHO technical Report series No. 894).
4. Hager A. British Medical Bulletin 1981; 37(3):287.
5. Roccini AP. Adolescent obesity and Hypertension. Pediatr Clin N Am 1993; 40(1):81-92.
6. Styne DM. Childhood and adolescent obesity. Pediatr Clin N Am 2001; 48 (4):823- 847.
7. Bhave S, Bavdekar A, Otiv M. IAP National Task Force for Childhood Prevention of Adult Diseases: Childhood obesity. 2004; 41: 559-575.
8. Hedley AA, Ogden CL, Jhonson CL, Carrol MD, Curtin LR, Flegal KN. Prevalence of Over-weight and Obesity Among US Children, Adolescents and Adults 1999- 2002: JAMA 2004; 291: 2847- 2850.
9. Kotani K, Nishada M, Yamashita S. "Two decades of annual medical examinations in Japanese obese children: do obese children grow into obese adults?" Internat J of obese and metab disorder 1997;21:912-921
10. Shetty P.S. "Childhood obesity in developing societies. NFI bulletin 1999; 20(2):1-4.
11. Unhealthy school children. Lancet 1999; 351:2133.
12. Chatterjee P. India sees parallel rise in malnutrition and obesity. Lancet 2002; 360: 1948.
13. Subramanyam V, Jayashree R, Rafi M. Prevalence of Overweight and Obesity in Affluent Adolescent Girls in Chennai in 1981 and 1998. Indian Pediatr 2003: 40: 332-336.
14. Jagadesan, et al, Prevalence of Overweight and Obesity in Chennai, Indian Pediatrics 2014; 51:
15. Marwah P, Marwah A, Kaur P. to assess the prevalence of obesity among affluent school children in Patiala, Punjab and identify its associated risk factors. Pediatric Oncall [serial online] 2012 [cited 2012 November 1]; 9. Art # 73.
16. Viswanathan and Tharkar, Impact of Socioeconomic Status on Prevalence of Overweight and Obesity among Children and Adolescents in Urban India. The Open Obesity Journal, 2009, 1, 9-14.
17. Robinson et al, Early-Life Risk Factors for Childhood Obesity. Am J Clin Nutr 2015; 101: 368-75.
18. Chang Ying, Chen Xu and Zhang Zhi Kun, Gestational diabetes mellitus and children adiposity. Biomed Environ Sci, 2015; 28(2): 140-142.
19. Biard J, Fischer D , Lucas P, Kleijnen J, Roberts H, Law C. Being big or growing fast: systematic review of size and growth in infancy and later obesity. BMJ 2005; 331: 929-931.
20. American Academy of pediatrics, Policy Statement. Prevention of pediatric over-weight and obesity. Pediatrics 2003; 112: 424-429.

A STUDY ON THE PHYSICAL FITNESS AMONG KABBADI AND KHO- KHO PLAYERS IN MAHATMA GANDHI UNIVERSITY

Srinivas Reddy. Y[1], Venkat Reddy. P[2], Gopikrishna. Y[3]

[1]Physical Director, University College of Engineering Technology,MGU,Nalgonda
[2]Professor, Department of physical Education, Osmania University, Hyderabad.
[3]Professor, Department of physical Education, JNT University, Hyderabad.

ABSTRACT:

The aim of the present study was to study the difference in Physical Fitness among Kabbadi and Kho- Kho Players in Mahatma Gandhi University. 15 Male Kabbadi Players and 15Male Kho -Kho Players between the age group of 18 Years to 23Years were taken for the Study. The AAPHER Youth Fitness Test consisting of 6 Items were used for the Study. It was found that Kho- Kho Players have good Physical Fitness compare to the Kabbadi . This study shows that the Kho Kho Players are good because they do good Physical Training compare to Kabbadi Players.The Kho- Kho Players are having very good speed , strength and endurance.
***Key words**: Physical fitness, Speed, Strength, Endurance.*

INTRODUCTION:

Physical fitness is defined as the state or condition of being physically sound and healthy, especially as the result of exercise and proper nutrition. It is thus, a state of general well being, marked by physical health as well as mental stability. Physical fitness is not just about having a lean body; it is about having cardiovascular endurance, as well as a strong immunity system, and most importantly, a satisfied and happy state of mind. Physical fitness is composed of general and specific fitness. It can be health and skill related physical fitness. Physical fitness refers to the organic capacity of the individual to perform the tasks of the daily living without undue tiredness and fatigue and still have a reserve of strength and energy available to meet satisfactorily sudden emergency placed upon him. Physical fitness provides capacity for activity. Modern Competitive performance demands severe training every day thoughout the year to maintain fitness for performance at peak level.The techniques and skills in sports and games have advanced dramatically which demands the competitive sport participant to possess a high degree of physical fitness. Hand Ball and Soft Ball require Physical Fitness to enhance the Performance.

METHODOLOGY:

Aim: To find out the Physical Fitness among the Kabbadi and Kho- Kho Players in Mahatma Gandhi University.

Sample: 15 Kabbadi and 15 Kho- Kho Players of Mahatma Gandhi University has taken for study.

Test Administration: To find out the Physical Fitness the AAPHER Youth Fitness Test consisting of the following Items are used in the study.

1. Pull Ups
2 .Sit Ups
3. Shuttle Run
4. Standing Broad Jump
5. 50 Yard Dash
6. 600 Yard Run

The above Tests are conducted among KABADDI and KHO-KHO Players.

RESULTS AND DISCUSSSION:

Table 1 and Bar Diagram showing the performance of Physical Fitness among Kabbadi and Kho Kho Players. It is found Kho- Kho Players are having good performance then Kabbadi in 50 Yard Dash,600 Yard Run,Standing Broad Jump, Shuttle Run and Sit-ups and Kabbadi Players are found good in Pull-ups.

Table: 1

AAPHER	GROUP	N	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
50 Yard	Kho- Kho Players	15	6.66	0.40	0.10	-3.38	28.00	0.00
	Kabbadi Players	15	7.20	0.45	0.12			
600 Yard	Kho- Kho Players	15	1.70	0.20	0.05	-2.07	28.00	0.05
	Kabbadi Players	15	1.86	0.25	0.06			
SBJ	Kho- Kho Players	15	2.34	0.11	0.03	4.23	28.00	0.00
	Kabbadi Players	15	2.21	0.06	0.02			
Pull Ups	Kho- Kho Players	15	12.12	1.11	0.29	6.22	28.00	0.00
	Kabbadi Players	15	14.10	1.06	0.27			
Shuttle Run	Kho- Kho Players	15	13.90	0.90	0.23	3.80	28.00	0.00
	Kabbadi Players	15	14.15	0.30	0.08			
Sit Ups	Kho -Kho Players	15	30.33	2.23	0.57	5.57	28.00	0.00
	Kabbadi Players	15	25.47	1.51	0.39			

RECOMENDATIONS:

It is recommended that Kho- Kho and Kabbadi Players requires Physical Fitness Training for enhancing the Performance. It is advised to Coaches include the Physical Fitness programs in their Schedules.

References:
1. Science of Sports Training, Hardayal Singh.
2. Running for Fitness by Sebastian and Peter Coe.

IMPORTANCE OF CIRCULAR DATA IN SPORTS SCIENCE – A REVIEW

M. Srinivas[1†] and S. Sambasiva Rao[‡]

[†]Professor of Mathematics, [‡]Assistant Professor of Mathematics, Department of Humanities and Sciences, SVS Group of Institutions, Warangal-506015, Telangana, India.
Email IDs: sri.srinivaswgl@gmail.com, ssrao.siginam@gmail.com

Abstract. The statistical analysis of angular data is typically encountered in biological and geological studies, among several other areas of research. Circular data is the simplest case of this category of data called directional data, where the single response is not scalar, but angular or directional. A statistical analysis pertaining to two dimensional directional data is generally referred to as "Circular Statistics". In this paper, an attempt is made to review various fundamental concepts of circular statistics and to discuss its applicability in sports science.

1. Introduction and Preliminaries

The majority of statistical techniques used in the analysis of human performance are linear, in which the assumptions are often easy to specify and provide good mathematical solutions for modeling a wide range of events. But many problems encountered in biological scenario do not lend themselves to strict linear representation (see [3] and [28]). It was observed that frequently cannot be modeled in a linear manner are data produced from circular scales. These variables are distinctive in the sense that data points are distributed on a circle instead of the traditional configuration of points on the real number line. Circular scales produce cyclic or periodic data that complicate traditional analytical procedures. The complexities found in evaluating circular data are largely a manifestation of the special interval level status the circular scale represents. Circular scales do not have a true zero point. That is, they are circular means that any designation of high or low or more or less is purely arbitrary.

The analysis of circular data is an odd corner of statistical science which many never visit, even though it has a long and curious history. Moreover, it seems that no major statistical language provides direct support for circular statistics.

The basic statistical assumption in circular statistics is that the data are randomly sampled from a population of directions. Observations arise either from direct measurement of angles or they may arise from the measurement of times reduced modulo some period and converted into angles according to the periodicity of time, such as days or years. They are

[1] Corresponding Author

commonly summarized as locations on a unit circle or as angles over a 360^0 or 2π radians range, with the endpoints of each range corresponding to the same location on the circle.

The key characteristic that differentiates circular data from data measured on a linear scale is its wrap-around nature with no maximum or minimum. That is, the "beginning" coincides with the "end", i.e., $0 = 2\pi$ and in general the measurement is periodic with θ being the same as $\theta + 2p\pi$ for any integer p. Differences between the theories of statistics on the line and on the circle can be attributed to the fact that the circle is a closed curve while the line is not. Thus, distribution functions, characteristic functions and moments on the circle have to be defined by taking into account the natural periodicity of the circle.

Types of circular data

1. Vectorial (it consists of directed line segments in which both angle and direction associated with the point)
2. Axial (Data relating to the angular position of random lines which do not have a natural orientation associated with them)

We now provide formulae typically used in circular data analysis

1. Circular mean: $\overline{X} = \begin{cases} \frac{1}{n}\sum_{i=1}^{n}\cos\phi_i & \text{for ungrouped} \\ \frac{1}{n}\sum_{i=1}^{n} f_i\cos\phi_i & \text{for grouped} \end{cases}$

$$\overline{Y} = \begin{cases} \frac{1}{n}\sum_{i=1}^{n}\sin\phi_i & \text{for ungrouped} \\ \frac{1}{n}\sum_{i=1}^{n} f_i\sin\phi_i & \text{for grouped} \end{cases}$$

2. Length of mean vector: $r = \sqrt{\left(\overline{X}\right)^2 + \left(\overline{Y}\right)^2}$
3. Hence, average angle is $\cos\overline{\phi} = \frac{\overline{X}}{r}$ and $\sin\overline{\phi} = \frac{\overline{Y}}{r}$, and

$$\overline{\phi} = \begin{cases} \tan^{-1}\left(y/x\right) & \text{if } x > 0 \\ 180^0 + \tan^{-1}\left(y/x\right) & \text{if } x < 0 \\ 90^0 & \text{if } x = 0, y > 0 \\ 270^0 & \text{if } x = 0, y < 0 \\ \text{indeterminate} & \text{if } x = 0, y = 0 \end{cases}$$

4. A sample of *n* angles (in degrees) $a_1, a_2, \ldots a_n$ is to be summarized. [6] and [16] contain definitions of various summary statistics that are used for angular data.

$$C_p = \sum_{i=1}^{n} \cos(pa_i) \quad \text{and } \overline{C_p} = \frac{C_p}{n}$$

$$S_p = \sum_{i=1}^{n} \sin(pa_i) \quad \text{and } \overline{S_p} = \frac{S_p}{n}$$

$$R_p = \sqrt{C_p^2 + S_p^2} \quad \text{and } \overline{R_p} = \frac{R_p}{n}$$

$$T_p = \begin{cases} \tan^{-1}\left(\dfrac{\overline{S_p}}{\overline{C_p}}\right) & \text{if } \overline{C_p} > 0, \overline{S_p} > 0 \\ \tan^{-1}\left(\dfrac{\overline{S_p}}{\overline{C_p}}\right) + \pi & \text{if } \overline{C_p} < 0 \\ \tan^{-1}\left(\dfrac{\overline{S_p}}{\overline{C_p}}\right) + 2\pi & \text{if } \overline{C_p} > 0, \overline{S_p} < 0, \end{cases}$$

Where a=Resultant length

R=mean of the resultant length with limits 0 and 1

Circular variance = V=1-R

Mean direction=Theta=Measure of mean of individual angles, estimated by T

Circular dispersion= δ = (1-T)/($2R^2$).

Major differences

1. A common problem in circular data is to estimate a preferred direction and its corresponding distribution. Common choices for summarizing the preferred direction are the sample circular mean, and sample circular median.
   - A common one-dimensional statistical problem is the estimation of a location parameter, and its corresponding distribution.
2. Linear descriptive statistics are limited in precisely characterizing the central tendency of circular distributions.
   - If we have a number of angular measurements on the circle, then the mean of those measures should give an estimate of the true population mean parameter.
3. Many of the problems associated with the use of traditional statistical methods for describing circular data emerge in statistical inference.
   - The usual parametric or non-parametric methods of statistical inference do not take into account scale circularity when it exists. Hence, these methods will be subject to serious, unknown and unrecognized errors in stated probabilities associated with Type **I** error rates, loss of statistical power, or both.

- The statistical methods that minimize the interpretational risks associated with circular data analysis when certain distributional assumptions are met.

4. Failure to recognize the circularity of one or more variables in time series, regression, or correlation analysis may lead to overlooking important systematic relationships among variables.
    - The use of appropriate circular methods can assist in simplifying statistical relationships and improve the fit of data models.
5. Computing the median angle of unimodal circular data is similar to that for linear data.
6. If time is considered in the usual time-series analysis which is a linear variable, compared to situations where one is considering timing only within a cycle, which is most usefully treated as a circular variable.
7.

Type of Data	Deviation from mean	Sum of Deviations from Mean	Square of Deviations from mean	Variance
Linear	$\left(x_i-\bar{x}\right)$	$\sum\left(x_i-\bar{x}\right)$	$\left(x_i-\bar{x}\right)^2$	$\frac{1}{n}\sum\left(x_i-\bar{x}\right)^2=s^2$
Circular	$\sin\left(\phi_i-\bar{\phi}\right)$	$\sin\left(\sum\left(\phi_i-\bar{\phi}\right)\right)$	$2\left[1-\cos\left(\left(\phi_i-\bar{\phi}\right)\right)\right]$	$\frac{1}{n}\sum 2\left[1-\cos\left(\phi_i-\bar{\phi}\right)\right]=2(1-r)$

Circular Distribution

A circular distribution (CD) is that in which total probability is concentrated on the circumference of a unit circle. A set of identically independent random variables from such a distribution is referred to as a random sample from the CD. Two frequently used families of distributions for circular data include the von Mises and the Uniform distribution

The importance of the von Mises distribution is similar to the Normal distribution on the line (see [15]). It was introduced by von Mises (1918) to study the deviations of measured atomic weights from integral values. It is a symmetric unimodal distribution characterized by a mean direction μ, and concentration parameter k, with probability density function

$f(\theta)=\frac{1}{2\pi I_0(k)}e^{k\cos(\theta-\mu)},\ \theta\geq 0,\mu<2\pi,0\leq \mathrm{k}<\infty$, where

$$I_0(k)=\frac{1}{2\pi}\int_0^{2\pi}e^{k\cos\theta}d\theta=\sum_{i=0}^{\infty}-\frac{1}{(i)^2}\left(\frac{k^2}{4}\right)^i$$

is the modified Bessel function of order zero. See [6] p.50 for a series expansion and methods for evaluating $I_o(k)$, k is a concentration parameter, which quantifies the dispersion. As k increase from zero, $f(\theta)$ peaks higher about μ.

The circular random variable θ is symmetric about a given direction μ if its distribution has the property $f(\mu + \theta) = f(\mu - \theta)$, for all θ, where addition or subtraction is modulo (2π).

If k is zero, then $f(\theta) = 1/ 2\pi$ and the distribution is uniform with no preferred direction.

All directions are equally likely, hence this is also known as the Isotropic distribution. This distribution represents the state of no "preferred direction", since the total probability is spread out uniformly on the circumference of a circle.

The uniform distribution on the circle has the property that the sample mean direction and the sample length of the resultant vector are independent. Similar property is held by the normal distribution for linear data (see [12]).

The commonly used parametric model, the von Mises distribution, for analyzing directional data assumes unimodality and axial symmetry of a given data set. Since this is not always the case, the search for robust methods leads naturally to techniques which are non-parametric or are distribution free. The need for distribution-free methods is highly desirable in directional data analysis (see [17]).

2. Literature Review

Batschelet ([3]) has pioneered many of the principles in statistical circular methods; some of his work is no longer in print and thus not readily available. The definition of circular median is stated in [15], p. 28. For a detailed discussion of circular probability distributions we refer to see [8] p. 25--63.

The wrapped normal was introduced by [29] and later studied by [27], [13], and [7], [25] matched the first trigonometric moments of the von Mises and wrapped normal distributions.

The similarity of the two distributions has also been noted and to some extent explained by [9] , [10], [14] and [11]. Based on the difficulty in distinguishing the two distributions, [4] conclude that decision on whether to use a von Mises model or a wrapped normal model depends on which of the two is most convenient.

A large part of parametric statistical inference for circular data is derived based on one or two models and there has not been enough discussion on model-robustness, i.e., to justify their validity and use when the data is actually from another model (see [8]). As a

result, modeling asymmetric data sets, which frequently occur in practice, provides some challenges because of the lack of appropriate models.

The standard texts on directional data are [15] and [6]. In [3], a less mathematical account of applications of circular data to the analysis of biological data is available and in [5], an account of methods for the analysis of spherical data is provided. The Authors (see [26], [16]) discuss both two and three dimensional data.

Inappropriate applications of linear methods to circular data are in the book by [28] p. 607, 624-625, who does not consider the fact that, the zero or positive direction in the circle is arbitrary. Many of his proposed methods are not rotationally invariant. Circular data is typically encountered in the following areas of research: migrating birds, human performance, military training, biomathematics (animal behavior studies on homing, migration, escape, and exploratory behavior), Biology (movements of migrating animals), Meteorology (winds), Geology (directions of joints and faults), Physics, Geomorphology (landforms, oriented stones), Spatial and temporal performance (navigation, work-system design, biological rhythms, and sleep), factor analysis, circadian physiology, atomic weights, Oceanography, Ozone concentrations, among others.

3. Circular data in Sports Science

In sports, the vision plays an important role in the control of far aiming tasks; its exact role is unclear with the purpose of scoring. In static far aiming tasks, like rifle shooting, shooting free throws in basketball and playing billiards, the duration of the final fixation on the target before initiating the final movements correlates with expertise. Compared with non-experts, experts fixate their gaze at the target for longer before taking the actual shot, a phenomenon called ‘‘quiet eye’’. The prediction of offensive outcomes based on certain situations in the game. Some of these outcomes include, scoring, success of plays, and yardage gained. These predictions may help coaches make crucial decisions. In particular, in the basketball shooting, the goals were to find an average angle at which a player shoots the most often and has a high percentage of makes versus their average angle for missed shots. Data analysis involves check sheets, control charts, and Pareto diagrams. Examination of the charts should suggest causes that affect performance.

There has been no attention to the problem of circular data in sports science though there are several instances in various games where we encounter circular data. For instance, the strength of batsman in cricket to play shots in certain areas of cricket field follows strong directional patterns and one can analysis the bating style of a batsman based on this directional data using methods in circular statistics, like whether he/she is strong in hitting the ball more often in long off, midwicket and so on. One more example for using circular

statistics analysis is due to Rita Ferraz De Oliveira et al. The authors examined the timing of optical information pick-up in basketball jump shooting using an intermittent viewing technique (see [31]). Expected shooters to prefer to look at the basket as late as possible under the shooting style used. Most shooters preferred to pick up optical information as late as possible given the adopted shooting style. One can conclude that, in dynamic far aiming tasks such as basketball jump shooting, late pick-up of optical information is critical for the successful guidance of movements.

4. Conclusions

Our purpose here is to point out that there exist circular data problems in sports science; there is a little research that has focused on the importance of circular data in sports science. Therefore, the coaches or sports science researchers must focus on the identification of data available to them regarding the games and differentiate them into linear and circular data for better understanding and analysis of outcome of the game and for the improvement in the performance of the player. To this end, the attempt made in this article may help to understand certain aspects of circular statistics.

References

[1]. Arnold, B.C., Castillo, E. and Sarabia, J.M. (1999), "Conditional Specification of Statistical Models", Springer-Verlag, New York.

[2]. Arnold, B.C. and SenGupta, A. (2004), "Distributions with circular normal conditionals and tests for independence on the torus", under revision for Annals of the Institute of Statistical Mathematics.

[3]. Batschelet, E. (1981), "Circular Statistics in Biology", Academic Press. London

[4]. Collett, D., and Lewis, T. (1981), "Discriminating between the von Mises and wrapped normal distributions", *Australian Journal of Statistics*, 23, 73-79.

[5]. Fisher, N.I., Lewis, T., and Embleton, B.J.J. (1987). "Statistical Analysis of Spherical data', Cambridge University Press. Cambridge.

[6]. Fisher, N.I. (1993), "Statistical analysis of circular data", Cambridge University Press, Cambridge.

[7]. Gumbel, E.J., Greenwood, J.A., and Durand, D. (1953), "The circular normal distribution Theory and Tables", *Journal of the American Statistical Association.*, 48,131-152.

[8]. Jammalamadaka, S.R. and SenGupta, A. (2001), "Topics in Circular Statistics", World Scientific, New Jersey.

[9]. Kendall, D.G. (1974a), "Hunting quanta", *Trans. R. Soc. Lond.*, A 276, 231-266.

[10]. Kendall, D.G. (1974b), "Pole-seeking Brownian motion and bird navigation", *J. R. Stat.Soc. B*, 36, 365-417.

[11]. Kent, J.T. (1976), "Distributions, Processes and Statistics on Spheres", Ph.D Thesis. University of Cambridge. Cambridge.

[12]. Kent R.D., Netsell R.,and Abbs J.(1979), "Acoustic characteristics of dysarthria associated with cerebellar disease", *Journal of Speech and Hearing Research*, 22, 627-648.

[13]. Levy, P. (1939). "L'addition des variable aleatoires defines sur une circonference". *Bull. Soc. Math. France*, 67, pp. 1-41.

[14]. Lewis, T. (1974). Discussion on "Pole Seeking Brownian motion and bird navigation" by Kendall, D. G. *Journal of the Royal Statistical Society B* 36, 365-402.
[15]. Mardia, K.V. (1972) "Statistics of Directional Data", Academic Press, New York.
[16]. Mardia, K.V., and Jupp, P.E. (2000), "Directional Statistics", Wiley. Chichester.
[17]. Rao, J.S. (1984), "Nonparametric methods in directional data", Chapter 31 in Handbook of Statistics, Vol. 4. Nonparametric statistics, editors P.R. Krishnaiah and P.K. Sen. 755-770. Elsevier Science Publishers. Amsterdam.
[18]. SenGupta, A. (1991), "A review of optimality of multivariate tests", *Statistics & Probability Letters*, Special issue - Multivariate Optimality and Related Topics, S.R. Jammalamadaka and A. SenGupta (Guest eds.), 12, 527 - 535.
[19]. SenGupta, A. (1998) DDSTAP – "Directional Data Statistical Analysis Package", *Indian Statistical Institute*, Kolkata.
[20]. SenGupta, A. (2004), "On the constructions of probability distributions for directional data", *Bulletin of the Calcutta Mathematical Society*, 96, 139-154.
[21]. SenGupta, A. and Chang, H-J. (2005), "Optimal tests for the mean direction of a von Mises distribution", In Felicitation volume in honor of B.K. Kale, B.C. Arnold, S. Bendre and U. Gather (eds). (To appear)
[22]. SenGupta, A. and Jammalamadaka, S.R. (2001), "Geometry of the von Mises distribution and of tests for its mean direction", *Stochastic Modelling and Applications*, 4, 16-37.
[23]. SenGupta, A. and Pal, C. (2001), "On optimal tests for isotropy against the symmetric wrapped stable - circular uniform mixture family", *Journal of Applied Statistics*, 28, 129-143.
[24]. SenGupta, A. and Vermeire, L. (1986), "On Locally Optimal Tests for Multiparameter Hypotheses", *Journal of the American Statistical Association*, 81, 819-825.
[25]. Stephens, M.A. (1963), "Random walk on a circle", *Biometrika*,Vol. 50, 385-390.
[26]. Upton, G.J.G., and Fingleton, B. (1989), "Spatial Data Analysis by Example" Volume 2. *Categorical and Directional Data*, Wiley. NY.
[27]. Wintner, A. (1933), "On the stable distribution law", *American Journal of Mathematics*, 55, 335-339.
[28]. Zar, J.H. (1999), "Biostatistical Analysis", 4th Edition. Prentice-Hall, Inc.
[29]. Zernike, F. (1928), "Wahrscheinlickkeitsrechnung und Mathematische Statistik. In Handbuch der Physik", 3, 419-492. Springer Berlin.
[30] Girija S.V.S,"Construction of New Circular Models",*VDM Publishing*, 2010.
[31] Rita Ferraz De Oliveira et al., "Late information pick-up is preferred in basketball jump shooting", *Journal of Sports Sciences*, September 2006; 24(9): 933-940.

COMPARATIVE STUDY OF SENIOR AND JUNIOR VOLLEYBALL PLAYERS ON TASK AND EGO ORIENTATIONS AND SPORTS COMPETITION ANXIETY

***Dr.LILLYPUSHPAM ISAAC, ** Mr.P.RAJASEKARAN, *** Dr.FLOSSY RAYAPPAN**

***Assistant** Professor, Dept.of Physical Education, TNPESU, Chennai

**Physical Director, Balaji Institute of Engineering and Technology, Chennai

**Associate Professor, School of Social work, Roshin Nilaya, Valencia, Mangalore

ABSTRACT

The purpose of the present investigation was to conduct a comparative study of senior and junior volleyball players on goal orientations and sports competition trait anxiety. The sample comprised (N=51) senior volleyball players (N=32) and junior volleyball players (N=19). All the volleyball players was tested on the psychological variables i.e. task and ego orientation, sport competition trait anxiety, and perceived stress and junior volleyball players .Results Indicated that there is no significant difference between junior and senior volleyball players, on task ego and sport competition anxiety.

INTRODUCTION

OBJECTIVES

The present study has the following objectives:

1. To study the sport competition anxiety level of senior and junior volleyball players.
2. To study the goal orientation of senior and junior volleyball players.

METHODOLOGY

THE SAMPLE

The sample of the present study comprised a total number of 51 volleyball players: senior (32) and junior (19), who participates in various national level competitions, and have more then 3 to 4 years of experience, in playing volleyball. The age of the subject ranged between 15 to 26 years (mean age =20.5years).

INSTRUMENTS

Standardized sport specific questionnaires were used, in this study. The following questionnaires were used

1. Task and ego orientation in sport questionnaire (TEOSQ) (duda, 1992).
2. Sport competition anxiety test (SCAT) (Martens, Gill, scanlan & Simon, 1990).

PROCEDURE

The instruments used, in this study, were complied and printed out in both English and Hindi. The respondents filled up the questionnaire, individually in the present of the researcher, in their off practice hours.

To find out the significance of mean difference between senior and junior volleyball players, on task ego orientation and sport competition anxiety, t-test was applied. The result are presented in this table 1 below.

GROUP	ANXIETY				TASK		EGO		
	MEAN	SD	T		MEAN	SD	T	MEAN	SD	T
SENIOR	16.88	3.54	1.31(ns)	29.41	2.21	1.13(ns)	18.00	3.52	.04(ns)
JUNIOR	15	3.53		28.42	2.12		18.05	3.39	

Table 1 represent the significance of mean difference between senior and junior volleyball players on sport competition anxiety and goal orientation. From table, it is seen that senior volleyball player, do not differ significantly from junior volleyball player, in their sport competition anxiety. The obtained t- value was 1.31; which is found to be not significant .with respect to the goal orientation; it is found that the senior volleyball players did not differ significantly from the junior volleyball players. The 't' value found to be 1.13 in task orientation and the t-value for ago orientation for both senior and junior volleyball players, was found to be .40.

With respect to goal orientation, it was found out that senior players did not differ from junior volleyball players in their goal orientation. That mean values of senior volleyball players did not differ significantly, from junior volleyball players, in their task orientation. Both senior and junior volleyball players were found to be task oriented. The probable reason for this result may be due to the fact that both groups have participated in various national level competitions and have the experience of success in competition that had made both the groups more task orientation. However, competitiveness often has the unintended and direct effect of making the players ego oriented in their activity.

IMPLICATIONS OF THE STUDY

It is concluded that is essential for the coaches/ physical trainers to know the level of goal orientation of their players and they should motive their players to be more task oriented. On the basis of this idea of level of goal orientation, the coach can plan for future. It will help them to modify their training schedule and will help to improve the performance of the players. Along with this, the coach can plan for psychological training and counseling of their players to enable them develop the right kind of mental set towards their games, and to control their negative psychological, tendencies like anxiety.

REFERENCES

1. Ames , C.(1984). Competitive and individualistic goal structures; a cognitive motivational analysis. In r.e ailles (Eds), researcher on motivation in education (pp.177-207). Orlando, fi; academic press Inc.
2. Ames , C. & archer,J (1984). Achievement goal in the class room; student' learning strategies and motivation processes,journal of education psychology,80.260-267.
3. Cronbach , L.J.(1951).Coefficient alpha the internal structure of tests.Psychometrika, 16,297-334.
4. Duda,J.L.(1989).The relationship between task and ego orientation and the perceived purpose of sport and exercise psychology ii,.318-335.

FITNESS TRAINING AMONG FIELD HOCKEY PLAYERS FOR UNDER-19 BOYS OF SAAP HOCKEY ACADEMY: NALGONDA DISTRIC, TELANGANA STATE.

PATHAKOTI MADHU*, VARIKOTI JAYASRI, BOMMAKANTI SAIDULU*****

*Lecturer in Sri Krishna College of physical education, Mahatma Gandhi University, Nalgonda.

** Physical education teacher, Dornakal, Warangal.

***Lecturer in Sri Krishna college of physical education, Mahatma Gandhi University, Nalgonda.

INTRODUCTION

Physical fitness can be defined as a general state of health and well-being or more specifically as the ability to perform aspects of sports or occupations. Physical fitness is generally archived through correctly nutrition, exercise, hygiene, and rest. it is a set of attributes or characteristics seen in people and which relate to the ability to perform a given set of physical activities.

Fitness is defined as the quality of being suitable to perform a particular task. A holistic definition of fitness is described by Greg Glassman in the cross fit journal as an increased work capacity across broad time and model domains; mastery of several attributes of fitness including strength, endurance, power, speed, balance, and co-ordination and being able to improve the amount of work done in a given time.

Hockey is a family of sports in which two teams play against each other by trying to manoeuvre a ball or a puck into the Opponents goal using a hockey stick, in many areas, one sports(typically field hockey or ice hockey's generally referred to simply as hockey.

Training is defined as specific as task – oriented fitness is a person's ability to perform in a specific activity with a reasonable efficiency.

Speed: The ability to move quickly from one point to another in a straight line.
Agility: The ability of the body change direction quickly.
Balance: The ability to maintain an upright posture while still or moving.
Coordination: Integration with hand and/or foot movement with the input of the senses.
Power: The ability to do strength work at an explosive pace.
Flexibility: The range of movements possible at various joints.
Muscular strength: The amount of force that can be produced by a single contraction of a muscle.
Muscular endurance: The ability of a muscle group to continue muscle movement over a length of time.

Table shows the weekly fitness training schedule

Days	Morning	evening
Mon	40 min run, stretching exercises, & limbering down	6 rounds around hockey field, stretching exercises 30 min.. 60 mts and 90 mts sprints 3 repetition.
Tues	20-3-20-3-20-3 minutes slow jog, medium fast run, slow jog and walk, stretching exercises.	Swimming (self practice)
Wed	9 rounds around hockey field, stretching exercises, 100 mtrs long strides 6 repetitions and limbering down.	6 rounds run, running exercises with body movements, limbering down.
Thurs	Treadmill Run of 800mts with four min set time, stretching exercises and weight training.	4 rounds run, exercise and play many Recreation game.
Fri	Hill training(own warm up and own body weight)	3 rounds run, exercise and limbering down
Sat	Cross country run 8 km, stretching exercises and limbering down.	YOGA (Pranayama & meditation)
sun	REST	REST

Statement of the problem: To find out the speed and endurance results after the impact of three months fitness training schedule among SAAP hockey players of Nalgonda Distric.

Sample: For the present study 20 male SAAP hockey players are taken.

Tool: To measure speed 30mts run and to measure endurance 800mts run used for the study.

Procedure of Data collection:

30mts run: purpose the aim of this test is to determine speed.

Procedure: The test involves running a single maximum spring over 30mts, with the time recorded. A through warm-up should be given, including some practice starts and accelerations.

800mts Run

Purpose: The aim of this test is to determine endurance.

Procedure: The test involves 800mts continuing running. The player have to stand behind the starting line, on the command ready to GO he has to start running continuously without any break. He has to complete 2 rounds around the 400mts track. Timing is recorded by the qualified officials.

RESULTS AND DISCUSSIONS

Pre test

Test	Group	N	Mean	Std. deviation	Std. error	D f
30mts	Hockey players	20	2.54	0.03	0.007	0.36
800mts	Hockey players	20	2.90	0.0131	0.030	0.36

Table 1 shows the pre test, average speed and endurance of hockey players is 2.54 and 2.90 where three months fitness training not implemented.

Post test

Test	Group	N	Mean	Std. deviation	Std. error	D f
30mts	Hockey players	20	2.48	0.040	0.009	0.38
800mts	Hockey players	20	2.864	0.134	0.030	0.38

Table 2 shows the post test, average speed and endurance of hockey players is 2.48 and 2.864 after implementing three months fitness training.

MEAN DIFFERENCE

TEST	PRE TEST	POST TEST	DF
30mts run	2.54	2.48	0.06
800mts run	2.90	2.864	0.04

Table three shows 0.06 sec mean difference of speed between pre test and post test of SAAP hockey players and 0.04 mean difference of endurance between pre test and post test.

CONCLUSION: **I**t is concluded that three months fitness training have great impact on hockey players of SAAP academy, nalgonda under the age group of 19 years compare to pre test results. Hence it is concluded that three months fitness training can archive best performance.

RECOMMENDATION: It is recommended that hockey players need good physical fitness to improve performance and physical fitness components such as speed, strength, agility, endurance, flexibility, power, and coordination.

REFERENCES: Hockey, Wikipedia.

EFFECTS OF SPORTS TRAINING & NUTRITION ON BONE MINERAL DENSITY IN FEMALE MEDICOS IN TELANGANA

Dr. K. Ramkumar Reddy, Assoc. Professor, Dept of Orthopedics, MGM Hospital, Warangal. Telangana

Dr. T. Prabhakar Reddy, Physical Director, Kakatiya Medical College, Warangal. Telangana

Abstract

Adolescence, characterized by changes in height, weight and body composition, is also a crucial period for bone mineral accrual Approximately 40 per cent of peak bone mass is accumulated during adolescence which protects against post menopausal osteoporosis. Therefore, optimizing peak bone mass in early adulthood is thought to reduce the risk of osteoporosis by offsetting bone losses later in life.

About 50-70 per cent of the variance in peak bone mass within a population is determined by genetic factors. Other potential determinants which interact with genetic factors to influence bone mass include gender, diet, physical activity, sun exposure, and hormonal factors.

There is a marked variation in bone mineral density (BMD) among women from different ethnic groups. Thus, women of European origin have been observed to have lower BMD at different skeletal sites compared to their African-American counterparts but a higher BMD than those of Far East Asian origin. Among environmental factors, nutrition and vitamin D status play a crucial role in acquisition of bone mineral density. Also, there is evidence to suggest that physical activity during adolescence and early adulthood is a key determinant of peak bone mass. A positive association between bone mineral status and daily participation in high-impact physical activity has also been reported.

In view of limited information on Indians, we decided to study the effect of sports training and nutrition on BMD in a group of post-pubertal women, *i.e.*, an age group during which bone mass is still being accumulated. To meet this objective sportswomen involved in regular moderate to high level physical activity were compared with age matched sedentary controls:

Material & Methods

Population and sample collection: The study included 186 female subjects (90-sportswomen; 96-controls), aged 18-21 yr, from different colleges affiliated to the Kaloji University of Health Sciences, Warangal, Telangana. A study subject was defined as a sportswoman, if she represented either her college or the State of Telangana in competitions for either individual or team sports. A subject was selected as a control if she was involved in less than 150 min of physical activity per week, including any walking involved to reach the college. Purposive sampling technique was used to select the subjects. Sportswomen from four colleges of the Kaloji University of Health Sciences – Kakatiya Medical College, Warangal, Osmania Medical College, Hyderabad, Gandhi Medical College, Secunderabad, Govt. Medical College, Nizamabad. Initially, the sample consisted of 107 subjects, of which 17 girls dropped out. Finally, 90 subjects who gave their informed consent to participate, were recruited for detailed anthropometric, biochemical, dietary, lifestyle and BMD assessment. To formulate the control group, 117 girls were approached from a single college – Sur Homeopathic Medical College; 21 girls were eliminated since they did not provide consent. Hence, a sample of 96 controls underwent detailed assessment. The study protocol was approved by the Institutional Ethics Committee of the Kakatiya Medical College, Warangal.

The sample size was calculated with an estimated difference of 5 per cent between the two groups at lumbar spine. Lumbar spine BMD of 25 controls was initially measured and based on an anticipated 5 per cent excess BMD in sportswomen we arrived at a sample size of 99 subjects in each group (80% power).

Under anthropometric assessment height and weight recordings were done on the same day on which BMD was measured. Height was recorded without shoes; using a wall stadiometer to the nearest 1 mm. Subjects were weighed using a clinical balance to the nearest 0.1 kg, wearing light

clothing and without shoes. BMI was calculated as weight (in kg) / height (in m^2). Every morning, the scale and stadiometer were calibrated with standard weight and height respectively. Subjects with systemic illness, symptoms of chronic hepatic or renal disorder, endocrine disorders and drugs affecting bone mineral health were excluded from the study.

Analytical methods: Blood samples were collected from subjects in the fasting state at 0800 h without venostasis under basal conditions for estimation of total serum calcium, serum ionic calcium phosphorus, total alkaline phosphatase (ALP), 25-hydroxyvitamin D (25-OHD) and immunoreactive parathyroid hormone (PTH). Serum was centrifuged at 4°C for 15 min at 1200 g and divided into five aliquots, which were refrigerated. Serum Ca, ionic Ca, P and ALP were estimated on the same day, and the remaining aliquots were stored at -20°C until PTH and 25(OH) D were estimated.

Serum Ca and P (Roche Diagnostics 902, Mannheim, Germany) were measured by colorimetric method (Hitachi, Automated Biochemistry Analyzer); ionic calcium by ion selective electrode method (Roche Diagnostics, AVL 9180 electrolyte analyzer) and ALP was measured by liquid kinetic method (Roche Diagnostics 902, Mannheim, Germany). PTH was assayed by electrochemiluminescence method (Elecsys 2010, Roche Diagnostics, Mannheim, Germany) and serum 25(OH)D was measured by radioimmunoassay (Diasorin, Stillwater, MN, USA).

The normal laboratory range for serum Ca was 2.20-2.55 mmol/l (8·8-10·2 mg/dl) and for serum *P* was 0.86-1.44 mmol/l (2·7-4·5 mg/dl), according to the kit manufacturers. The normal laboratory range for ionic calcium was 1.1-1.3 mmol/l and for serum alkaline phosphatase at 37°C was 100-275 IU/l in adults. The normal serum concentrations of 25(OH)D and PTH were 22.4-93.6 nmol/l (9.0-37.6 ng/ml) and (10-66 pg/ml), respectively. The lowest concentration of 25 (OHD) measurable by this kit, defined as the lowest quantity differentiated from zero at 2 standard deviations (SDs) below the mean counts per min of the zero standard, is 3.74 nmol/l. Vitamin D deficiency was classified based on the measurement of serum 25(OH)D concentration, as recommended by Lips. Serum 25(OH)D concentrations of 25-50 nmol/l, 12.5-25.0 nmol/l, and less than 12.5 nmol/l were classified as mild, moderate, and severe hypovitaminosis D, respectively.

Dietary information was collected using well-established 24-h dietary recall. Dietary assessment of energy, protein, carbohydrate, total fat, dietary fibre, phytate, oxalate, calcium (dairy and non-dairy) and phosphorous was calculated using Nutritive Value of Indian Foods. A self-designed and structured questionnaire was prepared by the investigator to elicit information regarding physical activity and lifestyle profile which included style of dress during college and practice hours, direct sunlight exposure, surface area of the body exposed to sunlight daily, time spent outdoors, time spent in sports practice sessions (outdoor), and sunscreen usage. Direct sunlight exposure was assessed by documenting average duration of exposure and percentage of the body exposed daily

The 24-h recall and questionnaire was pre-tested on five girls before finalization and administration.

Bone density expressed in g/cm^2 at anteroposterior (AP) lumbar spine (L1-L4), femur (femoral neck) and forearm (total, ultra distal and 33% radius) was measured using the Prodigy Oracle (GE Lunar Corp., Madison, WI, USA) according to standard protocol. Quality control procedures were carried out in accordance with the manufacturer's recommendations. Instrument variation was determined regularly by a daily calibration procedure using a phantom supplied by the manufacturer and mean coefficient of variation was <0.5 per cent. As per the International Society for Clinical Densitometry (ISCD) recommendations, short term precision study was performed by making duplicate measurements in 30 volunteers at each region of interest, repositioning the subject after each scan. The mean coefficients of variation were 0.62, 0.41, 0.65 per cent, and 0.84 per cent at femoral neck, total femur, lumbar spine, and 33 per cent radius, respectively.

Data analysis: Statistical analysis was carried out using STATA 9.0 (College Station, Texas, USA). Data were presented as mean ± SD/median (range) as appropriate. Anthropometric,

dietary, biochemical and BMD parameters were compared between the groups using Student's t test or Wilcoxon rank sum test as appropriate. Analysis of covariance (ANCOVA) was used to compare the BMD values between the groups adjusting for anthropometric, dietary and biochemical parameters. The results were reported as adjusted mean (95% C.I.). $P<0.05$ was considered significant.

Results

Anthropometric and dietary parameters: There was no significant difference in the mean age, height, weight, BMI between the sportswomen and controls. The presence of underweight, overweight and obesity was 7.8, 6.6, and 3.3 per cent respectively, in sportswomen, whereas it was 16.7, 7.3 and 3.1 per cent in controls. All girls in both the groups reported normal menstruating pattern. Baseline characteristics, biochemical and dietary parameters of the sports girls and controls Diets of sportswomen showed significantly ($P<0.001$) higher intake of all nutrients *i.e.*, macronutrients (energy, protein, fat, carbohydrate and fat) and other constituents (fibre, phytate and oxalate) compared to control. Forty seven per cent sportswomen met daily recommended dietary allowance (RDA) for energy as suggested by the Indian Council of Medical Research as compared to only 2.1 per cent controls. The percentage of energy contribution from protein, fat, and carbohydrate was within the reference range. Although the fat intake of sports girls was high, the per cent energy contribution from fat was less than that observed in controls. Mean total calcium intake of the control subjects (409.7 ± 172.5 mg/day) was significantly less than that of sportswomen (779.1 ± 324.5 mg/day, $P<0.001$). Seventy six per cent of sportswomen met the RDA for calcium in contrast to 1 per cent of control subjects. Also the mean dietary calcium intake of the controls was far less than the WHO (2004) and US (1997) recommendations which lie in the range of 600-1300 and 500-1300 mg/day, respectively. However, the mean intake of sportswomen was found to be within the international

RECOMMENDATIONS:

Physical activity and lifestyle parameters: Twenty five per cent of the sportswomen played volleyball, 18.7 per cent took part in athletics and 11 per cent of the subjects took part in hockey and football. Other sports played included athletics, aerobics and basketball, *etc*.

The sportswomen had participated in regular physical training sessions for last 3 to 4 yr prior to recruitment in the study. The selected sportswomen were involved in regimented sports practice for a mean of 3 h/day. In contrast, the control subjects followed a sedentary lifestyle and were not engaged in either leisure time physical activity or regular sports.

During college hours, sports subjects wore clothes wherein the body surface area exposure was limited to 15 per cent which increased to 45 per cent during practice sessions. However, the control subjects had maximum of 15 per cent body surface exposed throughout the day. A significant difference was seen in the duration of daily sun exposure between 0900-1600 h, (2 h for sportswomen and ½ h for control subjects). Around 60 per cent of sports subjects and 70 per cent of the controls did not use a sunscreen which may interfere with vitamin D synthesis.

Biochemical and hormonal parameters: Serum 25(OH)D was significantly higher while PTH and ALP levels were significantly ($P<0.001$) lower in sports women when compared with age matched controls. No significant difference was noted in serum total calcium and ionic calcium between the two groups. Further 2 (2.2%) sportswomen and 89 (92.7%) controls had serum 25(OH)D concentration <9 ng/ml*i.e.* below the lower limit of the normal range recommended by the manufacturer. Normal, mild and moderate hypovitaminosis D was observed in 51.6, 45.1 and 3.3 per cent sportswomen, respectively. In contrast, none of the controls had a normal vitamin D while 17.3, 38.5 and 54.2 per cent had mild, moderate and severe hypovitaminosis D, respectively.

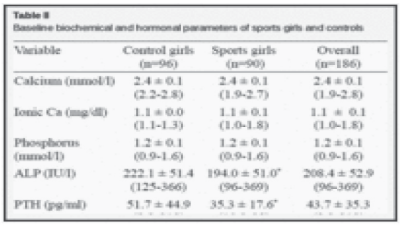


Table II
Baseline biochemical and hormonal parameters of sports girls and controls

Variable	Control girls (n=96)	Sports girls (n=90)	Overall (n=186)
Calcium (mmol/l)	2.4 ± 0.1 (2.2-2.8)	2.4 ± 0.1 (1.9-2.7)	2.4 ± 0.1 (1.9-2.8)
Ionic Ca (mg/dl)	1.1 ± 0.0 (1.1-1.3)	1.1 ± 0.1 (1.0-1.8)	1.1 ± 0.1 (1.0-1.8)
Phosphorus (mmol/l)	1.2 ± 0.1 (0.9-1.6)	1.2 ± 0.1 (0.9-1.6)	1.2 ± 0.1 (0.9-1.6)
ALP (IU/l)	222.1 ± 51.4 (125-366)	194.0 ± 51.0* (96-369)	208.4 ± 52.9 (96-369)
PTH (pg/ml)	51.7 ± 44.9	35.3 ± 17.6*	43.7 ± 35.3

Table II Baseline biochemical and hormonal parameters of sports girls and controls

Bone mineral density (BMD) parameters: Total BMD as well as BMD at all skeletal sites except femur neck were significantly (P<0.001) higher in sports women in comparison to controls. BMD in sportswomen was higher than that in controls by 5, 13.1, 10.3 and 9.2 per cent at total body, total hip, lumbar spine and 33 per cent radius respectively. This difference persisted after adjustment for anthropometric, biochemical, hormonal and nutritional parameters at total hip and lumbar spine (Table IV). No significant association was found between BMD and either biochemical or hormonal parameters.

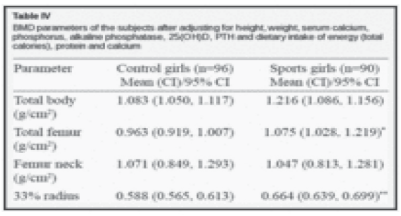


Table IV
BMD parameters of the subjects after adjusting for height, weight, serum calcium, phosphorus, alkaline phosphatase, 25(OH)D, PTH and dietary intake of energy (total calories), protein and calcium

Parameter	Control girls (n=96) Mean (CI)/95% CI	Sports girls (n=90) Mean (CI)/95% CI
Total body (g/cm²)	1.083 (1.050, 1.117)	1.216 (1.086, 1.156)
Total femur (g/cm²)	0.963 (0.919, 1.007)	1.075 (1.028, 1.219)*
Femur neck (g/cm²)	1.071 (0.849, 1.293)	1.047 (0.813, 1.281)
33% radius	0.588 (0.565, 0.613)	0.664 (0.639, 0.699)**

Table IV
BMD parameters of the subjects after adjusting for height, weight, serum calcium, phosphorus, alkaline phosphatase, 25(OH)D, PTH and dietary intake of energy (total calories), protein and calcium

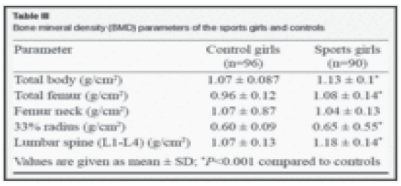


Table III
Bone mineral density (BMD) parameters of the sports girls and controls

Parameter	Control girls (n=96)	Sports girls (n=90)
Total body (g/cm²)	1.07 ± 0.087	1.13 ± 0.1*
Total femur (g/cm²)	0.96 ± 0.12	1.08 ± 0.14*
Femur neck (g/cm²)	1.07 ± 0.87	1.04 ± 0.13
33% radius (g/cm²)	0.60 ± 0.09	0.65 ± 0.55*
Lumbar spine (L1-L4) (g/cm²)	1.07 ± 0.13	1.18 ± 0.14*

Values are given as mean ± SD; *P<0.001 compared to controls

Table III Bone mineral density (BMD) parameters of the sports girls and controls

Discussion

Peak bone mass is a key determinant of skeletal health throughout life. Approximately 60 per cent of the risk of osteoporosis can be explained by the amount of bone mineral achieved by early adulthood, and the subsequent bone loss accounts for the remaining risk. The attainment of peak bone mass is influenced by genetic and environmental factors. In view of the fact that physical activity and nutrition are considered to be key determinants for acquisition of bone mass[23], the effect of these two parameters on BMD was studied by selecting physically active sportswomen and sedentary controls from different colleges of Delhi.

Physical activity during the pubertal years has been shown to positively influence adult bone health. Several reports suggest that regular physical activity contributes significantly to gain in BMD, beginning in the prepubertal years. The present study clearly highlights that sportswomen who have undergone at least three years of regular physical training, had significantly higher total BMD and BMD at femur, 33 per cent radius and lumbar (L1-L4) skeletal sites when compared to controls. This is consistent with results from both cross-sectional and short-term follow up studies in past, reporting higher BMD values of physically active gymnasts or sportswomen when compared to controls. The higher 25(OH)D levels in sportswomen can be explained by the longer duration of sun exposure. While higher 25(OH)D levels over a period of time may contribute to the higher BMD in sportswomen, the present study did not show this and a few other cross-sectional studies have also not reported an association between 25(OH)D concentration and BMD.

A significantly higher intake of energy and macronutrients was noted among the sportswomen when compared to controls. These findings are in agreement with other studies reporting nutrient intake in sportswomen as compared to their sedentary counterparts. The higher protein intake of sportswomen as compared to controls may be a factor responsible for higher BMD in these subjects as also reported by other researchers. Studies in various ethnic populations have observed a positive role of calcium in bone mass accrual and attainment of peak bone mass formation. A higher daily calcium intake (both dairy and non-dairy) was noted in the diets of sportswomen in contrast to controls. The calcium intake of sportswomen was higher than the Indian RDA (500 mg/day) but less than the WHO[21] (2004; 600-1300 mg/day) and U.S.[22](1997; 500-1300 mg/day) recommendations. Contrary to the findings of the present study, various authors have reported no significant differences in the mean daily calcium intakes among physically active women and controls.

Some investigators have reported that physical activity is a more critical variable for attaining optimal BMD than dietary calcium intake. However, the increased BMD of adult Hutterite women (a communal population involved in agriculture in America) which demonstrated a strong positive correlation between "current hours of feet" and "colony workload" with BMD, testifies to the important interaction between nutrition and physical activity for skeletal health.

Ethnic and genetic factors are said to account for as much as 50-70 per cent of the variance in peak bone mass, with Asians having low peak bone mass as compared to Caucasians, while blacks having the highest bone mineral density. Indians have also been reported to have low BMD compared to Caucasians. Several reasons like short stature, high prevalence of hypovitaminosis D and traditional Indian vegetarian diets which are deficient in vitamin D and protein, may be responsible for lower BMD values reported in Indians.

In the current study, it was found that sportswomen not only had higher BMD than control subjects but also higher than other Indian, Chinese, Japanese (data provided by the densitometer manufacturer) and US white Caucasian[35] young adult populations. Interestingly, BMDs for the controls in the present study were also found to be higher than USA and Japanese subjects.

In conclusion, our results suggested that healthy Indian sportswomen with good nutrition, better bone biochemical parameters, adequate sun exposure and physical activity from younger age had higher BMD when compared to age matched sedentary controls. This suggests that consistent with other reports, lifestyle, physical activity and sun exposure are key determinants responsible for better bone mineral mass and serum vitamin D levels too. Thus, it can be summarized that leading an active lifestyle which includes daily physical activity, leading to greater sun exposure along with good nutrition to attain peak bone mass.

References

1. Kun Z, Greenfield H, Xueqin D, Fraser DR. Improvement of bone health in childhood and adolescence.Nutr Res Rev. 2000;14:119–52
2. Matkovic V, Jelic T, Wardlaw GM, Ilich JZ, Goel PK, Wright JK, et al. Timing of peak bone mass in Caucasian females and its implication for the prevention of osteoporosis.Inference from a cross-sectional model. J Clin Invest. 1994;93:799–808.
3. Kelly PJ, Morrison NA, Sambrook PN, Nguyen TV, Eisman JA. Genetic influences on bone turnover, bone density and fracture. Eur J Endocrinol. 1995;133:265–71.
4. Ferrari S, Rizzoli R, Slosman D, Bonjour JP. Familial resemblance for bone mineral mass is expressed before puberty. J Clin Endocrinol. 1998;83:358–61.
5. Heaney RP, Abrams S, Dawson-Hughes B, Looker A, Marcus R, Matkovic V, et al. Peak bone mass.Osteoporos Int. 2000;11:985–1009.
6. Saggese G, Baroncelli GI, Bertelloni S. Osteoporosis in children and adolescents: diagnosis, risk factors, and prevention. J Pediatr Endocrinol Metab. 2001;14:833–59.
7. Cundy T, Cornish J, Evans MC, Gamble G, Stapleton J, Reid IR. Sources of interracial variation in bone mineral density. J Bone Miner Res. 1995;10:368–73.
8. Aloia JF, Vaswani A, Yeh JK, Flaster E. Risk for osteoporosis in black women. Calcif Tissue Int.1996;59:415–23.

9. Bachrach LK, Hastie T, Wang MC, Narasimhan B, Marcus R. Bone mineral acquisition in healthy Asian, Hispanic, black and Caucasian youth: a longitudinal study. J Clin Endocrinol Metab. 1999;84:4702–12.
10. Marwaha RK, Sripathy G. Vitamin D & bone mineral density of healthy school children in northern India. Indian J Med Res. 2008;127:239–44.
11. Rizzoli R. Nutrition: Its role in bone health. Best Pract Res Clin Endocrinol Metab. 2008;22:813–29.
12. Valimaki MJ, Karkkainen M, Lamberg-Allardt C, Laitinen K, Alhava E, Heikkinen J, et al. Exercise, smoking, and calcium intake during adolescence and early adulthood as determinants of peak bone mass.Cardiovascular Risk in Young Finns Study Group. BMD J. 1994;309:230–1.
13. Welten DC, Kemper HC, Post GB, Van Mechelen W, Twisk J, Lips P, et al. Weight-bearing activity during youth is a more important factor for peak bone mass than calcium intake. J Bone Miner Res.1994;9:1089–96.
14. Bass S, Pearce G, Bradney M, Hendrick E, Delmas PD, Harding A, et al. Exercise before puberty may confer residual benefits in bone density in adulthood: studies in active prepubertal and retired female gymnasts. J Bone Miner Res. 1998;13:500–7.
15. Gustavsson A, Thorsen K, Nordstrom P. A 3-year longitudinal study of the effect of physical activity on the accrual of bone mineral density in healthy adolescent males. Calcif Tissue Int. 2003;73:108–14.
16. Ginty F, Rennie KL, Mills L, Stear S, Jones S, Prentice A. Positive, site-specific associations between bone mineral status, fitness and time spent at high impact activities in 16–18 year-old boys. Bone.2005;36:101–10.
17. Lips P. Vitamin D deficiency and secondary hyperparathyroidism in the elderly: consequences for bone loss and fractures and therapeutic implications. Endocr Rev. 2001;22:477–501.
18. Nutrient requirements and recommended dietary allowances for Indians. New Delhi: ICMR; 1990. Indian Council of Medical Research (ICMR)
19. Tyler MB. Burn. In: Mann CV, Russel RCG, Williams NS, editors. Bailey and Love's short practice of surgery. 24th ed. London: Chapman and Hall; 2004. pp. 226–78.

BIOMECHANICAL ANALYSIS ON BADMINTION FOREHAND SMASH

Dr. R. Venkatesh, Principal, Sri Venkatapathappa, College of Physical Education, CVV Campus, Chikka Ballapur, Karnataka

Dr. A. Shankar Reddy, Associate Professor in Physical Education, Rayalaseema College of Physical Education, Proddutur, Kadapa.

ABSTRACT

From the perspective of biomechanics, this article analyzes the three stages and four nodes moments for forehand smash technique, focuses on analysis the measurement methods of torso rotation magnitude, the correlation between torso twist angular and hand speed, and the principle of upper parts' enlargement effect. Based on the generation principle discussion of the forehand smash technology, it establishes the calculation model of torso rotation angle that is the angle calculation of the shoulder line equation at two different moments, and then through the data of 10 athletes' torso rotation angular velocity and the hand's instantaneous velocity when the racket hits the badminton, obtains a better linear regression model using statistical correlation analysis, and finally analyzes the speed transfer condition use of various body parts in the smash process by using the whipping action principle.

Key words: Forehand smash, angular range, correlation analysis, whipping action, body canter of gravity

INTRODUCTION

In 1873 badminton movement was born in England; after 100 years of vigorous development, badminton has become a very popular sports project in the world; badminton can fully exercise the body and enhance functions of the human body. Whether it's a regular badminton game or as a general fitness activity, they should conduct footwork, jump, twist and swing on the ground without break; rational use of various hitting techniques and the footwork to strike the ball back and force on the court, thereby increasing strength of the arms, legs and waist muscles, accelerating the systemic blood circulation of the exercise, enhancing the function of cardiovascular system and respiratory system; long-term badminton exercise, can make heartbeat strong, increase vital capacity and improve. In addition, badminton requires practitioners to make judgments on the changing pitch in a short time, and decisively fight back so it can not only improve the sensitivity and coordination of the human nervous system, but also develop a good human morality and edify sentiments

through exercise and competition, it can develop indomitable fighting spirit and excellent quality, cultivate their healthy and positive psychological qualities.

On the basis of previous studies, this paper conducts analysis on the badminton forehand smash technologies in different phases and nodes, expounds the exercise principles of various aspects from the perspective of muscle strength, explores the torso rotation angle amplitude problem by using methods of linear equation, uses statistical correlation to analyze the relationship between the torso angular velocity and the hand, explains the causes of hold hand' speed by the whipping principle, provides a theoretical basis for the correct implementation of badminton forehand smash technology in order to provide direction theoretical basis for the development direction of badminton competitive level.

The stage analysis of badminton forehand smash action the energetically forehand smash action by soaring in the air in badminton is a very useful technique. The implementation of this technique is generally divided into three stages and four nodes, where the four nodes are as follows:

(1)The steps are in place, the body centre of gravity controls on starting point of the declining;

(2)Control the body centre of gravity to decrease to the lowest point;

(3)Human body leaps to the sky, the body centre of gravity reaches its highest point;

(4)The racket hits badminton.

Define the movement of 1) and 2) as the first motion phase, define the movement of 2) and 3) as the second phase, and define the movement of 3) and 4) as the third phase.

In the badminton forehand smash process first steps need to be in place, then bent down to lower the body center of gravity, followed by sideways jump to put the shoulder toward the upper and right side to lift the upper arms, forearms and racket, and achieve the effect of stretching the body; After start the jumping the body needs to turn left and back off to erect the chest and abdomen as the action, followed by the right arm swings on the back and upward, but the forearm naturally backswing and the wrist extends backward, making the forearm drive racket swing from the upward to the backward and downward, then twist in air and hold abdomen to drive right arm swing on the right and upward, making the elbow lead, forearm waves on forward at full speed, the wrist extends backward fully, and finally

swing the racket from backside and downside to the right backside and downside a little, complete the purpose of hitting the ball.

If we conduct the principle analysis and summary of the smash technical action, then we can grasp the basic characteristics of the whole action process, analyze the association in stages, divide the smash technology into squat, jump - lead arm, waving arm - smash and land close shot four stages.

The biomechanical analysis of forehand smash action. The biomechanical analysis of torso movement during forehand smash process In the forehand smash process, the movement of the torso and each joint is stationary moving stationary? So in the smash technology action process, the size range of the action is measured through angle size of torso rotation and angles of the upper limb joints. The motion state change of the torso and each joint is due to the generation of acceleration. From this: the range size of the torso motion is determined by the distance and time imposed by the acceleration.

The motion state change of torso starts from a sideways jump, the body turns left and stretches toward back and up after leaving the ground, erecting chest and holding abdomen cause the body to form a "bow" shape. When the body center of gravity reaches its highest point, we need to control the torso turn left rapidly to achieve the effect of holding the abdomen and driving the right upper arm of the holding arm swing to the right and upward, and in the swing process it is led by the elbow. The elbow leads right forearm waving fast to the forward and upward, the racket holding in hands spins fast to hit badminton, thus completing the torso left turning and body bending.

The torso twist angle is measured through the angle between shoulder line at time 1 t and the shoulder line at time 2 t , thus in two-dimensional spatial coordinate system we can write the linear equation of the two shoulder joints' connection at two times, to infer the rotation range of the torso. Linear equation can be represented by equation (1).

In Formula (1) 1 k represents the slope of the shoulder line equation at time 1 t , and 2 k represents the slope of the shoulder line equation at time 2 t . The calculation method of the angle between the two shoulder lines is as formula (2).

Now a lot of research on badminton technology is based on the video analysis, we can collect the position coordinates of the human body joints in the forehand smash process by

the video characteristic analysis, then substitute the collected coordinates of the two shoulders at different times into the formula (1) and obtain the shoulder slope at two different moments, and finally obtains the torso rotation angle by the formula (2), the torso rotation angle situation in three motion stages.

Sports Technology Stage The first stage The second stage The third stage Torso rotation angle 12.28, 10.05, 29.69, 30.94, 44.02, 12.96

From the data in Table 1 the torso twist range reaches biggest at the third stage, when the body center of gravity reaches the highest point, swing the racket to hit the badminton; the smallest torso rotation range is the process when the body center of gravity from the lowest point to the feet leaving from the ground at the first stage. From a practical technical operational aspect, the small-amplitude torso rotation of the first and second stage is to better achieve the rotation of the third stage effectively, when the body center of gravity reaches the highest point, the athletes need to rotate fast, in order to effectively swing the racket and hit the badminton by the fast swivel movement.

The biomechanical analysis of torso and hands during forehand smash process The skeletal muscle has extensibility, viscosity and elasticity; its extensibility is reflected in the external force can be stretched, the characteristics of the stretched muscles being restorable after the external force disappears is called elasticity, and the muscle's viscosity is reflected in the viscoelastic properties of the muscle. The viscoelasticity of the muscle can show elastic only in a brief contraction, with the lengthen of the time, the elastic properties will be significantly decreased, the torso muscles affects the twist of the torso; the faster the muscle contracts, the faster the swivel angular velocity becomes; in the initial stage of the force spreading its initial kinetic energy is the maximum, if the energy loss during transfer process are the same, then the initial kinetic energy is greater and the shot speed is greater; in order to study the relationship between the angular velocity of the swivel torso and the shot speed, the paper collects the data of 10 samples. .

Table 2: The torso rotational angular velocity and hand speed list of different athletes

Athlete number Torso rotational angular velocity (rad/s) Release speed(m/s) A 380.002 9.536 B 375.639 12.734 C 262.475 11.431 D 322.716 12.672 E 155.506 7.586 F 231.391 11.928 G 178.285 6.406 H 581.901 14.018 I 362.220 10.294 J 459.967 12.672

The data scattering distribution and correlations in Table 1 are shown in Figure 2.

Figure 2: The data distribution of twist angular velocity and the hand speed

As can be seen from Figure 2, the torso twist angular velocity and the shot speed has good linear relationship, and the correlation coefficient is 0.736; if the release speed is v, and the torso twist angular velocity is □ , then the relationship between them is in the formula (3).

3608.60138. In Formula (3) is negligible in a certain extent, when the athlete's torso twist angular velocity increases, his shot speed will increase accordingly.

The biomechanical analysis of shoulder elbow, wrist and hand during the forehand smash process When jump sideways the handed arm puts the shoulder to the right to lift the upper arm, forearm, hand and racket. When the body unfolds the original "bow" shape, the upper arm places to the top and right direction, the forearm naturally swings back, wrist extends back to drive racket waving in beneath and behind. In the hitting process, the handed arm swings and bats forward and upward with the fastest speed driven by the body swivel, hold abdomen and body bend.

The movement process of above- hold arm is the process of continued velocity and energy propagation mainly from the proximal to the distal upper limb. Because equipped muscles of each joint is constantly weakening from the proximal to the distal point, the larger muscle section is physically called the large joints, and the smaller section is called the small joints. The muscle force resulting from the large joints is big, the muscle strength of man's arm from the shoulder point to the wrist decreases, the arm’s hitting process is known as the arm’s whipping action.

The law of conservation of momentum has a better applicability in whipping action process, and its expression is in the formula (4).

2211 vmvmp □□ (4)

The mechanical principle of whipping action: first the whip root acquires angular momentum through accelerated waving, then stops, and then the angular momentum transfers toward the direction of whip slightly, finally make the end joint with the minimum quality produce great moving velocity and striking strength.

In the ball-handed hitting process of forehand smash, the body's hip joint makes the pivoting torso under the action of the right leg, left arm throws out along the tangent of the left shoulder, like a whipping action from the hip joint to the left shoulder; the rotational speed of whipping action is the superimposed transmission from the beginning to the end side, Figure 3 shows the schematic diagram of the whipping action.

Figure 3: The schematic diagram of the top joint rotation along with the end rotation

In Figure 3 point A represents the hip joint, point B represents the shoulder point, point C represents the wrist joint, 21 , II respectively represent the rotational inertia of torso and arms, 1 □means co-owned angular velocity of the hip joint and the connected joint. But when the torso rotates relative to the hip joint and left arm throws out along the horizontal tangent of the left shoulder, the angular velocity owned by the arm is the angular velocity sum of the hip joint, the torso and shoulder joint, which achieves the effect of speed amplification, the rotation of the torso relative to the hip joint is shown in Figure 4.

Figure 4: The relative rotation schematic diagram of the ends to the top

Shoulder joint point B rotates relative to the hip joint point A, the moment of momentum of the torso is in the formula (5).

. .. . tItM □ 2□ (5) In Formula (5) . . tM means the instantaneous torque generated by shoulder muscle's contraction at moment oft . . t □ represents the angular acceleration of the torso relative to the point A.

According to the definition of angular acceleration the angular momentum theorem can be obtained as formula (6) below.

In Formula (6) t □ means the effect time of the shoulder muscle contraction torque M , by the formula (6) the expression of the angular velocity 2 can be obtained as formula (7) below.

The formula (7) shows that the whipping action during badminton forehand smash process makes the angular velocity of the arm increase

When the rotation angle of the shoulder joint around point B is very small, the speed of the arm at this time can be obtained more precisely, as shown in the formula (8) below.

In Formula (8) v means s linear velocity of the wrist point C relative to the hip joint, 1 v means the linear velocity of the shoulder point B relative to the torso, 2 v represents the linear velocity of the torso point C relative to the hip joint, and 2 1, rr respectively means the length of the arm and rotation radius of the torso.

Substitute the formula (6) and (7) into the formula (8) then formula (9) can be obtained.

According to equation (9), when the badminton racket just contacts with the badminton, the increasing value of the hold hand after whipping action in the system consisting of hip, torso and shoulder is Joint point name 2)Instantaneous speed of joint point 3)Instantaneous speed of joint point 4)Instantaneous speed of joint point Shoulder joint 1.05□ 0.43 1.78□ 0.88 1.76□ 0.75 Elbow joint 1.50□ 0.64 4.50□ 2.47 3.26□ 1.51 Wrist joint 1.91□ 1.15 2.44□ 1.49 8.56□ 1.73 Hand 2.39□ 1.33 3.01□ 1.86 10.92□ 2.45

As can be seen from the data in Table 1 at the 2) node time the speed of the various joints from the shoulder joint to the hand increases constantly, at the 3) node time the velocity from the shoulder to the elbow increases, the velocity from the wrist to the hand increases, at the 4) node time the velocity from the shoulder joint to the hand continues to increase, and the increase range is the biggest in the three node times.

CONCLUSION:

This paper studies the mechanical characteristics of all links of the forehand smash technology during the badminton movement process, explores the principle of forehand smash technology from the perspective of biomechanics; in the various action techniques in badminton, the power of forehand smash is great, the backfield technology has been an important means of scoring. In the implementation of forehand smash technology due to the variability of the speed, strength, route and angle, a variety of plays is produced, wherein the ball's speed has the biggest attack force after smash, so the backfield smash technology has better effects than other techniques. This paper focuses on the rotation range situation of human torso, the correlation issues between torso twist angular velocity and hand speed, and the whipping effect of holding arm in the hitting process.

REFERENCES

1. Liu Xiao-lan. China Sport Science and Technology. 1984.29(13)46-49.

2. Luo Yang-chun. Journal of Shanghai Physical Education Institute. 1994.23(12).46-47.
3. Wan Hua-zhe. journal Of Nanchang Junior College. 2010.3:154-156.
4. Li Ke. Journal of Shenyang Sport University. 2012.31(2):111-113.
5. Zhang Shu-xue. Journal of Nanjing Institute of Physical Education. 1995. 31(2):25-27.
6. Pan Li. Journal of nanjing institute of physical education(natural science). 2004.19(1):54-55.
7. Li Yu-he, Ling Wen-tao. Journal of Guangzhou Physical Education Institute. 1997. 17(3):27-31.
8. Xu Guo-qin. Journal Of Hebei Institute Of Physical Education. 2008.22. (2):70-72.
9. Chen Qing-hong. China Sport Science and Technology. 1990.21(10):63-65 [10] Tian Jun-ning. Journal of Nanjing Institute of Physical Education. 2000.14(4):149-150.

Effect of High Intensity Aerobic Training on Selected Physiological Parameters of Women Athletes

***Dr.LILLYPUSHPAM ISAAC, ** Dr.FLOSSY RAYAPPAN , *** Mr.P.RAJASEKARAN**

***Assistant** Professor, Dept.of Physical Education, TNPESU, Chennai
**Associate Professor, School of Social work, Roshin Nilaya, Valencia, Mangalore
***Physical Director, Balaji Institute of Engineering and Technology, Chennai

ABSTRACT

The primary purpose of this study was to determine whether high intensity aerobic has an effect on physiological parameters of women athletes'. To achieve these purpose 30 women athletes', aged 18to22 years took part in the study. Subjects were randomly assigned to either high intensity aerobic training (n=15) control (n=15) group. The training regimen lasted for eight weeks. The selected dependent variables such as systolic blood pressure, diastolic blood pressure and Vo2 max were assessed using standard tests and procedures, before and after the training regimen. Analysis of covariance was used to determine the significant difference existing between pretest and posttest on selected dependent variables. The analysis of data revealed that due to the impact of eight weeks of high intensity aerobic training the selected physiological parameters of women athletes' have significantly changed.

Key words: Aerobic training, physiological parameters

INTRODCTON

Sportsmen and women must participate in year round conditioning programs to have the utmost efficiency, consistent improvement and balanced abilities. For that they must put their bodies under a certain amount of stress to increase physical capabilities. Physical exercise is extremely important for maintaining physical fitness including healthy weight; building and maintaining healthy bones, muscles, and joints; promoting physiological well-being; and strengthening the immune system. To improve or maintain a desired level of physical fitness, there is a need to constantly administer an adequate training intensity while exercising.

A good aerobic exercise program can help to live a longer, healthier life and enhance wellbeing. Person will get ,multitude of benefits if done aerobic workouts on a regular basis even if the intensity is low or short in duration .It's fun to keep a log of one's workouts that track a person's progress to see how far one have come in one's pursuit of fitness. Aerobic exercise is an extended activity that makes one breathe hard while the large muscle groups at a regular, even pace. Aerobic activities help to make a heart stronger and more efficient. During the early part of exercise, one's body uses stored carbohydrate and circulating fatty acids (the building blocks of fat molecules) for energy.

In aerobic exercise the heart rate increases substantially, but never reaches its maximum level. The heart is always able to deliver sufficient oxygen-rich blood to muscles, so that they can derive energy from fat and glycogen aerobically. Aerobic exercise builds stamina for sports and it also is the most important from of exercise for health, since it increases the efficiency of heart, circulation and muscles. Aerobic exercise in the capillary network in the body. To do any work we need energy and even while at rest some physiological functions have to be carried within our body and for that purpose some calories of energy will be burnt. As the intensity and duration of work increases the demand for the fuel in the working muscles also increases.

METHODOLOGY

Subjects and variables: The purpose of this study was to examine the effect of high intensity aerobic training on physiological parameters among women athletes'. For the purpose of this study thirty women athletes in the age group of 18 to 22 years were recruited, with their consent. The age, height and weight of the selected subjects averaged 20.5± 1.65 yr, 170.6±4.82 cm, and 65.47±5.68 kg respectively. The selected participants were randomly assigned to both the high intensity aerobic training and control group of 15 each. The selected dependent variables were assessed using standard tests and procedures, before and the training regimen. The variables and tests used are presented in table-I

Table I: Depended variables and Test

SI .No	Variables	Test/Instruments	Unit of Measurement
1.	Systolic Blood pressure	Blood pressure Monitor	mmHg
2.	Diastolic Blood Pressure	Blood pressure Monitor	mmHg
3.	VO_2 max	One mile run	ml

Training Protocol

The experimental group underwent the high intensity aerobic training programme three days per week for eight weeks. Training sessions consist of a 30-minute aerobic exercise period with a warming-up and cooling-down period of 5 and 3 minutes, respectively. The cardiovascular load during the training period is individually adjusted and increased from a level of 80% to 95% of intensity was fixed to predict VO_2max and systolic blood pressure and diastolic blood pressure

The adjusted post test mean values on selected physiological parameters namely systolic blood pressure, diastolic blood pressure and Vo_2max were graphical represented in figure-I

Experimental Design and Statistical Procedure

The experimental design used for the present investigation was random group design involving thirty subjects. Analysis of covariance (ANCOVA) was used as a statistical technique to determine the significant difference if any, existing between present and posttest data on selected dependent variables. The level significance was accepted at $P < 0.05$.

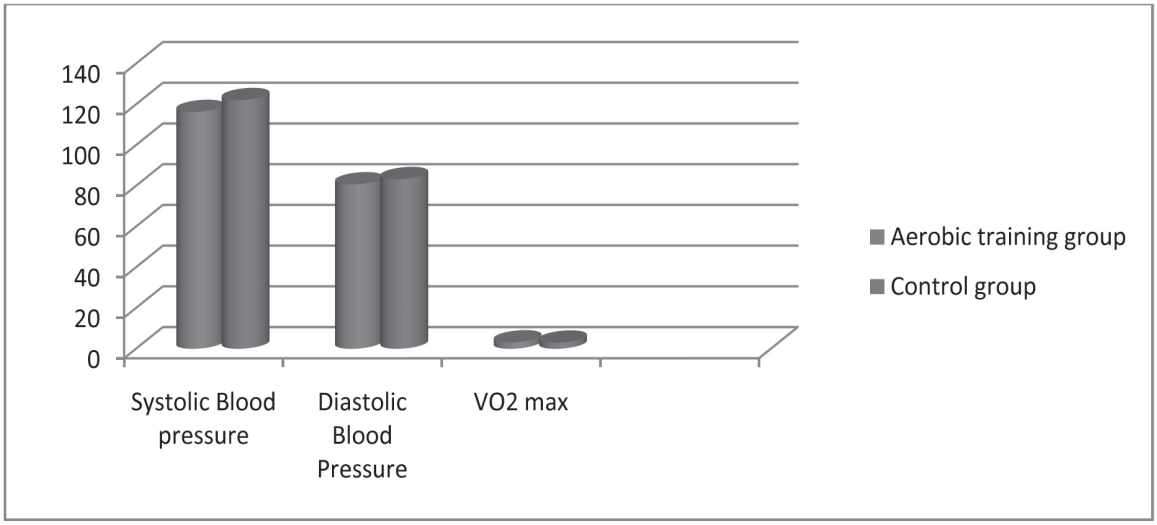
Result

The descriptive analysis of data collected on selected physiological parameters before and after eight weeks of high intensity aerobic training is presented in table-II

Table II: Computation of Mean and Standard Deviation on Selected Physiological parameters

Variables	Groups	Pretest		Posttest	
Systolic Blood pressure	Experimental	120.80	5.58	112.10	5.60
	Control	120.51	5.19	120.10	5.32
Diastolic Blood Pressure	Experimental	85.10	3.82	76.19	2.96
	Control	80.68	4.12	81.01	3.54
VO_2 max	Experimental	2.91	0.18	3.15	0.22
	Control	3.00	0.16	3.01	0.13

Figure-I: Adjusted post Test means Values on Selected physiological Parameters



Analysis of Covariance was used to determine the significant impact of high intensity aerobic training on selected physiological parameters and it is presented in table-III

Table III: Analysis of covariance on Selected physiological parameters of high intensity Aerobic Training and Control Group

Variables	Groups	Adjusted Mean	SOV	Sum of Squares	Df	Mean Square	'F' ratio
Systolic Blood pressure	Experimental	116.30	B	185.58	1	178.81	38.09
	Control	122.11	W	123.45	27	4.71	
Diastolic Blood Pressure	Experimental	80.75	D	920.15	1	928.71	125.94
	Control	83.30	W	190.58	27	7.30	
VO_2 max	Experimental	3.12	B	0.98	1	0.92	12.52
	Control	3.00	W	2.22	27	0.08	

Required table value for significance at 0.05 level of confidence for df of 1 and 27 is 4.21
*singnificant at 0.05 level.

The findings of the study shows that significant difference existing between high intensity aerobic training and control group on systolic blood pressure, diastolic blood pressure and vo2max,since the obtained 'F' ratio of 38.09,125.94,and 12.25 respectively were greater than the table value of 4.21 for significance at 0.05 level of confidence for df of 1 and 27.It was concluded that eight weeks of high intensity aerobic training significantly altered the selected physiological parameters of athletes.

DISCUSSION

Aerobic training is a progressive physical conditioning programme that stimulates cardio respiratory activity for a time period sufficiently long to produce beneficial changes in the body Aerobic exercise builds stamina for health, since it increases the efficiency of heart, circulation and muscles. Aerobic exercise is the keystone of fitness by doing aerobic it increases the capillary network in the body .In this present study systolic blood pressure, diastolic blood pressure andVO2max are altered considerably after exercise. Several studies (simao, polit&Lemos, 2003 Mac Dougall et al., 1992; Stone et al .,1991;Fleck, 1988)confirm the findings of this study.

Most of the previous studies also show a substantial increase in maximum oxygen consumption following aerobic training. During exercise, Vo_2max increases in direct proportion to the rate of work. A

person's Vo_2max is in part genetically determined; it can be increased through training until the point that the genetically possible maximum is reached (Jorgensen et al., 1977). Increase in Vo_2max generally range from 15 to 20 percent following a 6-month training period can result in increases in Vo_2max in participants undergoing high intensity (hickson et al., 1981) and lower intensity training (Cunningham & Cantu, 1990).

CONCLUSION

The result of the study shows that due to the effect of eight weeks of high intensity aerobic training the selected physiological parameters namely systolic blood pressure, diastolic blood pressure and Vo_2max of the athletes' have significantly changed.

REFERENCES

1. Brehm, Barbara A. (2010). Physical Movement, www.google.co.in.
2. Cunningham, L.N. and Cantu, R.C. (1990). Acute and chronic effects of exercise using an exercycle in healthy, untrained adults. Physical therapy, 70, 494-502.
3. Fleck, S.J. (1988). Cardiovascular Adaptations to Resistance Training. Med Sci Sports Exerc.20 (5Suppl).
4. Hickson, R.hagber, A., & Hallowoszy, J.(1981). Time course of the adaptive responses of aerobic power and heart rate to training. Medicine and Science in Sports and Exercise, 13, 17-20.
5. Jorgensen CR, Gobel FL, Taylor HL, Wang Y. (1977).Myocardial blood flow and oxygen consumption during exercise. Annals of the New York Academy of Science, 301: 213-223.
6. MacDougall JD, McKelvie RS, Moroz DE, Sale DG, McCartney N. (1992). Factors affecting blood pressure during heavy weight lifting and static contractions.J Appl Physiol. 73:1590-7.
7. Simao R, Polito MD, Lemos A. (2003). Duplo-produtoem exercicios contra-resistidos. Fit perfor J. 2:279-84.
8. Stone, M.H. et al., (1991). Health- and Performance- related potential of resistance training. Sports Medicine, 11, 210-231.
9. Wilmore JH, Costill DL. (1994). Physiology of sport and exercise. Champaign, IL: Human Kinetics.

A COMPARATIVE STUDY ON SELECTED PHYSICAL FITNESS COMPONENTS OF KABADDI AND KHO-KHO PLAYERS

BOLLE DEEPA, ** KONDETI INDIRA*

*Lecturer in Sri Krishna college of physical education, Mahatma Gandhi University, Nalgonda.

**Lecturer in DR.Muscu madhusudan reddy college of physical education, Mahatma Gandhi University, Nalgonda.

INTRODUCTION

Kabaddi is a game of speed, strength, strategy, and most importantly lung power. First you will need twenty-four people split into two teams of twelve. Only seven players per team are on the play in field at the same time the remaining teammates are reserves that can 'sub in' later. The two teams go to opposite sides of the field, which is divided into two equal sections. Flip to see who goes first. That team starts out on offence and the two teams alternate offence/defense each turn until the game is over. Today the game is played worldwide (yes, there an American kabaddi team) their even an official kabaddi organization, the kabaddi federation of India (KFI) founded in 1950 that regulates play and rules and keeps a bunch of records and stuff. Not ready for the big leagues? Try the amateur kabaddi federation (AKFI). Physical fitness is the fundamental necessity for any sporting activity. Motor qualities such a speed, strength, endurance, and flexibility along with physical fitness are essential for excellence in sports. Sports trainers and coaches are emphasizing on improving the physical fitness and motor qualities of the players, which is also known as conditioning. A good conditioning program is the back-bone of the over-all training of the sports persons.

Physical fitness is categorized into general and specific fitness. General fitness refers to the motor qualities required in any sports persons Irrespective of the sports discipline. Such as speed, strength, flexibility, endurance and co-ordination. Each and every sport demands certain motor qualities above the ordinary. Specific fitness is the intensified level of motor qualities achieved by the sports persons that is required by the specific sport.

OBJICTIVES OF THE STUDY: To find out the different between physical fitness components of kabaddi and KHO-KHO players such as speed, explosive strength, cardiovascular endurance, coordinative ability, and flexibility.

HYPOTHESIS OF THE STUDY: There will no significant difference in physical fitness factors of kabaddi and KHO-KHO players.

DELIMITATIONS OF THE STUDY: The study will be delimited to purposively selected 100 female subjects age ranking from 19 to 23 years of Kakatiya University Warangal, participated at inter-colligate Kabaddi and KHO-KHO competition.

In Dependent variable

Physical fitness components

1. Speed
2. Explosive strength
3. Cardiovascular endurance
4. Flexibility

Test Administration

speed	30m. sprint
Explosive strength	Standing broad jump
Cardiovascular strength	12 min. run/walk test
flexibility	Sit/bend and reach test

METHODOLOGY: For the purpose of the study one hundred players – 50 from the game of kabaddi and 50 from the KHO-KHO has been selected on purposively and randomly basis. All the subjects were regularly practicing and competing in their respective sports competition. Health and physical education is defined and the process by which individuals and groups of people learn to behave in a manner conductive to the promotion, maintenance or restoration of health.

It is a continuing process of promoting environmental and life style changes to facilitate their objective.

In this modern area of competition the psychological preparation of team is as much important as teaching the different skills of a game on the scientific lines. The tern is prepared not any to play the games also to win the games it is not the proficiency in the skills which gives victory but more important is the spirit of the players, with which they play and perform their best in the competition.

RESULTS: The following variables were found significant at both 0.05 and 0.01 level of confident such as

variable	test	T ratio
Speed	30m dash	**5.86**
Explosive strength	Standing broad jump	**4.21**
Cardiovascular endurance	12 min. run/walk	**4.86**
Flexibility	Sit/bend and reach test	**5.51**

DISCUSSION

- The significant difference was found in the speed ability -30m sprint test the KHO-KHO players group had better speed in comparison to the kabaddi players group.
- The significant group was found in the standing broad jump a test of explosive strength in relation to the kabaddi and KHO-KHO players. The kabaddi player group had high explosive strength, showing greater jumping ability then the KHO-KHO player group.
- The significant difference was found in the sit and reach test in the KHO-KHO players group had better hips and legs flexibility in comparison to the kabaddi players groups.
- The significant difference was found in the 12 min run/walk test in the KHO-KHO layers group had better cardiovascular endurance in comparison to the kabaddi player group

REFERENCES:

- Adian, P.moran, **"The psychology of concentration in sports performance – A cognitive Analysis psychology"** press publisher (1996) P-12-13
- Adian, P.moran, **"The psychology of concentration in sports performance – A cognitive Analysis."** Erlbaum, U.K Taylor and Francis psychology press publisher, 1990, p 203-204.
- Bharshandar, JR., Bharshankar RN., Deshpande VN ., kaore SB., gosav GB., **"effects of yoga on cardiovascular system in subjects above 40 years",** Department of psychology, govt., Medical college, Nagpur (April 2003) p.p- 22-26.

ANALYTICAL STUDY ON PHYSICAL FITNESS OF VOLLEY BALL PLAYERS IN HYDERABAD DISTRICT

***Dr. S. Srinivas Rao, **Prof. V. Satyanarayana**

* Physical Director, A.M.S.P. Obul Reddy Public School, Jubliee Hills, Hyderabad.

**Director, Department of Physical Education, Osmania University.

INTRODUCTION

Physical fitness is a multifaceted continuum extending from birth to death, affected by physical activity. It ranges from optimal activities in all aspects of life through high and low levels of different physical fitness to serve disease and dysfunction. The ability to function efficiently and effectively is to enjoy leisure, to be healthy, to resist disease and to cope with emergency situations. Health related components of physical fitness include body composition, cardiovascular fitness, flexibility, muscular endurance and strength. Skill related components include agility, balance, coordination, power, reaction time and speed.

The relative importance of each of the components varies for each sport. Physical fitness is not only sport specific it may also be position specific, combined good health and physical development. The object of any program of physical fitness is to maximize any individual's health, strength, endurance and skill relative to age, sex, body build and physiology. These ends can only be realized through conscientious regulation of exercise, rest, diet and periodic medical examinations. Exercise should be regular and vigorous, but begun slowly and only gradually increased in strenuousness. Popular exercise methods include jogging, cycling and the use of body-building machines. It is more important that periods of sleep be regular and restful than that they extend any fixed number of hours.

Significance of the Study: The study is to determine the physical fitness of the National & University volley ball players and their performance related to their volley ball game.

Methodology: The study under report focuses the physical fitness, basis of team game players and their performance, which is the order of the day in everlasting sports scenario. The study was formulated based on the simple random sampling. The samples were collected from the 50

University volleyball players and 50 National volleyball players in Hyderabad district in the age group of 18-21 years were considered.

Results and Discussions: The results pertaining to the physical fitness of players the speed (50m run), endurance (Cooper Test - 12 minutes run/walk) and their performance with volley ball skill test. *Brady Volleyball Test* to indicate overall volleyball playing ability.

Speed (50 m run)

Sl. No.	Subjects	N	Mean	S.D.	't' ratio	P value
1.	University Players	50	7.00	0.46	2.601	0.01
2.	National Players	50	6.11	0.34		

Endurance (Cooper Test - 12 minutes run/walk)

Sl. No.	Subjects	N	Mean	S.D.	't' ratio	P value
1.	University Players	50	1980	288.56	4.01	0.01
2.	National Players	50	2195	239.95		

Volleyball Skill Test

Sl. No.	Subjects	N	Mean	S.D.	't' ratio	P value
1.	University Players	50	22.56	3.08	2.98	0.03
2.	National Players	50	24.84	1.06		

Conclusion: A trained individual is in a better state of physical fitness than the person who follows a sedentary, inactive life. When two persons, one trained and one untrained or approximately the same build are performing the same amount of moderate muscular work, evidence indicates that the trained individual has a lower oxygen consumption, lower pulse rate, larger stroke volume poor heartbeat, less in blood pressure, greater red and white blood cell

counts, slower rate of breathing, lower rate of lactic acid formation, and a faster return to normal of blood pressure and heart rate.

The heart becomes more efficient and is able to circulate more blood while bearing less frequently. Furthermore, in work of a strenuous nature that cannot be performed for any great period of time the trained individuals has greater endurance, a capacity for higher oxygen consumption, and a faster return to normal of heart rate and blood pressure. Training results in a more efficient organism. Since a greater efficiency of heart action enables a larger flow of blood to reach the muscles and thus ensure an increased supply of fuel and oxygen, more work is performed at less cost; improvements in strength, power, neuromuscular coordination, and endurance occur, coordination and timing of movements as better, and an improved state of physical fitness results. Physical fitness is a multifaceted continuum extending from birth to death, affected by physical activity. It ranges from optimal activities in all aspects of life through high and low levels of different physical fitness to serve disease and dysfunction.

The study under report has scientifically examined the various factors which influence the power game, especially the physical fitness variables pertinent to speed, endurance and even overall performance of volleyball between University Players and National Players at Hyderabad district. The national players have scientifically proved better than university players in majority of physical fitness variables speed, endurance, from university volleyball players. In the present scenario the academic standards in volleyball game have been playing a significant role in the creeping performance of the game. Hence it is concluded that the physical fitness plays a vital role on the performance of the players. Physical activity can act as an antidote to some kinds of fatigue; youngsters will be harmed through sustained exercise – if they are fit, their physical endurance is great, and the exercise will be conductive to good health; and shorts to fitness are available.

References:-

1. Duncan MJ, Woodfield L, al-Nakeeb Y. (2006), "Anthropometric and physiological characteristics of junior elite volleyball players", *Br J Sports Med.* Vol., 40(7), pp.649-51.
2. Edward J. Bruke (1976), "Validity of Related laboratory field test of physical working capacity", *Research Quarterly*, Vol.47 (1), p. 95-104

3. George B. Dintiman (1964), "Effects of various training programme on running speed." *The Research Quarterly*, Vol.35, p. 456.

4. Keen E.N. and A.W. Sloan (1989), "A Modified Harvard step test for women", *J. Appl. Physical*, Vol.14 (85), p. 986.

5. Matsudo VK, Rivet RE, Pereira MH. (1987), "Standard score assessment on physique and performance of Brazilian athletes in a six tiered competitive sports model", *J Sports Sci.*, vol.5(1), pp.49-53.

6. Sheppard JM, Gabbett TJ, Stanganelli LC. (2009), "An analysis of playing positions in elite men's volleyball: considerations for competition demands and physiologic characteristics", *J Strength Cond Res.*, vol. 23(6), pp.1858-66.

7. Shivarama Krishna (1991), "Sports Achievement Motivation, Self-Concept and Anxiety Differential among Indian Men and Women Basketball and Volleyball, Teams prior to SAG Games". *Journal of Physical Education and Sports Science*, Vol.4, p.1.

8. Wittberg, Richard A.; Northrup, Karen L.; Cottrel, Lesley (2009), "Children's Physical Fitness and Academic Performance", *American Journal of Health Education*, vol.40(1), pp.30-36.

COMPARATIVE EFFECT OF ISOMETRIC TRAINING AND CONCURRENT ISOMETRIC AND ISOKINETIC TRAINING ON STRENGTH PARAMETERS AMONG KABADDI PLAYERS

***Dr. A.PALLAVI, **Dr. N.Vijay Mohan**

*Asst. Professor, Dept of Physical Education, Andhra University, Visakhapatnam, **Associate Professor in Physical Education, Andhra University, Visakhapatnam)

ABSTRACT

The purpose of the study was to compare the effect of isometric training and concurrent isometric and isometric training on strength parameters among Kabbadi players. Twenty four male kabaddi players studying from Andhra University College of Engineering, Visakhapatnam were selected randomly as subjects. The age of the subjects ranged from 21 to 28 years. The selected subjects were divided into two groups. Group I underwent isometric training and Group II underwent concurrent isometric and isotonic training. The experimental groups were subjected to the isometric training and concurrent isometric and isometric training. The experimental groups were subjected to the isometric training and concurrent isometric and isotonic training for alternative three days per week up to eight weeks. The isometric training and concurrent isotonic training were selected as independent variables and the criterion variables strength parameters i.e. muscular strength, strength endurance and muscular power were selected as dependent variables and the muscular strength was assessed by 1 RM test and the unit of measurement in kilograms, strength endurance was assessed by bent knee sit ups and the unit of measurement in numbers and the muscular power was assessed by standing broad jump and the unit of measurement in meters. The experimental design selected for this study was pre and post test randomized design. The data were collected from each subject before and after the training period and statistically analyzed by using dependent't' test and analysis of covariance (ANCOVA). It was found that there was a significant improvement and significant different exist due to the effect of isometric training and concurrent isometric and training on strength parameters among kabaddi players.

INTRODUCTION

Isometric exercise are thousands of years old, with examples listed from the static holds in certain branches of yoga or oriental martial arts isometric exercise were first brought to modern public's attention in early days of physical culture, the precursor to body building. Many of the great body builders of the day incorporated isometric exercises into their training regiments. Many today's training protocols incorporate isometric exercise, which are often made into parts of normal, isotonic exercises. For example, during a set of seated rows, a subject can hold their

position when the handles are closest to their chest order to “squeeze” the muscle, in an effort to further strain the muscle.

Isometric exercises can also be used at the bedside to differentiate various heart murmurs; the murmur of mitral regurgitation gets louder as compared to the quieter murmur of aortic stenosis.) Cassidy, Aronow & Prakash, 1975).

Concurrent training is one of the best methods of training that many coaches are given to the players; it consists of training multiple qualities at equal amounts of intensity within the same training phase and often within the same workout.

Isotonic muscle training involves contractions where tension is equal throughout the range of motion. Isotonic exercise strengthens the muscles in the entire range of motion, while improving joint mobility. It involves the contraction and shortening of a muscle to allow movement. Isotonic muscle training is usually done with dumbbells, barbells or elastic resistance bands. (if such equipment is not available, pushups may be substituted). This muscle training technique employs eccentric and concentric movements. When the weight is lifted, the movement is referred to as concentric and when the weight is returned back to the starting position, the movement is called an eccentric movement. In an isotonic contraction, tension remains unchanged and the muscle’s length changes. Lifting an object at a constant speed is an example of isotonic contractions. In a concentric contraction, the muscle tension rises to meet the resistance, and then remains the same as the muscle shortens. In eccentric, the muscle lengthens due to the resistance being greater than the force the muscle is producing.

METHODOLOGY: To achieve the purpose, twenty four men kabaddi players studying from Andhra University College of Engineering, Visakhapatnam were selected randomly as subjects. The age of the subjects ranged from 21 to 28 years. They were assigned randomly into two groups (group I) underwent isometric training and (group II) underwent concurrent isometric and isotonic training. The experimental groups were subjected to the training during evening hours for alternative three days for eight weeks. The isometric training and concurrent isometric and isotonic training were selected as independent variables and the criterion variables strength parameters i.e. muscular strength, strength endurance and muscular power were selected as dependent variables and muscular strength was assessed by 1 RM test and the unit of

measurement in kilograms, strength endurance was assessed by bent knee sit-ups and the unit of measurement in numbers and the muscular power was assessed by standing broad jump and the unit of measurement in meters. The experimental design selected for this study was pre and post test randomized design. The data were collected from each subject before and after the training period and statistically analyzed by using dependent't' teat and analysis of covariance (ANCOVA).

RESULTS AND DISCUSSIONS: The data pertaining to the variables in this study were examined by using dependent 't' test to find out the significant improvement and analysis of covariance (ANCOVA) for each variables separately in order to determine the deference and tested at .05 level of significance. The analysis of dependent 't' test on data obtained for playing ability of the pre test and post test means of experimental groups have been analyzed and presented in Table 1.

TABLE – 1, MEAN AND DEPENDENT 'T' TEST OF EXPERIMENTAL GROUPS ON SELECTED VARIABLES

Variables	Mean	Isometric	Concurrent Isometric and Isotonic Training
Muscular Strength	Pre test Mean	55.97	56.10
	Post test Mean	56.86	58.18
	't' test	15.29*	25.00*
Strength Endurance	Pre test Mean	39.67	38.67
	Post test Mean	42.87	40.83
	't' test	31.53*	13.00*
Muscular Power	Pre test	2.51	2.50
	Post test	2.53	2.54
	't' test	5.70*	9.04*

*Significant at 0.05 level of confidence (11) = 2.201

The obtained 't' ratio value of experimental groups is higher than the table value, it is understood that isometric training and concurrent isometric and isokinetic training had significantly improved the performance of muscular strength, strength endurance and muscular power. It is understood that isometric training and concurrent isometric and isokinetic training

groups had significantly improved the performance of muscular strength, strength endurance and muscular power. The analysis of covariance in the data obtained on muscular strength, strength endurance and muscular power due to the effect of isometric training and concurrent isometric and isokinetic training have been analyzed and presented in Table – II.

TABLE – 11, ANALYSIS OF COVARIANCE OF EXPERIMENTAL GROUPS ON SELECTED VARIABLES

Variables	Adjusted Post Test Means		Source of variables	SS	Df	Medan Squares	'F' Ratio
	Isometric Training	Concurrent Isometric and Isokinetic Training					
Muscular Strength	56.93	58.12	Between	8.470	1	8.470	134.10*
			Within	1.33	21	0.063	
Strength Endurance	39.75	40.75	Between	6.010	1	6.010	17.24*
			Within	7.319	21	0.359	
Muscular Power	2.23	2.56	Between	0.003	1	0.003	15.74*
			Within	0.004	21	0.000	

* Significant at .05 level of confidence, df. (1.21)=4.32

Table II shows that the adjusted posttest mean values of muscular strength, strength endurance and muscular power of isometric training and concurrent isometric and isokinetic training groups were 56.93 and 58.12, 39.75 and 40.74 and 2.23 and 2.56 respectively. The obtained F ratio are 134.10, 17.24 and 15.74 which are higher than the table value 4.32 with df 1 and 21 required for significant difference at 0.05 level. Since the values of F ratio are higher than the table value, it indicates that there is significant difference exist between the adjusted posttest means of isometric training and concurrent isometric and isokinetic training groups in improving the performance of muscular strength, strength endurance and muscular power.

For the de3celopemnt of coaching progress, the coaches should add the both trainings for their training sessions to improve the performance of muscular strength, strength endurance and muscular power.

CONCLUSIONS

- The experimental groups namely isometric training and concurrent isometric and isotonic training had achieved significant improvement on muscular strength, strength endurance and muscular power.
- Significant difference were found among the two experimental groups namely isometric training and concurrent isometric and isokinetic training groups towards improving the selected criterion variables such as muscular strength, strength endurance and muscular power4.
- It was found that the improvement caused by concurrent isometric and isokinetic training group was better than isometric training group on improving the selected dependent variables.

REFERENCES:

- "Strength Training – Isometric Exercise" Spmessenger.com archived from the original on 2008-0129. Retrieved 2008 – 11- 10. Retrieved from http. //www.wikipedia.org//. On 22/2/2014.
- Cassidy.j.Aronow WS, & Prakash. R., (1975). "The Effect of isometric exercise on the systolic murmur of patients with idiopatic hypertrophic subaortic stenosis", Chest, 67:4, PP-395-397, Doi:10:1378/chest 67.4.395 PMID 1168115. Retrieved from http//www.wikipedia.org//. On 22/2/2014
- Lindh M (1979), "Increase of muscle strength from isometric quadriceps exercise at different knee angles", Scand Journal of Rehabilitation and Medicine, 11:1, PP-33-36 PMID 419396. Retrieved from http://wwe.wikipidia//.org. on 22/2/2014

MOTIVATION, ENCOURAGEMENT AND INSPIRATION IN SPORTS FOR COACHES AND SPORTS PERSONS

***PATHAKOTI MADHU, ** POLE LAXMIPATHI**

*Lecturer in Sri Krishna college of physical education, Mahatma Gandhi University, Nalgonda.

** Lecturer in Sri Krishna college of physical education, Mahatma Gandhi University, Nalgonda.

Introduction

Sports psychology is often quoted as being making the difference between someone who is good and someone who is a champion, giving you that little extra edge to put you ahead of your opponent. All good sport performances come from being well prepared, mentally as well as physically. To be the best requires you to use the skills that you have a effectively as possible. Often athletes who are fit and talented do not achieve their best possible performances because they have not developed the necessary mental skills. May be their concentration lapses at vital movements, they lack their potential and achieve the performances they dream about. Setting goals is an important starting point. All good athletes set goals and develop targets and plans to achieve their goals. Effective goal setting comes from making your goals positive, specific, actionable and flexible.

Motivation techniques for coaches and athletes

Goal setting:

1. Athletes should be encouraged to set a few ambitions but achievable long-term goals; perhaps to represent their country in a major championship in three or four years. Through empowering athletes to set their own goals, they are more likely to accept the challenges that lie ahead and pursue the goals with enthusiasm.
2. To keep athletes on track with their long-term goals, they should also set appropriate medium-term goals. For example, following a bronze medal-winning performance at the 2004 Athens Olympics, UK heptathlete Kelly sotherton set herself the medium term-goal of winning the 2006 commonwealth title in Melbourne (which she achieved) en route to pursuing her long term goal to be crowned Olympic champion at the 2008 Beijing games.
3. By far the most important goals in practical term are those for the short term, as it is these that keep athletes focused on the checkmarks which are seminal to achieving superior

performance, therefore, short term goals should be predominantly process-oriented. For example, when Manchester united Wayne Rooney injured a metatarsal six weeks before the start of soccer world cup. He set a series of process goals in his race to regain full fitness. These included daily physiotherapy sessions, remedial exercises in an oxygen chamber, non-weight bearing aerobic activities, monitoring of nutritional intake and so on;

4. Goals need to monitored and revised on regular basis. One of the biggest mistake that coaches make in setting goals is that they are often too rigid in their approach. The goal setting process works best when there is flexibility and the individual athlete or team take ownership of each goal. Thus, coaches and managers are better off exercising some democracy when setting goals, particularly if working with more experienced athletes.

Using extrinsic rewards:

According to SDT (1) the key aspect in using extrinsic rewards effectively is that they reinforce an athlete sense of competence and self-worth. Thus, a reward should be informational in nature rather then controlling. If a reward comes to be controlling, it can significantly undermine monetary worth. (i.e. it is a token reward) such as a women of the match or athlete of the tour title. Also the reward should be presented to an athlete in front of all potential recipients with some emphasis placed on the prestige associated with it. Other popular ways of using token rewards include etching athletes, names on annual honours boards for their contributions, or awarding a special item of clothing.

Positive self-talk:

Positive self-talk is technique that can be used to enhance motivation across a wide range of achievement domains. It makes use of an Athletes power full inner voice to reinforce their self-esteem or important aspect of their performance with appropriate repetition. Self-talk can positively alter an Athletes belief system. I use three types of self-talk in my work with athletes and will illustrate each with an example to assist you in coming up with you own.

Motivational music:

A particularly good way to motivate athletes in training and prior to competition is through the use of music they perceive to be inspirational. Sydney Olympics rowing gold

medalist, Tim foster, now a respected coach, uses music to puncture all of the indoor training sessions that he leads. Specifically, during circuit training or rowing ergo meter intervals. He puts on loud/fast music, while during recovery periods he plays soft/slow music. Therefore, work and recovery times are regulated by music. Research from Brunel University indicates that this approach increases work output, reduces perceived exertion and improves in-task affect the pleasure experienced during the activity.

Summary

Each and every one of us has an untapped energy source that can be drawn upon to bring about superior results. Enhancing motivation is fundamentally about a change of attitude; developing a positive can do mindset and engaging in systematic behavior—the short term goals process on how motivated your athletes are team might feel. You can instill a good work ethic. Recognize individual effort and instigate transparent reward structures that reinforce people since of competence. To work best, the techniques mentioned in this article need to be Mould around specific circumstance and the needs of individual athletes. Always strive to be original and innovate in the application of motivation techniques.

REFERENCES

1. Deci E Ryan R (1985) intrinsic motivation and self determination in human behavior, New York; Plenum
2. J personality social psych 1987;53:1024-1037
3. AmPsych 2000;55:68-78
4. Csikszentmihalyi M (1975) Beyond and Anxiety; san Francisco, CA JOsey-bass
5. Csikszentmihalyi M (1990) Flow : the Psychology of optimal experience, New York;

PRANAYAMA EXERCISES CAN RELIEFS STRESS – A STUDY

Dr. Srinivas Nallella
Physical Director, Department of Physical Education, M.V.S.R. Engineering College, Hyderabad

Introduction:

Stress is simply a reaction to a stimulus that disturbs our physical or mental equilibrium. In other words, it's an omnipresent part of life. A stressful event can trigger the “fight-or-flight” response, causing hormones such as adrenaline and cortisol to surge through the body. A little bit of stress, known as “acute stress,” can be exciting—it keeps us active and alert. But long-term, or “chronic stress,” can have detrimental effects on health. You may not be able to control the stressors in your world, but you can alter your reaction to them. During stress response, your heart begins to race, breathing quickens, muscles tighten, and blood pressure rises. You’ve gotten ready to act. It is how you protect yourself. Our bodies are designed to handle small doses of stress. But, we are not equipped to handle long-term, chronic stress without ill consequences.

Stress can affect your physical health, your mental health, and your behavior. In response to stressful stimuli, your body turns on its biological response: chemicals and hormones are released that are meant to help your body rise to the challenge. Your heart rate increases, your brain works faster and becomes razor sharp, you have a sudden burst of energy. This response is natural and basic; it's what kept our ancestors from falling victim to hungry predators. Stress overload, however, can have harmful effects.

Types of Stress:

Acute stress: Acute stress is your body's immediate reaction to a new challenge, event, or demand -- the fight or flight response. As the pressures of a near-miss automobile accident, an argument with a family member or a costly mistake at work sink in, your body turns on this biological response. Acute stress isn't always caused by negative stress; it's also the experience you have when riding a roller coaster or having a person jump out at you in a haunted house. Isolated episodes of acute stress should not have any lingering health effects. In fact, they might actually be healthy for you -- as these stressful situations give your body and brain practice in developing the best response to future stressful situations. Severe acute stress such as stress

suffered as the victim of a crime or life-threatening situation can lead to mental health problems, such as post-traumatic stress disorder or acute stress disorder.

Chronic Stress: If acute stress isn't resolved and begins to increase or lasts for long periods of time, it becomes chronic stress. Chronic stress can be detrimental to your health, as it can contribute to several serious diseases or health risks, such as heart disease, cancer, lung disease, accidents, cirrhosis of the liver, and suicide.

Physical Stress: Stress affects us all. You may notice symptoms of stress when disciplining your kids, during busy times at work, when managing your finances, or when coping with a challenging relationship. Stress is everywhere. And while a little stress is OK -- some stress is actually beneficial -- too much stress can wear you down and make you sick, both mentally and physically.

The Symptoms of Stress

Stress can affect all aspects of your life, including your emotions, behaviors, thinking ability, and physical health. No part of the body is immune. But, because people handle stress differently, symptoms of stress can vary. Symptoms can be vague and may be the same as those caused by medical conditions. You may experience any of the following symptoms of stress.

1.	**Emotional symptoms of stress include:**	2.	**Physical symptoms of stress include:**
*	Becoming easily agitated, frustrated, and moody.	*	Low energy, Headaches, Insomnia, Aches, pains, and tense muscles
*	Feeling overwhelmed, like you are losing control or need to take control.	*	Upset stomach, including diarrhea, constipation, and nausea
*	Having difficulty relaxing and quieting your mind.	*	Chest pain and rapid heartbeat, frequent colds and infections
*	Feeling bad about yourself (low self-esteem), lonely, worthless, and depressed.	*	Nervousness and shaking, ringing in the ear, cold or sweaty hands and feet
*	Avoiding others.	*	Dry mouth and difficulty swallowing, Clenched jaw and grinding teeth
3.	**Cognitive symptoms of stress include:**	4.	**Behavioral symptoms of stress include:**
*	Constant worrying, Racing thoughts	*	Changes in appetite -- either not eating or eating too much
*	Forgetfulness and disorganization	*	Procrastinating and avoiding responsibilities
*	Inability to focus, Poor judgment	*	Increased use of alcohol, drugs, or cigarettes
*	Being pessimistic or seeing only the negative side	*	Exhibiting more nervous behaviors, such as nail biting, fidgeting, and pacing

Physical, Emotional and Mental Symptoms of Stress

Recognizing the physical symptoms of stress can help in identifying the cause of the stress and also help in taking steps to deal with it.

These symptoms include but are not limited to:-

Nausea, Dizziness, Sweaty palms	Rapid heartbeat or chest pain
Insomnia, Frequent colds	Constipation or diarrhea, Backaches or headaches
Sudden rashes or skin irritations	Muscle spasms,Abdominal or stomach pain

Breathing Exercises for body, mind and spiritual:

Breathing exercises are so simple yet so obvious that we so often take them for granted. We ignore the power breathing has to affect our body, mind and spirit. With each inhalation, we bring oxygen into our body and spark the transformation of nutrients into fuel. Each exhalation rids the body of carbon dioxide, a toxic waste. Breathing also influences our state of mind. It can make us calm or excited, relaxed or tense. Breathing can make us confused or clear in our minds. Above all, in the Yogic tradition, air (Prana) is the primary source of energy or life force. It is considered a psycho-physio-spiritual force that permeates the entire universe. Yogic Breathing Exercises are called Pranayama in Sanskrit. They may be done in association with Yogasanas (postures) or just while sitting down quietly.

Pranayama is loosely translated as Pranic (breath) control. The ancient Yogis developed a number of breathing techniques to optimize the benefits of Prana. In Yoga, pranayama is used as a separate practice in itself to help clear and purify the body and mind. It is also used as a preparation for meditation. In asanas, the practice of postures, breathing exercises help optimize the benefits of the practice, and focus your mind. Pranayam (also spelled Pranayama) is an ancient practice concerned with breath control. Research has shown that practicing Pranayama can relieve symptoms of asthma. It is also beneficial in treating stress related disorders, such as anxiety and depression. There are a total of six types of Pranayam practice, all of which are detailed here.

1. Bhastrika Pranayam: Bellows Breath

1. **Breathe** in deeply through your nostrils. First, feel the diaphragm move down, allowing the lungs to expand and forcing the abdomen out; then feel your chest expand with your collar bones rising last.
2. **Breathe out quickly through your nostrils.** Feel the collar bones dropping, chest deflating, and abdomen shrinking as the lungs collapse. This process of exhaling should be much faster than the process of inhaling -- almost like a rapid deflation.
3. **Repeat the process.** When correctly done, your chest will expand when you breathe in and deflate when you breathe out. Continue doing this for 5 minutes.
4. **With practice, speed up your breathing.** Beginners should always start slowly to avoid hyperventilating, but over time, it will be possible to turn this into a rapid breathing technique.

2. Kapalbhati Pranayam: Shining Forehead Breath

1. **Inhale through your nostrils normally until your lungs are full.** Keep your inhalation slow but unforced. First, feel the diaphragm move down, allowing the lungs to expand and forcing the abdomen out; then feel your chest expand with your collar bones rising last.
2. **Exhale through both nostrils forcefully.** This places the emphasis of the breath on the exhale rather than the (natural) inhale. Assist your exhalation by pulling in your stomach muscles to expel air. Exhaling should take much less time than it took to inhale.
3. “Forced” exhalation means that the contraction of your stomach muscles helps push the air out of your body. It does **not** mean that the exhalation should be uncomfortable for you in any way.
4. **Repeat breaths for 15 minutes.** You may take a minute's rest after every five minutes.

3. Anulom Vilom Pranayam: Alternate Nostril Breath

1. **Close your eyes.** Focus your attention on your breathing.
2. **Close the right nostril with the right thumb.** Simply press the thumb against your nostril to block it.
3. **Inhale slowly through the left nostril.** Fill your lungs with air. First, feel the diaphragm move down, allowing the lungs to expand and forcing the abdomen out; then feel your chest expand with your collar bones rising last.

4. **Remove your thumb from your right nostril.** Keep your right hand by your nose and your lungs full of air.
5. **Use your ring and middle finger to close your left nostril.** Most people find it easier to continue using the same hand to block either nostril, but you're welcome to switch hands depending on which nostril you're blocking.

You can also switch if your arm gets tired.

6. **Exhale slowly and completely with the right nostril.** Feel the collar bones dropping, chest deflating, and abdomen shrinking as the lungs collapse. When you've finished exhaling, keep your left nostril closed.
7. **Inhale through the right nostril.** Fill your lungs.
8. **Close the right nostril and open the left.**
9. **Breathe out slowly through the left nostril.** This process is one round of Anulom Vilom Pranayam.
10. **Continue for 15 minutes.** You may take a minute's rest after every five minutes of exercise.

4. Bahya Pranayam: External Breath

1. **Inhale deeply through your nose.** First, feel the diaphragm move down, allowing the lungs to expand and forcing the abdomen out; then feel your chest expand with your collar bones rising last.
2. **Exhale forcefully.** Use your stomach and diaphragm to push the air from your body. "Forced" exhalation means that the contraction of your stomach muscles helps push the air out of your body. It does **not** mean that the exhalation should be uncomfortable for you in any way.
3. **Touch your chin to your chest and suck in your stomach completely.** The goal is to leave a hollow below your ribcage, making it look like the front muscle wall of your abdomen is pressed against the back. Hold this position -- and your breath -- for as long as is comfortable.
4. **Lift your chin and breathe in slowly.** Allow your lungs to completely fill with air.
5. **Repeat 3 to 5 times.**

5. Bhramari Pranayam: Bee Breath

1. **Close your eyes.** Focus on your breathing.

2. **Place your thumbs in your ears, your index fingers above your eyebrows, and your remaining along the sides of your nose.** Keep each pinky finger near a nostril.
3. **Breath in deeply through the nose.** First, feel the diaphragm move down, allowing the lungs to expand and forcing the abdomen out; then feel your chest expand with your collar bones rising last.
4. **Use your pinkies to partially close each nostril.** Keep your lungs filled.
5. **Breathe out through the nose while humming.** Note that the humming sound should originate in your throat, not as a result of your partially-blocked nostrils.
6. **Repeat three times.**

6. Udgeeth Pranayam: Chanting Breath

1. **Breathe in deeply through the nose.** First, feel the diaphragm move down, allowing the lungs to expand and forcing the abdomen out; then feel your chest expand with your collar bones rising last.
2. **Exhale very slowly while saying Om.** Allow the syllable to draw out as slowly as you can. Make sure to keep the O long and the M short. ("OOOOOOm.")
3. **Repeat 3 times.**

Benefits of Pranayama Exercises:

- It helps relieving the symptoms of asthma.
- It reduces the signs of oxidative stress in the body.
- Regular pranayama can extend life and enhance ones perception of life.
- Number of studies show that pranayama causes change in the cardio respiratory system including lowering of blood pressure
- Certain pranayama's are excellent for weight loss.
- Strengthens the lungs and the respiratory system as a whole.
- Improves the blood purification process.
- Strengthens the mind to improve concentration and mind control.
- Improves the functions of the brain cells as the brain gets optimum purified blood supply.
- If done properly over a period of time, one can have amazing mental powers and psychic abilities such as mind reading, distant viewing, knowing past life information, ability to overcome gravity and float....etc

Conclusion:

Pranayama is powerful breathing technique that ensures healthy body and calm mind. Regular practice of various types of pranayma improves breathing pattern, purifies blood, boosts resistance power and gives physical and mental strength. Pranayma is a part of yoga system that teaches the art of extending breath in many different ways. When practicing pranayama the breath should be skillfully inhaled, exhaled and retained. It teaches to change the depth, rate and pattern of breathing. Breathing is vital for our survival as it is the only way we can send oxygen inside our body and into our organs. One of the six principles discussed in the study of yoga is pranayama exercises or breathing exercise which promotes proper breathing. The yogis realized the importance of an adequate oxygen supply thousands of years ago that is why they developed and perfected various breathing techniques that will help to revitalize the mind and the body.

Pranayama is the science of breath control, consist a series of exercises intended to meet these needs and to keep the body in vibrant health. Proper breathing in yogic point of view is to bring more oxygen to the blood and to the brain, and to control prana or the vital life energy. These techniques have also proved to help the prevention of major diseases and cue minor illnesses. A body with a stressful mind cannot be a healthy body, yoga helps the mind to become clear and pure and clear mind is not affected by stress.

References:

- Pranayama its philosophy & practice, Divya Prakashan Diya Yog mandir Trust, Patanjali Yog Peeth, Delhi Hardwar road, Bahadrabad, Hardwar- Uttarakhand.
- George T. Stafford & Ray O. Duncan, Physical conditioning Exercises for Sports and Health Living (New York: The Ronald Press Co., 1965) P. 15
- Madanmohan, Kaviraja Udupa, Ananda Balayogi Bhavanani, Chetan Chinmaya Shatapathy and Ajit Sahai, modulation of cardio vascular response to exercise by yoga training, Department of Physiology, Department of Social and Preventive Medicine, Jawaharlal Institute of Post Graduate Medical Education & Research (JIPMER), Pondicherry, India
- Hamel “Heredity and Muscle Adoption to Endurance Training “Medicine and Science in Sports and Exercise”. P. 16
- Brown RP Gerbarg PL. Sudarshan Kriya yogic breathing in the treatment of stress, anxiety and depression: Part I. Neurophysiological model. J Altern Complement Med 2005; 11: 189-201
- Bhattacharya S, Pandey US, Verma NS. Improvement in oxidative status with yogic breathing in young healthy males. Indian J Physiol Pharmacol 2002; 46: 349-54.
- Vialatte FB, Bakardjian H, Prasad R, Cichocki A. EEG paroxysmal gamma waves during Bhramari pranayama: a yoga breathing exercise. Concious Cogn 2009; 18: 977-88.
- Jerath R, Edry JW, Barnes VA, Jerath V. Physiology of long pranayamic breathing: Neural, respiratory elements may provide a mechanism that explains how slow deep breathing shifts the autonomic nervous system. Med Hypotheses 2006; 67: 566-71.

EFFECT OF YOGASANAS ON SELF-CONFIDENCE AMONG INTER COLLEGIATE VAAGDEVI ENGINEERING COLLEGE PLAYERS

Dr. P. Sampath, Assoc Professor, Vaagdevi College of Physical Education, Bollikunta, Warangal.

ABSTRACT: The purpose of the present study was to find out the effect of yoga on self-confidence and mental health among inter-collegiate players. Thirty inter-collegiate men Volleyball, Basketball and Kabaddi were selected as subjects for the study, from the arts science college and they were randomly divided into two groups equally, with fifteen each, as experimental and control group. All the selected players continued training in their respective games; and apart from the training, experimental group underwent one hour yoga training in the morning session, before the games training, for the duration of six weeks. The pre-test and post-test were assessed in the psychological variables of self-confidence and mental health. Self-confidence was assessed through Agni Hotry Rekha's Self-confidence Scale and mental health was assessed through mental health inventory constructed by Jagadish and Srivatsava. The collected data's were statistically analyzed, by using ANCOVA, to find out the significant difference between the groups, if any. The significant level was fixed at 0.05 levels. It was concluded from the result of the study that the yoga training had significant impact on self-confidence among inter-collegiate players.

INTRODUCTION

Oftentimes we find ourselves in a situation where we feel like we just don't want to stand out from the crowd for fear of being ridiculed. This can be a very hard situation, especially since we can lose a lot of opportunities simply because of this fear. Our insecurities are caused by the lack of self-confidence.

Without self-confidence, we lack the initiative to perform extraordinary things for ourselves. Without self-confidence, we let fear take over and conquer us. If you've been feeling a bit low, but you want to start feeling different, good for you. The acceptance of change is always the first step. By performing a set of breathing exercises, postures and meditation, one can maintain the balance of both their physical as well as mental health. If you're wondering on how yoga can greatly help you enhance and strengthen your self-esteem, here are some explanations.

Yoga Makes Your Body Fit - Many people are aware that performing exercise can make your body look and feel better. With constant yoga exercises and stretches, your muscles will be put to work. These yoga poses and exercises can help give your

muscles a more toned appearance. Thanks to the breathing exercises of yoga, more oxygen can enter your muscles, thus providing your muscles with more vigor. If you once had problems with the body looked, yoga can help ease this problem by providing you with better looking muscles.

Yoga Helps You in Becoming Wholly Aware of your limitations and capabilities - self-confidence helps us get rid of fear of the things that we cannot do. However, the truth of the matter is that we cannot do everything, but this doesn't necessarily mean that we should feel bad about having limitations. Yoga can help you understand more your mind as well as your body. With yoga, you will become more aware of your limitations, as well as your potentials. If you know what are the things that you could possibly do, you are able to erase all the negative thoughts from your mind. Yoga can also help you balance your mind by helping you understand that there are things that one is capable of performing, and there are some things that cannot be done. The meditation exercises of yoga can help one grasp the concept that limitations are not downfalls, but simply shortcomings that have to be accepted. Once you've balanced all these thoughts, your confidence in yourself as well as your self-awareness will intensify.

Yoga strengthens your mind - one of the main causes of mental fatigue is stress. one shouldn't take mental fatigue lightly, because this condition can be the start of a lot of issues, like accumulation of negative thoughts that can ultimately lead to depression. Yoga can help you release these stressors by cleaning up all the clutter stored in your mind. Through a series of meditation and relaxing breathing exercises, one can increase the circulation of oxygen in the mind and body, thus increasing the flow of energy to your overall body. Yoga can help you deal with the stress, even when you're placed in an alarming situation. Once you know that you can deal with all the stress, your self-confidence will also increase. You no longer have to fear about not being capable of dealing with your problems, because you are aware that you've prepared for it.

Yoga Can Improve Your Posture - Having great posture has benefits that exceed aesthetic purposes. Excellent posture will make you look great indeed, but it can also prevent the organs in the body from compressing. If your organs are compressed because of your poor posture, your organs will not be able to function as effectively as they are supposed to. By religiously performing yoga, you can correct these problems since yoga

can help keep your body aligned. With great posture, your body will feel more energized, and you'll feel more confident as well.

METHODOLOGY

Thirty inter-collegiate players of Volleyball, Basketball and Kabaddi were selected as subjects for the study; and they were randomly divided into two groups equally, with fifteen each, as experimental and control group. The age groups of the subjects were eighteen to twenty eight years. Psychological Tools used in this study

A psychological variable of self-confidence was assessed through Agni Hotry Rekha's Self-confidence scale. This scale consists of 57 statements. It consists of 36 positive and 21 negative statements, with true or false category. The correct answer was awarded one mark each. The total score consists of the self-confidence score. The score ranges from 0 to 56. Higher score indicates higher self-confidence. Mental Health was assessed through Jagadish and Srivatsava (1983) mental health inventory. This inventory consists of56 items with four point scale from 1 to 4 score. In the 56 statements, 24 are positive and 32 are negative. The total score ranges from 56 to 224. The higher score indicated better mental health; whereas, minimum score of the inventory indicates poor mental health.

Training Procedure

The experimental and control groups practiced training in their respective games in the morning (one hour) and evening (two hours), in a schedule of weekly six days, for a period of six weeks; and apart from games training experimental group underwent one hour yoga training, in the morning, before starting the sports training. The one hour yoga training included eight asanas and two pranayama. The asanas were Bhujangasana, Dhanurasana, Sarvangasana, Vazerasana, Halasana, Chakarasana, Sirashasana, Savasana are Kapalabati and Shitali.

TESTING PROCEDURE

The pre and post-test were conducted before and after the six weeks yogasanas training, by using the Agni Hotry Rekha's Self-confidence scale and Jagadish and Srivatsava mental health inventory.

STATISTICAL PROCEDURE

The Analysis of Covariance (ANCOVA) was used as a statistical tool, to determine the significant difference on the data of pre and post mean obtained for self-confidence

between control and experimental groups. The level of significance was fixed at 0.05 level of confidence.

RESULTS & DISCUSSION

The Analysis of Covariance on the data obtained on self-confidence and mental health of pre and post tests are tabulated and presented in the Tables

Table: Computation of analysis of covariance on Self Confidence

Test	Group		SV	Sum of Squares	df	Mean Square	F value
	Exp.	Control					
Pre test	27.143	27.656	B	2.133	1	2.133	0.008
			W	6099.02	28	217.823	
Post test	34.3	29.2	B	135.55	1	135.55	7.839*
			W	484.10	28	17.324	
Adjusted Mean	34.201	29.196	B	187.96	1	187.96	10.471*
			W	483.73	27	17.916	

REFERENCES:

1. AnaghaChikte (2013).Yoga Therapy and Mental Health. Indian Streams Research Journal Volume : III, Issue : VII.
2. Bandura, A. (2006). Guide for Constructing Self-Efficacy Scales, In F. Pajares& T. Urdan (Eds.), Adolescence and Education: Self-Efficacy Beliefs of Adolescents. Vol. V, pp. 307- 337), Greenwich: Information Age Publishing.
3. Mohinder Singh (2000). Effects of selected Yogic Exercise on physical and psychological I' i tiles Unpublished Ph. D. Dissertation. Kurukshetra University, Kurukshetra.
4. Williams,J.M. (1998).Applied Sport Psychology: Personal Growth for peak perfirmanee. 3" ed., Mountain view, CA Mayfield.
5. Agnihotri, R. (1987). Manual for Agnihotri's self-confidence inventory (ASCI). National Psychological Corporation, Agra.
6. Jagadish&Srivatsav, (1983).Mental Health Inventory. Varanasi, Manovaigyanik Parikchan Sansthan.
7. Pratap, Vijayendra (1968). Steadiness in normal before and after Yogic Practices-An Exploratory Study, Yoga Mimamsa, 11(2), 1-13.

REHABILITATION AFTER KNEE INJURIES IN ATHLETES

MSN Patrudu, Physical Director, Andhra Medical College, Vishakapatnam, AP
Dr. R V L N Ratnakar Rao, Dept of Physical Education, Andhra University, Vizak

Introduction:

Athletes are exposed to trauma. In athletics very often they are knee injuries. This paper shows how a knowledge of athletes with a history of knee injury on the construction and operation of the locomotor system and rehabilitation process. This paper attempts to show the need for a comprehensive preparation for conscious athletes training. For a very long time until today an extremely attractive and common form of motor activity of children, adolescents and adults are team games. The universality of games due to the fact that their experience is a great form of social contact and a great pleasure. They were considered good form of education, disciplining children and adolescents, as well as developing their physical fitness.

Purpose and objectives of the work:

The purpose of this study is to present the role of treatment and rehabilitation after injuries of the knee in the opinion of the basketball practicing basketball. Guided by the objective of the work, in this publication is the main problem identified question: What is the scope of rehabilitation trainee should understand athletes knee injuries to return to full health and disposal of the knee? Concretized main problem was isolated in the development of specific problems by formulating them in the form of the following questions:

1. What is the level of knowledge about anatomy, physiology and biomechanics of joints, causes and mechanism of injury to the joints?
2. What are the types of knee injuries that occur most frequently in people who train Athletes?
3. Does preconditioning "warm up" (warming up and stretching of the joints in the knees) to prevent traumas joint structures, including the knee? And to what extent?
4. What is the relationship the method of treatment and rehabilitation from knee injury type?
5. How is the efficiency of use of treatment and rehabilitation of knee injuries?

It has been a major hypothesis that, in order to attain one hundred percent efficiency of athletes, the overall state of health and full availability of knee joints after injuries of the joints, athletes must take the full range of available rehabilitation.

With regard to the specific questions posed in the research process of this work, the following specific hypotheses:

1. It was assumed that the respondents have a sufficient level of knowledge about anatomy, physiology and biomechanics of joints, causes and mechanism of injury.
2. It was assumed that among people who taking training in athletics knee injuries the most common injury is ligament damage, and less damage to the bones that make up the pond.
3. It was assumed that the proper preparation of the preliminary (warm up, stretch) before training and competition largely prevents knee injuries.
4. It was assumed that, depending on the type of knee injury must be followed by an appropriate method of treatment.
5. It was assumed that the rehabilitation applied at the right time and scope (appropriate methods) has a decisive impact on the effectiveness of treatment and return to good health.

Materials and methods:

In this paper, a procedure of selection of the targeted study population. There were practicing athletics that have experienced trauma / injury of the knee. The study involved sixty people: forty three men and seventeen women. That gives 71.66% males and 28.33% women. Most respondents were aged 25 years (21.66%), 23 years old (20%) and 24 years (18.33%). After one surveyed were aged 19 years, 27 years, 28 years, 31 years and 35 years. Mass range studied fluctuated in the range from 45 kg to 110 kg. The most common values that respondents mentioned were: 80 kg (8.33%), 70 kg (6.66%), 84 kg (6.66%), 90 kg (6.66%). Other values ranged from 1.66% to 5%. The height of the body of respondents ranged from 163cm to 202cm. 15% of respondents identified as their height 175cm body, which was the most repeated value. Another common value was 177cm, which accounted for 11.66%. Other values ranged from 1.66% to 5%. 91.66% of respondents were residents of the city, at 8.33% of residents of the village. Education study group is as follows: 40% - higher vocational education (Bachelor), 38.33% - average, 20% - higher, 1.66% of primary and incomplete primary. None of the respondents replied "professional".

Diagnostic survey method was used. Selected survey technique and tool used is an original questionnaire. It should be noted also that the alternative in the clinical interview was used freely, the results of which proved to be important for the interpretation of the empirical material obtained.

Results:

The first question, respondents were asked about whether the building met, the operation of the knee and the reasons and information about your injury. Over half the respondents answered, "yes", this accounted for 56.66% of the responses. 23.33% coincided with the answer "a little". If the expression "yes" and "a little" treat together, it turns out that 80% of the respondents have knowledge about the physiology and biomechanics of joints, causes and mechanism of injury, which is a satisfactory result. Answer "no" was 20%.

The subjective feeling of the majority of respondents indicates a full recovery even after half a year. For injuries in sports occur most often during training, less frequently during the competition. To who should belong the role of educational athletes? The survey responses indicate that they know the structure and functioning of the knee and the reasons and information about your injury. But knowledge of the respondents very little comes from the trainer. In addition, 25% of the respondents before the injury have not made a warm-up. Half of the respondents do not want to continue treatment.

Conclusions:

1. Athletes who practice at any time are exposed to injuries of the knee.
2. After a knee injury, to achieve the full efficiency of athlete to full health and availability of knee joints, Athletes must take the full range of available rehabilitation.
3. Athletes have a sufficient level of knowledge about anatomy, physiology and biomechanics of joints, causes and mechanism of injury.
4. Among the people who train in Athletics knee injuries the most common injury is ligament damage.
5. Suitable preconditioning (warm up, stretch) before training and competition largely prevents knee injuries.
6. Depending on the type of knee injury acquired must be used an appropriate method of treatment.
7. Rehabilitation applied at the right time and scope (appropriate methods) has a decisive impact on the effectiveness of treatment and return to good health.

References:

1. Acland, R.D. (2003). Acland's DVD atlas of human anatomy [Computer Software]. Philadelphia: Wolters Kluwer Health/Lippincott Williams & Wilkins.
2. Anderson, M.K., Parr, G.P., & Hall, SJ. (2009). Foundations of athletic training: Prevention, assessment, and management. Philadelphia: Wolters Kluwer Health/Lippincott Williams & Wilkins.
3. Bandura, A. (1997). Self-efficacy: The exercise of control. New York: Freeman& Co. Christakou, A. & Zervas, Y. (2007). The effectiveness of imagery on pain, edema, and range of motion in athletes with a grade II ankle sprain. Physical Therapy in Sport, 8, 130-140.
4. Christakou, A., Zervas, Y., & Lavalle, D. (2007). The adjunctive role of imagery on the functional rehabilitation of a grade II ankle sprain. Human Movement Science, 26, 141154.
5. Cumming, J., Hall, C, & Shambrook, C. (2004). The influence of an imagery workshop on athletes' use of imagery. Athletic Insight: The Online Journal of Sport Psychology, 5(1), 1-22.
6. Cupal, D & Brewer, B. (2001). Effects of relaxation and guided imagery on knee strength, re injury anxiety, and pain following anterior cruciate ligamentre construction. Rehabilitation Psychology, 46(1), 28-43.
7. Donaldson, V.W. (2000). A clinical study of visualization onde pressed white blood cell count in medical patients. Applied Psychophysiology and Biofeedback, 25(2), 230-235.
8. Driediger, M., Hall C, & Callow,N. (2006). Imagery use by injured athletes: Aqualitative analysis. Journal of Sport Sciences, 24(5), 261-272.
9. Evans, L., Hare, R., & Mullen, R. (2006). Imagery use during rehabilitation from injury. Journal of Imagery Research in Sport and Physical Activity, 7(1), 1-21.
10. Francis, S.R., Anderson, M.B., & Maley, P. (2000). Physiotherapists and male professional athletes' views on psychological skills for rehabilitation. Journal of Science and Medicine in Sport, 3(1), 17-29.
11. Green, L.B. (1999). The use ofimagery inthe rehabilitation of injured athletes. InD. Pargman (Ed.),Psychological Basis of Sport Injuries (2nded., p. 235-251). Morgantown, WV: Fitness Information Technology.
12. Gregg, M., Hall, C, & Hanton, S. (2007). Perceived effectiveness athletes' mental imagery. Journal of Sport Behaviour 30(4), 398-415.
13. Gregson, M., Roberts, I., & Amiri, M. (1996). Absorption and imagery locate immune responses in the body. Bio feed back and Self-Regulation, 21, 149-165.
14. Hall, CR., Mack, D.E., Paivio, A., & Hausenblas, H.A. (1998). Imagery use by athletes: Development of the sport imagery questionnaire. In Smith, D. & Bar-Eli, M. (Eds.), Essential Readings in Sport and Exercise Psychology (p. 258-264). Champaign, 111.: Human Kinetics.
15. Hall, CR., Munroe-Chandler, K.J., Cumming, J., Law, B., Ramsey, R., & Murphy, L. (2009). Imagery and observational learning use and their relationship to sport confidence. Journal of Sport Sciences, 27(4), 327-337.
16. Hamson-Utley, J.J., Martin, S., Walters, J. (2008). Athletic trainers' and physical therapists' perceptions of the effectiveness of psychological skills within sport injury rehabilitation programs. Journal of Athletic Training, 43(3), 258-264.
17. Heil, J. (1993). Mental training in injury management. In J. Heil (Ed.), Psychology of Sport Injury (p. 151-174). Champaign, IL: Human Kinetics.
18. Hildebrand, K.A. & Frank, CB. (1998).Scar formation and ligament healing. Canadian Journal of Surgery, 41(6), 425-429.
19. Ievleva, L. & Orlick, T. (1991). Mental links to enhance healing: An exploratory study. The Sport Psychologist, 5, 25-40.
20. Jasnowski, M. & Kugler, J. (1987). Relaxation, imagery, and neuro immunomodulation. Annals of New York Academy of Science, 496, 722-730.

A STUDY OF WOMEN PHYSICAL FITNESS AMONG KABADDI PLAYERS & KHO-KHO PLAYERS AT GKCPE (UGDPEd) NALGONDA

***MALLIKAMBA, ** B.RAVI, *** PATHAKOTI MADHU**

*Lecturer in MSR college of physical education, Suryapet.

**Lecturer in Nigama college of physical education, Karimnagar.

***Lecturer in Sri Krishna college of physical education, Mahatma Gandhi University, Nalgonda.

Introduction: Physical fitness is a multifaceted continuum extending from birth to death, Affected by physical activity. It ranges from optimal activities in all aspects of life through high and low levels of different physical fitness to serve disease and dysfunction. The ability to function efficiently and effectively is to enjoy leisure, to be healthy, to resist disease and to cope with emergency situations. Health related components of fitness, flexibility, muscular endurance, and strength. Skill related components include agility, balance, co ordination power re- action and speed. They relative important of each of components varies of each sport. Physical fitness is not only sport specific it may also be position specific, combined good health and physical development. The object of any program of physical fitness it to maximize any individual health. Strength, endurance and skill relative to age, sex, body build and physiology. These ends can only realized through conscientious regulation of exercise, rest, diet, and periodic medical examinations. Exercise should be regular and vagarious, but begun slowly and only gradually increased in strenuousness. Popular exercise methods include jogging, cycling and the use of body-building machines. It is more important that periods of sleeps be regular and restful than that they extend fixed number of hours.

SIGNIFICANCE OF STUDY: The study is to be determined the women physical fitness of the kabaddi players and kho-kho players of Gopala Krishna college of physical education (ugdped), Nalgonda.

HYPOTHESES: 1. There may not be any significant different between women kabaddi players and women kho-kho players at gopala Krishna college of physical education (ugdped), Nalgonda. In relation to their speed (50m run). 2. There may not be any significant different between women kabaddi players and women kho-kho players at Gopala Krishna college of physical education (ugdped), Nalgonda. In relation to their endurance(Cooper test-12 minutes run/walk)

SAMPLE OF THE STUDY: A study was formulated based on the simple random sampling. The samples was collected from the women 25 kabaddi players (UGDPED) and women 25 kho-kho players (UGDPED) in the age group of 18-21 years from Gopala Krishna college of physical education, nalgonda.

SHOWING THE SAMPLE OF THE STUDY

SL. NO	Category of the subject	Number of subjects
1.	Kabaddi players (UGDPED)	25
2.	Kho-kho players (UGDPED)	25

TOOLS USED: The present study under investigation selected the following physical fitness test performed are

Physical fitness: Speed (50M Run), Endurance (Cooper test 12 minutes Run/walk).

DATA COLLECTION PROCEDURE: The study was under report focuses the women physical fitness, basis of team game players, which is the order of the day in everlasting sports scenario. The study was formulated based on the simple random sampling. The samples was collected from the women 25 kabaddi players(UGDPED) and women 25 kho-kho players(UGDPED) in gopala Krishna college of physical education, nalgonda in the age group of 18-21 years were considered. Physical fitness test was administrated on kabaddi and kho-kho players i.e the speed (50m Run) and endurance (cooper test 12minutes run/walk)

RESULTS AND DISCUSSIONS: The results pertaining to the study are present in the following,

Table-1 showing the mean values SD, df, t value and p-value between kabaddi players and kho-kho players of gopala Krishna college of physical education, nalgonda players is relation to their Speed (50M Run)

SL.NO	Subjects	N	Mean	S.D	t ratio	P value
1.	Kabaddi players	25	8.26	0.54	2.601	0.01
2.	Kho-kho players	25	6.97	0.39	2.601	0.01

Table-2 showing the mean values SD, df, t value and p-value between kabaddi players and kho-kho players of gopala Krishna college of physical education, nalgonda players is relation to their Endurance (cooper test)

SL.NO	Subjects	N	Mean	S.D	t ratio	P value
1.	Kabaddi players	25	2.232	278.76	4.01	0.01
2.	Kho-kho players	25	2.468	224.62	4.01	0.01

CONCLUSION: The study under report has scientifically examined the various factors which influence the power game, specially the women physical fitness variables pertinent to speed and endurance. A trained individual is in a better state of physical fitness then the person who follows a sedentary, inactive life. When two persons, one trained and one un trained or approximately the same build are performing the same amount of moderate muscular work, evident indicates that the trained indicates has a lower oxygen consumption, lower pulse rate, longer stroke volume poor heart beet, less in blood pleasure, greater red and white blood cells count, slower rate of breathing, lower rate of lactic acid formation, and a faster return to normal of blood pressure and heart beat.

The heart becomes more efficient and is able to circulate more blood while bearing less frequently. Furthermore, in work of a strenuous nature that can not be performed for any great period of time the trained individual are greater endurance, a capacity for higher oxygen consumption and a faster return to normal of heart rate and blood preasure. Physical fitness is a multifaceted continuum extending from birth to death, effected by physical activity. It ranges from optimal activities in all aspects of life through high and low levels of defferent physical fitness to serve diesese and dysfunction.

REFERENCES

1. Goldin PR Effects of mindfulness –based stress reduction(MBSR) on emotion regulation in social anxiety disorder. *EMOTION. 2010 Feb;10(1): 83-91*
2. Goyal M., et al. JAMA intern med. 2014;174(3):357-368
3. Wallace, K. physiological effects of transcendental meditation. *Science .27, 1970167 (3926):1751-1754.*

PHYSICAL FITNESS AND ITS SIGNIFICANCE ON PHYSIOLOGICAL ASPECTS OF VOLLEYBALL PLAYERS OF KAKATIYA UNIVERSITY

***N. Ramesh **M. Jaipal**
*Physical Director, Vaagdevi Degree & PG College, Kishanpura, Hanamkonda, Warangal.
**Physical Director, Vaagdevi Degree & PG College, Kishanpura, Hanamkonda, Warangal.

INTRODUCTION:

The physical fitness and wellness are inter-related to each other. Physical fitness is the sum of the fine motor abilities namely strength, speed endurance, flexibility and coordinative abilities. The most important aim of the sports exercise is to improve and maintain the physical fitness and wellness of the human being. Exercise is an essential element in the achievement and maintenance of physical fitness and wellness of human being. Physical fitness covers organic fitness as an individual. The main components of physical fitness are speed, strength, endurance, flexibility, agility, cardiovascular fitness and co-coordinative ability. Physical fitness is a multifaceted continuum extending from birth to death, affected by physical activity; it ranges from optimal activities in all aspects of life through high and low levels of different physical fitness to serve disease and dysfunction.

Human physiology is the science of the mechanical, physical and biochemical functions of humans in good health, their organs, and the cells of which they are composed. The principal level of focus of physiology is at the level of organs and systems. Most aspects of human physiology are closely homologous to corresponding aspects of animal physiology, and animal experimentation has provided much of the foundation of physiological knowledge. Anatomy and physiology are closely related fields of study: anatomy, the study of form, and physiology, the study of function, are intrinsically tied and are studied in tandem as part of a medical curriculum. Traditionally, the academic discipline of physiology views the body as a collection of interacting systems, each with its own combination of functions and purposes.

SIGNIFICANCE OF THE STUDY:

The purpose of the study is to find out whether or not any significant difference found on physiological aspects in relation to their physical fitness of Volleyball players in Kakatiya University.

OBJECTIVES OF THE STUDY:

The Study is to find out the physical fitness and its significance on physiological aspects of the Volleyball players in Kakatiya University.

SAMPLE OF THE STUDY:

The study was formulated based on the simple random sampling. The samples were collected from the 50 Volleyball players in the age group of 20 – 25 years from Kakatiya University were considered. The data was collected during Inter college University Tournaments

TOOLS USED: The present study under investigation selected the following physical fitness activities and test performed on physiological aspects.

- **Physical Fitness Activities**
  Speed, Agility, Explosive power and Endurance.
- **Physiological tests**
  The Harvard Step test (Pulse Rate – 1 minute), Breath Holding Time (1 minute)

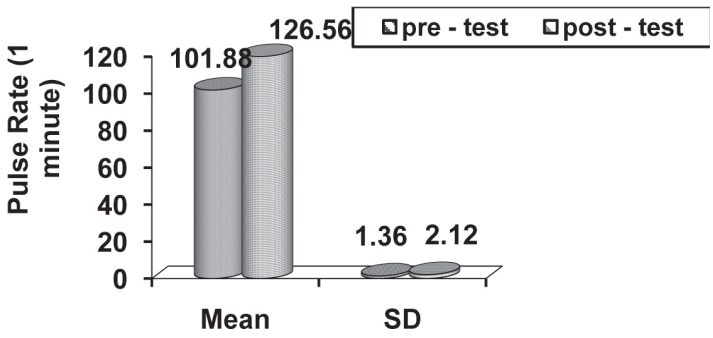
DATA COLLECTION PROCEDURE: 50 Kakatiya University Volleyball Players have been selected for the study and they have under gone physical fitness activities for 45 days. The pre-test was taken, and then the post test was administrated after the systematic training of physical fitness activities like speed, agility, explosive power and endurance on physiological aspects.

RESULTS & DISCUSSIONS

Table – 1 Showing the Mean Values, SD, df, 't' value and p-value between pre-test and post of kakatiya University Volleyball players in relation to their pulse rate.

Sl. No.	Subjects	N	Mean	S.D.	df	't' ratio	P value
1.	Pre - test	50	101.88	1.36	98	2.46	0.00
2.	Post – test	50	126.56	2.12			

Graph – 1 Showing the Mean Values, SD, df, 't' value and p-value between pre-test and post of Kakatiya University Volleyball players in relation to their pulse rate.



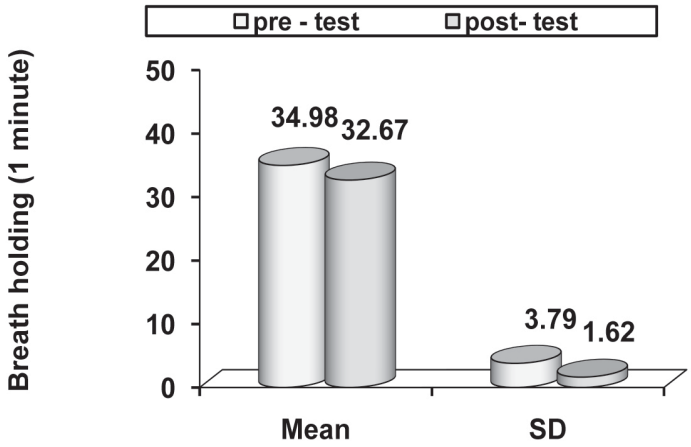
DISCUSSION

Table-1 and Graph-1 shows the mean, standard deviation, degrees of freedom, t-value and significance between pre-test and post- test of Kakatiya University Volleyball Players in relation to their **pulse rate**. The mean value of Pre-test was 101.88, standard deviation was 1.36 and the mean value of post-test was 126.56 and standard deviation was 2.12. The obtained t-ratio was 2.46, which was found to be significant at 0.00 levels.

Table – 2 Showing the Mean Values, SD, df, 't' value and p-value between pre-test and post of Kakatiya University Volleyball players in relation to their Breath Holding

Sl. No.	Subjects	N	Mean	S.D.	df	't' ratio	P value
1.	Pre – test	50	34.98	3.79	98	2.68	0.01
2.	Post – test	50	32.67	1.62			

Graph – 2 Showing the Mean Values, SD, df, 't' value and p-value between pre-test and post of Kakatiya University Volleyball players in relation to their Breathing Holding.



DISCUSSION

Table -2 and Graph -2 shows the mean, standard deviation, degrees of freedom, t-value and significance between pre-test and post- test of Kakatiya University Volleyball Players in relation to their **Breath Holding**. The mean value of pre-test was 34.98, standard deviation was 3.79 and the mean value of post-test was 32.67 and standard deviation was 1.62. The obtained t-ratio was 2.68, which was found to be significant at 0.01 levels.

CONCLUSION

It is finally concluded that physical fitness have yielded significant differences on the physiological aspects of Volleyball players it have scientifically proved better that the Kakatiya university Volleyball players have major role to prove their physical fitness in the performance of the game the physical fitness variables viz., speed, explosive power, agility and endurance. In the present scenario the Tactical standards in foot ball game have been playing a significant role in the creeping performance of the modern game of foot ball. By and large, the players exposed at higher levels of competition need to be fit physically, mentally and technically, so that the standards of the power game will remain at its best all the time at international level.

References:

- George T. Stafford and Ray O. Dencan, Physical Conditioning Exercises for Sports and Health Living (New York: The Ronald Press Company, 1965) P. 15.
- Srivatson, “Over all pattern of coaching Basketball”, Yayam I (May 1963) P. 13
- F. Edward Coyle, Mari. K. Hammert and Andrew R. Coggan, Effect of determining of Cardiovascular responses to exercise: “Role of Blood Volume Journal of Applied Physiology” 60, No. 1 (Jan. 1986), P. 95-99.
- George T. Stafford & Ray O. Duncan, Physical conditioning Exercises for Sports and Health Living (New York: The Ronald Press Co., 1965) P. 15
- Madanmohan, Kaviraja Udupa, Ananda Balayogi Bhavanani, Chetan Chinmaya Shatapathy and Ajit Sahai, modulation of cardio vascular response to exercise by yoga training, Department of Physiology, Department of Social and Preventive Medicine, Jawaharlal Institute of Post Graduate Medical Education & Research (JIPMER), Pondicherry, India
- Hamel “Heredity and Muscle Adoption to Endurance Training “Medicine and Science in Sports and Exercise”. P. 16

THE ROLE OF PHYSICAL ACTIVITY & SPORTS IN PREVENTING DISEASE AND PROMOTING HEALTHY LIFE IN MODERN LIFE STYLE

***Ailaiah Chedupelly, **Dr. Srinivas Nallella**

*Physical Education Teacher, Zppss, Alankanipeti, Warangal.
**Physical Director, Department of Physical Education, M.V.S.R. Engineering College, Hyderabad.

INTRODUCTION: Physical activity, fitness, and exercise are critically important for the health and well being of people of all ages. Research has demonstrated that virtually all individuals can benefit from regular physical activity, whether they participate in vigorous exercise or some type of moderate health-enhancing physical activity. Even among frail and very old adults, mobility and functioning can be improved through physical activity. Therefore, physical fitness should be a priority for people of all ages in modern life. Physical activity has been shown to reduce the morbidity and mortality from many chronic diseases. Millions suffer from chronic illnesses that can be prevented or improved through regular physical activity:

The physiological and psychological rewards of being physically active are well established. The important benefits of exercise are extensive for health and modern life scenario.

1. Enhancing function, 2. Maintaining reserve capacities, 3. Preventing disease, 4. ameliorating the effects of age and chronic disease

It is well known that physical inactivity or a sedentary lifestyle is related to an increased risk of cardiovascular disease and other chronic disease states, such as hypertension, diabetes, obesity, osteoporosis and certain forms of cancer.

The risks associated with physical activity must also be considered. The most common health problems that have been associated with physical activity are musculoskeletal injuries, which can occur with excessive amounts of activity or with suddenly beginning an activity for which the body is not conditioned. Much more serious associated health problems (i.e., myocardial infarction, sudden death) are also much rarer, occurring primarily among sedentary people with advanced atherosclerotic disease who engage in strenuous activity to which they are unaccustomed. Sedentary people, especially those with preexisting health conditions, who wish to increase their physical activity, should therefore gradually build up to the desired level of activity. Even among people who are regularly active, the risk of myocardial infarction or sudden death is somewhat increased during

physical exertion, but their overall risk of these outcomes is lower than that among people who are sedentary.

The study on physical activity continues to evolve. This study includes both well-established findings and newer research results that await replication and amplification. Interest has been developing in ways to differentiate between the various characteristics of physical activity that improve health. It remains to be determined how the interrelated characteristics of amount, intensity, duration, frequency, type, and pattern of physical activity are related to specific health or disease outcomes.

Significance of the study: The purpose of the study is to promote a sense of health and fitness, personal responsibility in being fit, and an appreciation of individual and group achievement. It provides them the opportunity to participate in activities that may be of ongoing interest to them throughout their health life.

Physical activity in health and disease: Physical inactivity is recognized as a significant common and preventable risk factor for non communicable diseases, which account for almost 60% of global deaths and 43% of global burden of chronic disease. Maintaining regular physical activity helps avoid positive energy balance and obesity. Physical activity reduces the risk of developing heart disease, type II diabetes, osteoporosis, colon cancer, and may also play a protective role against breast cancer. Physical activity also plays a role in a person's well being by reducing stress, anxiety and feelings of depression in the individuals.

Cardiovascular disease: Heart disease accounts for a third of all global deaths. Physical inactivity is linked to an increased risk of coronary heart disease, but only a minority of adults takes sufficient exercise to benefit health. The mechanism by which physical activity might help protect against coronary heart disease may involve effects on coagulation and thrombosis as well as an influence on lipoprotein metabolism. Individuals who frequently exercise often have a lower concentration of plasma fibrinogen. Physical activity may also produce a reduction in plasma triglycerides and an increase in HDL cholesterol (good cholesterol), and therefore a reduction in risk from developing coronary heart disease. Habitual physical activity also reduces the risk of arterial hypertension, particularly among those who are overweight, and therefore can be a useful adjunct with pharmacological treatment. Increased levels of aerobic exercise can also produce a reduction in both systolic and diastolic blood pressure.

Conclusion: Hence, the recommendation of the study that everyone should accumulate 30 minutes or more of physical activity & sports over the course of most days of the week is fully justified. However despite the health benefits of physical activity and the fact that is it potentially accessible to all, it is estimated that over 60% of the world population is not active enough.

Scientists and doctors have known for years that substantial benefits can be gained from regular physical activity. The expanding and strengthening evidence on the relationship between physical activity and health necessitates the focus of the study brings to this important public health challenge. Although the science of physical activity is a complex and still-developing field, we have today strong evidence to indicate that regular physical activity & sports will provide clear and substantial health gains.

We must get serious about improving the health of the nation by affirming our commitment to healthy physical activity on all levels: personal, family, community, organizational, and national. Because physical activity is so directly related to preventing disease and premature death and to maintaining a high quality of life, we must accord it the same level of attention that we give other important public health practices that affect the entire nation. Physical activity thus joins the front ranks of essential health objectives, such as sound nutrition, and the prevention of adverse health effects of tobacco. The effort to understand how to promote more active lifestyles is of great importance to the health of this nation. Although the study of physical activity & sports determinants and interventions is at an early stage, effective programs to increase physical activity have been carried out in a variety of settings, such as schools, physicians' offices, and worksites. Determining the most effective and cost-effective intervention approaches is a challenge for the future.

Finally, physical activity is only one of many everyday behaviors that affect health. In particular, nutritional habits are linked to some of the same aspects of health as physical activity & sports, and the three may be related lifestyle characteristics. This study deals solely with physical activity & sports to prevent disease and enhance the healthy life style in promoting the modern life

References:

- F. Edward Coyle, Mari. K. Hammert and Andrew R. Coggan, Effect of determining of Cardiovascular responses to exercise: "Role of Blood Volume Journal of Applied Physiology" 60, No. 1 (Jan. 1986), P. 95-99.
- George T. Stafford & Ray O. Duncan, Physical conditioning Exercises for Sports and Health living (New York: The Ronald Press Co., 1965) P. 15
- Madanmohan, Kaviraja Udupa, Ananda Balayogi Bhavanani, Chetan Chinmaya Shatapathy and Ajit Sahai, modulation of cardio vascular response to exercise by yoga training, Department of Physiology, Department of Social and Preventive Medicine, Jawaharlal Institute of Post Graduate Medical Education & Research (JIPMER), Pondicherry, India.
- Hamel "Heredity and Muscle Adaption to Endurance Training "Medicine and Science in Sports and Exercise". P. 16

PHYSICAL CHARACTERSTICS AND PERFORMANCE IN BADMINTON

Rajender Kommu, Physical Education Teacher, ZPPHS, Inugurthy (M), Kesamudram, Wgl.

Abstract:

The aim of the present study was to establish a relationship between selected variables of physical characteristics and the level of performance of male badminton players. 20 male badminton players who represented State Badminton Championship were selected as the subjects for the study. The age of the selected subjects were ranged from 20 to 27 years of age. Arm strength, leg strength, agility, spine flexibility and wrist flexibility were taken as the variables of physical characteristics. Level of performance was recognized as the playing ability of the players. Rogers's formula was employed to estimate the arm strength of the selected subjects. Leg Strength of the subjects was taken by leg dynamometer to the nearest kilogram. To measure the agility of the subjects 4×10 yards shuttle run was administered and time was recorded to the nearest 1/10th of a second. Spine and wrist flexibility of the subjects was taken by flexomeasure with yard stick and it was recorded to the nearest inches. For determining the level of performance of the players they were asked to participate in a series of three matches, seven points each. The fixture of the matches was drawn on the basis of lottery system. The level of badminton performers were categorized on the basis of players' performance which was evaluated and rated by a panel of three experts on the court during the matches on a 10 points likert type rating scale having score from 1 to 10 points. Some more addition points were awarded according to the results of the matches i.e. 5 points for winning and 2 points for losing the match. The Person's Product Moment Coefficient of correlation was computed to determine the relationship between badminton performance and selected variables of physical characteristics. The results of this study indicated that there is a significant relationship between agility and wrist flexibility a variable of physical characteristics and level of performance where as an in significant relationship were observed between arm length, leg length and spine flexibility the variables of physical characteristics and level of performance at 0.05 level of confidence. The finding indicates that agility and flexibility of wrist of the subjects were important variables for better performance in Badminton.

Keywords: Physical Characteristics, Performance, Badminton

Introduction

Among the indoor games, badminton occupies a place of pride both as an individual as well as team sport in spite of frequent changes that have occurred in various aspects of competition pertained to the game including, fitness level, skills, strategies and tactics. Scientific pedagogies and innovative approach have made the game more performance oriented than ever before. Sports performance is based in a complex and intricate diversity of variables, which include physical (general & specific conditions), psychological (personality & motivation) sociological and physical characteristics (body morphology, anthropometry & body composition) factors (Campos et al., 2009). In games and sports different factors play a

significant role in determining the performance level. However, great importance is assigned to biomechanical, psychological, physiological parameters in competitive sports. For improving the performance of badminton players it is important to identify the specific traits and parameters, which contribute to the playing ability. Several studies have been conducted to find out the parameters required for badminton skill performance. Badminton being a highly explosive sport, involves a unique movement technique and strength over a relatively small court area. The match is won normally by a perfect amalgam of physical condition, mental attitude, courage, intelligence and the player's technical skill and tactical efficiency. It calls for a co-ordinated functioning of the body and its reflexes. Studies have pointed out the importance of physical characteristics for different sports. However, few studies in the literature have investigated physical and physiological characteristics of badminton (Faude et al, 2007; Chint et al, 1995; Cabello and Gonzalez-Badillo, 2003) but the relationship between physical characteristics and level of performance is neglected. Thus this study was undertaken to establish a relationship between selected variables of physical characteristics and the level of performance of male badminton players.

Methods and Materials

Participants For the purpose of this study, 20 male badminton players who represented State Badminton Championship were selected as the subjects. The age of the selected subjects were ranged from 20 to 27 years of age.

Procedure of Data Acquisition

Arm strength, leg strength, agility, spine flexibility and wrist flexibility were taken as the variables of physical characteristics. Level of performance was recognized as the playing ability of the players. Rogers's formula was employed to estimate the arm strength of the selected subjects, for this height was measured in inches, weight in kilograms and push-ups & pull-ups in numbers. Leg strength of the subjects was taken by leg dynamometer to the nearest kilogram. To measure the agility of the subjects 4×10 yards shuttle run was administered and time was recorded to the nearest 1/10th of a second. Spine and wrist flexibility of the subjects was taken by flexomeasure with yard stick and it was recorded to the nearest inches. For spine flexibility modified sit and reach test was used and wrist elevation test was employed to measure the wrist flexibility. For determining the level of performance of the players they were asked to participate in a series of three matches, seven points each. The fixture of the matches was drawn on the basis of lottery system. The level of

badminton performers were categorized on the basis of players' performance which was evaluated and rated by a panel of three experts on the court during the matches on a 10 points likert type rating scale having score from 1 to 10 points. Some more addition points were awarded according to the results of the matches i.e. 5 points for winning and 2 points for losing the match.

Statistical Technique:

The Person's Product Moment Coefficient of correlation was computed to determine the relationship between badminton performance and selected variables of physical characteristics and the level of significance was set at 0.05 level of confidence. Test-retest method was also employed to determine reliability of performance of the subjects. The performance of the subjects in arm strength, leg strength, agility and flexibility were recorded on two different days with a gap of one day in between.

Results and Discussion:

Since results of any endeavour plays an important role to interpret and explain the current trend of the concerned field. The results of the present investigation are presented in the preceding tables.

Table 1: Relationship between test and retest scores' of physical characteristics

variables	R values
Arn strength	0.94*
Leg strength	0.92*
Agility	0.95*
Spine flexibility	0.82*
Wrist flexibility	0.88*

*Significant at 0.05 level of significance with 18 df Tab r = 0.44

Form the above cited table 1 its seem that the score of test-retest has highly significant as all calculated r value are more than tabulated r value at 0.05 level of confidence with 18 degree of freedom.

Table 2: Relationship between variable of physical characteristics and level of performance of state level male badminton players

Physical Characteristic	performance	N	df	
Arm strength	0.32	20	25	Needed value of r for being significant at 0.05 = 0.44
Leg strength	0.30			
Agility	0.49			
Spine flexibility	0.11			
Wrist flexibility	0.55			

Table 2 reveals that wrist flexibility and agility (variable of physical characteristics) significantly correlates with badminton performance. The coefficient of correlation of wrist flexibility is 0.54 and agility is 0.49, whereas the coefficient of correlation of other independent variables i.e. arm strength, leg strength and spine flexibility were not found significant with performance at 0.05 level of confidence.

Conclusion: On the basis on results of this empirical investigation its seems reasonably fair to conclude that there is significant relationship between the wrist flexibility and agility to badminton performance therefore these variables are most trustworthy for the better performance in Badminton.

References:

1. Barrow, M. H. & Rosemary, McGee. A Practical Approach to Measurement in Physical Education.
2. Berral, D. L. R. et al. (2010). Comparison of anthropometric equations for estimation muscle mass in badminton player. International Journal of Morphology [Online] 28(3), 803-810.
3. Blomqvist, M., Luhtanen, P. & Laakso, L. (2000). Expert-novice differences in game performance and game understanding of youth badminton players. Physical Education & Sport Pedagogy 5(2), 208-219.
4. Cabello, M. D. & González-Badillo, J. (2003). Analysis of the characteristics of competitive badminton. British Journal of Sports Medicine 37, 62-66.
5. Campos, F. A. D. et al. (2009). Anthropometric profile and motor performance of junior badminton players. Brazilian Journal Biomotricity 3(2), 146-151.
6. Chint, M. et al. (1995). Sport specific fitness testing of elite badminton players. British Journal of Sports Medicine 29, 153-157.
7. Clarke, H. H. & David H. Clarke. Application of Measurement to Physical Education. Faude, O. et al. (2007). Physiological characteristics of badminton match play. European Journal of Applied Physiology 100,479-485.
8. Manrique, D. C. & Gonzalez-Badillo, J. J. (2003). Analysis of the characteristics of competitive badminton. British Journal of Sports Medicine 37, 62-66.
9. Sakurai, S. and Ohtsuki, T. (2000). Muscle activity and accuracy of performance of the smash stroke in badminton with reference to skill and practice. Journal of Sports Sciences 18(11), 901-914.
10. Yasin, A. et al. (2010). Comparison of some anthropometric characteristics of elite badminton and tennis players. Science, Movement and Health 2, 400-405.

BENEFITS OF MEDITATION TO CHILDREN

***A.SRINIVAS, ** S.SRAVAN KUMAR REDDY**

*lecturer in Sri Krishna college of physical education, Mahathma Gandhi University, Nalgonda.
**lecturer in Sri Krishna college of physical education, Mahathma Gandhi University, Nalgonda.

Introduction

Meditation has been practiced for thousands of years. Meditation originally was meant to help deepen understanding of the sacred and mystical forces of life. These days, meditation is commonly used for relaxation and stress reduction.

Meditation is considered a type of mind-body complementary medicine. Meditation produces a deep state of relaxation and a tranquil mind.

During meditation, you focus your attention and eliminate the stream of jumbled thoughts that may be crowding your mind and causing stress. This process may result in enhanced physical and emotional well-being.

Meditation is an excellent way to unwind after an eventful day. Life can at times be stressful, triggered by various factors such as a work, family and life in general. Our children are not immune to stress either; they also undergo quite considerable amounts of stress on a daily basis. School-based assignments feuds between their parents and either can contribute to stress. If your child is stressed and you don't know where to start, learn how to manage stress through meditation.

Introducing Elements of Meditation to our child

Before we begin the meditation sessions, it is important to let our kid Know what exactly they will be involved in, what is expected of them and basically why they have to be ina quite place not even allowed to shout as much as they would love to i.e. introducing the elements of meditation.

AN OPEN ATTITUDE

There should be willingness to learn as meditation needs a lot of commitment. This is hard to achieve from a child. Nonetheless, we need to explain the fact to kid in a way he or she

will understand. He or she has to learn how to block distractions during a meditation session in order to fully benefit from it.

A QUIET SETTING

The child has to instinctively know that when it is the time for meditation session, everything else has to take a back seat. The room should have a fewer distractions as possible. The child should be understand why there will be no shouting, running around, cycling or doing anything else apart from what he is told to.

Attention

The child must be taught how to focus his attention on something specific as per the instructor's guidance. These specific item might be a set of words or even an object, if any distractions interrupt the process, the child should be taught how to regain his or her concentration.

A RELAXED POSTURE

During meditation, there is a number of positions which a person should try out for favorable results. Such postures include sitting, standing or even lying down on the back. The key here is that the posture should be as relaxing as possible.

HOW TO START THE PROCESS

FEELING THEIR BREATH

The breath is the key starting point in a meditation session. For starters, it is very important for a child to learn how to feel his breath. The child should feel the movements of his chest as he breaths in and out. The session should be conducted in a quiet place, with lots of practice, the child will learn how to focus and slowly waft away into a spiritual state of higher consciousness.

TEACH THEM TO LET GO: For children , it is not easy to concentrate and let go in a meditation session. Unless they are willing to, it is hard to force them do it. However, with persistence and lots of patients, a parent or an instructor can teach the child how to go about it.

BE CREATIVE

Being creative helps here, a parent should know what a child likes and use it to win his attention. Create a fairy tale that is captivating enough to sway them to the world of your creation, a world they identify with. Draw their curiosity and once you have them where you want, have them join in the tale and share their imaginations. You will also learn a lot about your kid's thoughts from this.

BE PATIENT

Never set a goal when teaching children meditations. Just guide them and let them be guided by their own energy towards establishing their own balances. Only interfere by guiding them to gain control over their feelings when they become restless.

BE A PART OF PROCESS

Join them, the best lessons are taught with illustration. When you till them to relax, relax as well. **Doing meditation together will be very helpful for your family** as you will all be healthier, relaxed and focused as a family.

BENEFITS OF MEDITATION TO CHILDREN

Meditation can give you a sense of calm, peace and balance that benefits both you emotional will-being and your overall health. And these benefits don't end when your meditation session ends. Meditation can help carry you more calmly through your day and may improve certain medical conditions.

Children stand to gain a lot from meditation. If started early, the kids will have more to gain as they grow and later in their adult life. The benefits comes in many forms, they very from psychological, spiritual, and physical to emotional. Below is a list and brief explanation to each.

PSYCHOLOGICAL BENEFITS TO CHILDREN

- Improved memory

Meditation helps a child remember thing more clearly. If started early, this will help them improve their grades in school.

- ❖ Greater creativity
- ❖ Reduced anxiety

With meditation, the child worries less and is calmer in stressful situations.

- ❖ Prevent addictions

Teaching your child to be more conscious of his or her mind will help prevent them from indulging in adductive activities such as smoking and pornography.

SPIRITUAL BENEFITS

- ➢ Intuition

With continues practice, the child is able to become more intuitive.

- ➢ Greater sense of the purpose to live.
- ➢ A feeling of connection to other people and the environment.
- ➢ Ability to let go and let nature take it's cource.
- ➢ **Mindfulness of being present and concentrating on the body of physical benefits.**

PHYSICAL BENEFITS

- ✓ Better immune system

  Research shows that the people who meditate have lesser changes of suffering from high blood pressure, stroke and heart attacks. Children will grow up healthier and stronger.
- ✓ Relaxed muscles

  Meditation helps one relax not only his or her mind but also the muscles. This will reduce the muscular tension leading to a more relaxed growth.
- ✓ Reduced pain

  The calm that comes with meditation helps reduce strain relaxed pain like headache.
- ✓ Better sleep

  The relaxing effect of meditation will help your kids sleep more soundly and luxuriously, good sleep will further enhance their concentration.

EMOTIONAL BENEFITS

In addition to the above benefits, meditation is good for emotional well-being.

- ✓ Greater ability to love and be loved

Meditation help children appreciate their surroundings; they are able to show more affectionate feeling towards other. People tend to respond in kind, something will that help your child develop a healthy self-esteem.

- ✓ More confidence

Ability to calm their minds will help them face issues more confidently, weather it is bully at school or that girl they really want to approach.

- ✓ Positive attitude

Generally, meditation help the child project a positive outlook towards life.

- ✓ Happiness

Meditation is all about understanding and following your path. When the child starts to follow his or her own path, he or she is happier and more fulfilled.

CONCLUSSION

Any one can practice meditation, it's simple and inexpensive, and it does not require any special equipment, and you can practice meditation wherever you are ---- weather you are out for walk, riding the bus, waiting at the doctor's office or even in the middle of a difficult business meeting.

If stress has you anxious, tense and worried, consider trying meditation. Spending even a few minutes in meditation can restore your calm and inner peace.

Different types of meditation may include different features to help your meditation. You can make meditation as formal or informal as you like, however it suits your lifestyle and situation. Some people built meditation in to their daily routine. For example, they may start and end each day with an hour of meditation. But all you really need is a few minutes of quality time

for meditation. Meditation is not a replacement for traditional medical treatment. But it may be useful addition to your other treatment.

REFERENCES

1. Goldin PR Effects of mindfulness –based stress reduction(MBSR) on emotion regulation in social anxiety disorder. *EMOTION. 2010 Feb;10(1): 83-91*
2. Goyal M., et al. JAMA intern med. 2014;174(3):357-368
3. Wallace, K. physiological effects of transcendental meditation. *Science .27, 1970167 (3926):1751-1754.*

An analysis of selected Physical and Physiological variables of "Men Kabaddi and Men Hockey Players"

***Ch. Sudershan Reddy**

* Associate Professor, Vaagdevi College of Physical Education, Bollikunta, Warangal

ABSTRACT: The purpose of the study to analysis the physical and Physiological selected physical fitness variables of Men Kabaddi and Hockey players. The sample contested of 15 Kabaddi and 15 Hockey players who were participated inter collegiate tournaments. 15 meter distance shuttle run and 12 minute run test was administerd to collect data. The analysis depleted to significant difference between Men Kabaddi players and Hockey players.

INTRODUCTION:

Present days Physical Education and Sports is an integral part of education. Physical Education Teachers are concerting the development of the quality of physical fitness among the students and society. Fitness is for all. It is a part of education and part of life. According to Charles A. Bucher fitness 10 the ability of individual to live a full and balanced, life if involves physical, mental, emotional, social and spiritual factors and a capacity for their whole some enyororsions.

Physical fitness to the ability to enjoy our lives and to achieve the desired goals without under fatigue fasters.

METHODOLOGY:

The purpose of the present stages to analyse the selected physical and physiological variables between kabaddi and hockey men players. The study was carried out on 15 kabaddi of 18 to 22 members and 15 Hockey players were selected to access the cardio respiratory endurance 12 meters run for agility shuttle run and for speed 50 mts sprint were conducted. The mean and standard deviation were calculated to analyze the collect data.

RESULT & DISCUSSION: The mean and standard deviation values cardio respiration endurance of men small area and large area games.

	Kabaddi	**Hockey**
Mean	1450.67	1578.13
SD	16.17	17.39

The above details depicted that the mean values on cardio respiratory endurance of mean Kabaddi players were 1450.67 and Hockey players were 1578.18.

The Mean and standard deviation values on agility of Men kabaddi and Hockey players are analysed and presented below.

	Kabaddi Players	**Hockey Players**
Mean	7.00	7.29
SD	0.10	0.11

The mean values of Kabaddi men players on agility are 7.00 and hockey players are 7.29.

SPEED: The mean and standard deviation values on speed of men kabaddi and Hockey players are presented below.

	Kabaddi	**Hockey Players**
Mean	7.09	7.54
SD	0.06	0.13

CONCLUSIONS OF THE STUDY:

The results despicted that there is a significant deference between Kabaddi men and Hockey men players on selected physical and Physiological variables such on speed, agility and cardio respiratory endurance. The results conducted that Hence men players are better on speed, agility and cardio respiratory endurance when compared to Kabaddi men Players.

REFERENCES:

1. Gema Hooks, Weight training in Athletics and Physical Educaion. (New. V. Jersy: Practice Hall Inc. 1974)
2. Charles A. Bucher, Dimensions of Physical Education.

Effect of Yoga Training on Selected Physical and Performance Variables among College level Basketball players.

***Kota Sridhar Kumar, ** Kumaraswamy**

*Physical Director, KU Engineering College & Technology, KU Campus, Kakatiya University, Warangal, TS.
,**Physical Director, University College of Physical Education, Kakatiya University, Warangal.

INTRODUCTION:

In India, the game of Basketball started its journey in 1930 when it was played for the first time. The first Indian National Championship for men was conducted in 1934 in New Delhi. The Basketball federation of India (BFI), which controls the game in India was formed in 1950. Throughout history, Indians learned to appreciate the game because of its fast scoring and intense activity from the beginning until the end. Nowadays, it is considered as one of the widely played sports in India. India is one those first few countries in the history of basketball that adopted the game within a few years of its inception and its teams actually consisted of five players on the court.

Yoga does not mean twisting and bending of the body. It is a comprehensive method of culturing and nurturing the body. Yoga is the cheapest and the most scientific method of ensuring the soundness of the body and the richness of the mind. Yoga provides strength and indirectly aids attitude. A vigorous approach to life is built and strengthened by a practice carried out daily. Yoga training refers to the substitution of skills other than the skills directly involved in the performance of an event that helps to sustain their endurance and muscular-strength. The main objective is to avoid injuries and maintain muscular balance through a period of intense sports training. Further yoga training as the training program of breathing and flexibility in nature, its concurrent effect would have highly positive to the game that underlies endurance. The degrees of requirements in aerobic and anaerobic aspects differ based on positions of the players. But no specific training program is provided for this, even such a disproportion exists. With this perspective, the present study is carried out to find out the effect of yoga training on selected physical and performance variables among Men College Basketball players. All the asanas which have an effect on the diaphragm help to massage the heart and at the same time massage the abdominal organs. Yoga helps to keep the body in proper shape and to increases the power of resistance.

MATERIALS AND METHODS: To achieve the purpose of this study 40 Male Men College Basketball players from Warangal District, Nalgonda District, Karinmnagar District,

and Hyderabad District in Telangana were selected as subjects and their age ranged from 18 to 27 years. The study was formulated as a true random group design, consisting of a pre-test and post-test. The subjects were randomly assigned to two equal groups of twenty each and named as yoga training group and control group. Yoga training group underwent training for six weeks and control group was not given any training. The physical fitness variables namely speed was assessed by 50mts dash, strength was assessed by grip dynamometer, agility was assessed by 'T' agility test, endurance was assessed by cooper 12 minutes run and flexibility was assessed by sit and reach and performance variables namely overhead pass jump shot and blocking were assessed using subjective rating. It was done by three qualified coaches on each skill selected in this study. The rating was done on 10 points scale by each coach and aver- age on each variable was taken as individual score. The subjects were selected randomly, but the groups were not equated in relation to the factors to be examined, hence the difference between means of the two groups in the pre-test had to be taken into account during the analysis of the post-test differences between the means. This was achieved by the application of the analysis of covariance, where the final means were adjusted for differences in the initial means, and the adjusted means were tested for significance.

RESULTS AND DISCUSSIONS: The results were presented in the following tables,

Table - I Descriptive Analysis of Selected Physical and Performance Variables of Yoga Training Group

S.No.	Skills	Pre Test Mean	SD	Post Test Mean	SD	Adjusted Mean
1	Flexibility	20.10	2.95	21.95	2.39	21.28
2	Agility	11.25	0.74	10.30	0.75	10.39
3	Speed	6.20	0.35	5.50	0.38	5.60
4	Strength	41.35	2.68	44.35	1.01	43.52
5	Endurance	7.30	0.65	6.61	0.53	6.57
6	Overhead pass	3.15	1.01	8.05	0.54	8.05
7	Jump shot	4.43	0.71	7.56	0.63	7.54
8	Blocking	3.70	0.72	7.15	1.01	7.25

The above table documents the pre & post tests means, standard deviations and adjusted mean values of yoga training group on selected variables among Men College Basketball Players.

TABLE –II Descriptive Analysis of Selected Physical and Performance Variables of Control Group

S.No.	Skills	Pre Test Mean	SD	Post Test Mean	SD	Adjusted Mean
1	Flexibility	19.40	4.07	19.40	3.72	19.70
2	Agility	11.47	0.46	11.45	0.61	11.40
3	Speed	6.00	0.29	6.05	0.28	6.08
4	Strength	41.90	2.18	43.00	1.03	42.22
5	Endurance	7.40	0.39	7.25	0.50	7.28
6	Overhead pass	3.63	0.81	3.77	0.64	3.71
7	Jump shot	3.47	0.51	3.41	1.20	3.68
8	Blocking	3.51	0.53	3.70	0.61	3.52

The above table documents the pre & post tests means, standard deviations and adjusted mean values of yoga training group on selected skills in Men College Basketball Players.

RESULTS: The results of analysis of covariance on Flexibility, Agility, Speed, Strength, Endurance, Overhead Pass, Jump Shot & Blocking. The obtained F values for flexibility, agility, speed, strength, endurance, were 21.90, 16.14, 7.24, 13.95, 7.56, 96.17, 120.42, 132.10 respectively were greater than the required value 4.01 at 0.05 level of confidence. Since the observed 'F' value was greater than the table 'F' value on all selected variables. Hence there exists significant difference among the groups.

FINDINGS AND CONCLUSIONS: In this study forty Men College Basketball players were examined on their selected physical and performance factors. When sport performance is concerned, physical fitness play a vital role. Yoga training is the modern concept of sports training which combines different training methods. More over specific skills training is the need of the present sport scenario. In the present situation, the contribution of yoga training towards the sports performance is inevitable. This study explains the concept of combining the yoga training with game-specific exercises and found positive outcomes on the selected variables.

From the analysis of data, the following conclusions were drawn.

1. It was found that the yoga training group showed significant improvement in all selected variables among Basketball players. Previous research in this field has been concerned with either anthropometrical change during interventions, or has been concerned with skill-specific improvements.

2. It was also found that the control group did not show significant improvement in all the selected variables.

3. It was also found that the experimental group showed significant improvement in all the selected variables than the control group.

REFERENCE:

[1] Krishna kumar, N, "Yoga and physical fitness." In International Conference on "Metabolic Syndrome in Yoga and Naturopathy (Souvenir) sponsored by the Central Council for Research in Yoga and Naturopathy, karaikudi, Tamil Nadu, India; Department of Physical Education and Health Sciences, Alagappa University (2007).

[2] Greene, J.J.McGuine, T.A., Leverson, G., & Best, T.M. (1993). Anthropometrical and performance measures for high school basketball players. Journal of Athletic Training.

[3] Moorthy, A.M and David Manual Raj, Yoga for health Madras M.J, Publishers, (1983).

[4] Pienarr, A.E., Spamer, M.J., & Steyn, H.S. (1998). Identifying and developing rugby talent among 10-year-old boys: A practical model. Journal of Sports Sciences.

[5] Richard, Aggiss., Paul, Dearing., Brain, Glencross., Denis, Glencross., Don, Mcwatters., lan, Pitt., Ric, Purser., Hugh, Robson., Don, Smart, & Ivan, Spedding. (1984). Coaching Hockey, The Australian way. Australian Hockey Association, Australia.

YOGIC PRACTICE TO DEVELOP SPORTS PERFORMANCES AND BENFITS OF YOGA

***Dr.L.Sandeep Kumar Jadhav, **Dr.R.Arvind Kumar**

* Physical Director, Osmania Medical College, Hyderabad.

**Physical Director, G.H.S .Seetarampet, Hyderabad.

Introduction:

Competition demands, huge hard work and sound will to win the match; every field is connected with competition even in academic field or sports. Everyone is trying to get medals or a place in sports by any means weather it is fair or unfair, in the field of sports ,coaches ,sports scientists, physiologist, psychologist are trying to find out the momentum of success for players. All these science help to develop maximum performance. But our own science i.e."Yoga is untouchable. Energy is the capacity to work, it is needed in every aspects of life, i.e. for sitting, standing, sleeping, reading, dancing or any other major or minor, things requires energy.

This energy is also needed in sports activity can be improved by yogic Asana and Kriyas. The word Yoga comes from the Sanskrit word "Yuj" which means to unite or bind. It is about the union of a person's own consciousness and the Universal Consciousness. The scientific inventions Technological development and rapid processes of Urbanization have improved the standard of 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 to day. Today medical research declares the 90% to 95% of physical disorders are due to **Stress and Tension** (Zaveri and Zaveric; 2006) that's why Natural life through the Yoga is demand of today.

BRANCHES OF YOGA

Health Yoga or Yoga of Postures

Bhakti Yoga or Yoga of Devotion

Raja Yoga or Yoga of Self-Control

Janana Yoga or Yoga of the Mind

Karama Yoga or Yoga of Service

Tantra Yoga or Yoga of Rituals

PRINCIPLES OF YOGA

Proper Relaxation

Proper Exercise

Proper Breathing

Proper Diet

Positive thinking and Meditation

BENEFITS OF YOGA

Provide a holistic approach towards your welfare

Help to improve your strength and flexibility.

Help in renal of toxins in the body and aid in Relaxations

Help to Reduce the Weight

Help in hearing and nourishing the body

Also clams your Mind.

Gives clarity to your thought

It doesn't need any special place, or equipment or clothes

Yoga can enhance Concentration

Also release the Stress from Muscles.

ASANAS

A – BHUJANGNSANA

B – HASTA UTTHANASANA

C – SHALABHASANA

D – DHANURASHANA

E – PASCHIMOTTANSANA

F – ARDHA MASTSYENDRASANA

G – VIPAREETA KARANIASANA

H – USHTRASANA

I – HALASANA

Yoga Asana with their Benefits

1. ***ANJALI MUDRA*** (Salutation Seal)also called as Pranamanjali

   In India people are greeted by this Mudra with verbal Saluation "Namaskar"

   Method:

   Sit comfortably is siddhasana or stand in Tadasana .

   Inhale and bring your palms together.

   Rest thumbs lightly on your Sternum

   Press the hand firmly.

Bow your head slightly drawing the crease of neck toward the centre of your head.

Lift your Sternum into your thumbs and lengthen down along the back or armpit making the back elbows heavy.

Benefits;

Reduces Stress and Anxiety

Clams the Brain

Creates Flexibility in the hands, Fingers, Wrists, and Arms.

Opens the Heart.

Uses in Sports:

--- Boxing , Swimming, Judo, Diving.

2. BASHA PADMASANA

Also known as Budda Padmasana

Benefits:

Helps in keeping the Spine erect

Useful in constipation and improves digestive power

It is Beneficial in Arthritis.

It improves Sexual Health.

Uses in Sports:

--- Archery, Shooting, Fencing.

3. DHANURASANA

Benefits:

Activates and Strengthen all the Major and Minor joints of the body.

Strengthens all the abdominal muscles and organs.

Back muscles thigh macula.

Develops digestive power and removes extra.

Weight and fat from the Stomach and Waist arrears.

Chest, Lungs and Neck are strengthened and activated.

Use in Sports:

Long jump, Gymnastic, Swimming.

4. USTRASANA-Camel Pose

Benefits:

Stretches the front of the body including the Chest, Abdomen and Quadriceps.

Improves Spinal Flexibility.

Uses in Sports:

Rope Mallakhamb, Mallakhamb, Running events.

CONCLUSION:

Yoga is process to control and develop the mind and body to gain good health, Blance of mind and Self Realization, through Yoga has the potential power to make up healthy add to our Vigor, Still most people lack the Knowledge of Systematic practice of Yoga.

REFERECNES:

1.N.S.Ravi Shanker 2002 “Yoga for Health” Pustak Mahal .Delhi.

2.Dr.S.Pal D.D.Agrawal 2003”Yogsanas and Sadhana” Pustak Mahal,New Delhi.

3.P.K.Pradhan- “Yogic Practices for health and Sports Performances”.

A Comparative Study on Achievement Motivation among Athletes and Hockey Players of Andhra University

Dr. Sparjan Raju, Physical Director, Rangaraya Medical College, Kakinada, Andhra Pradesh

Introduction:

Sport Psychology is the scientific study of people and their behaviors in sport. The role of a sport psychologist is to recognize how participation in sport exercise and physical activity enhances a person's development. Beginning, in the 1970, Sport psychology became a part of the curriculum on university campuses. Today, sport and exercise psychologists have begun to research and provide information in the ways that psychological well being and vigorous physical activity are related. Achievement Motivation defined as the need to perform well or the determined the success as the need to perform well or the motivated for success and evidenced by persistence and effort to achieve high performance in sports. Motivation is based on your emotions and achievement related goals. Achievement Motivation is the desire to excel at task.

Modern day sports are very demanding. It requires for the sportsmen and athletes a like to perform to the very best of their abilities and beyond. Individual sport activities such as wrestling and gymnastics have shown to elicit higher anxiety levels than competitive team sport activities such as soft ball and basket ball. Achievement Motivation defined as the need to perform well or the striving for success and evidenced by persistence and effort in the face of difficulties. Achievement Motivation is regarded as central human motivation. Achievement Motivation form to be the basic for good life. People who are oriented towards achievement in general, enjoy life and feel in control, being motivated keeps people dynamic and gives them self respect. They set moderally difficult but easily achievable targets, which help them, achieve their objectives. They do not set up extremely difficult or extreme easy targets by motivated people prefer to work on a problem rather than leaving the outcome to chance. It is also seen that achievement motivated sports persons seem to be more concerned with their personal achievement rather the rewards of success.

Athletics is an exclusive collection of sporting events that involve competitive running, jumping, throwing, and walking. The most common types of athletics competitions are track and field, road running, cross country running, and race walking. The simplicity of the competitions, and the lack of a need for expensive equipment, makes athletics

one of the most commonly competed sports in the world. Athletics is mostly an individual sport, with the exception of relay races and competitions which combine athletes' performances for a team score, such as cross country.

Hockey Field hockey is played on gravel, natural grass, sand-based or water-based artificial turf, with a small, hard ball approximately 73 mm (2.9 in) in diameter. The game is popular among both males and females in many parts of the world, particularly in Europe, Asia, Australia, New Zealand, South Africa, and Argentina. The governing body is the 126-member International Hockey Federation (FIH). Men's field hockey has been played at each summer Olympic Games since 1908 (except 1912 and 1924), while women's field hockey has been played at the Summer Olympic Games since 1980.

Modern field hockey sticks are J-shaped and constructed of a composite of wood, glass fibre or carbon fibre (sometimes both) and have a curved hook at the playing end, a flat surface on the playing side and curved surface on the rear side. All sticks are right-handed – left-handed sticks are not permitted. While current field hockey appeared in mid-18th century England, primarily in schools, it was not until the first half of the 19th century that it became firmly established. The first club was created in 1849 at Blackheath in south-east London.

Objective of the study: The purpose of the study is to find out the level of achievement motivation among Athletes and Hockey Players of Andhra University.

Significance of the study: The study is to determine the significance difference between athletes and hockey players in relation to their achievement motivation of Andhra University.

Hypothesis: Is there any significance difference between athletes and hockey players in relation to their achievement motivation of Andhra University.

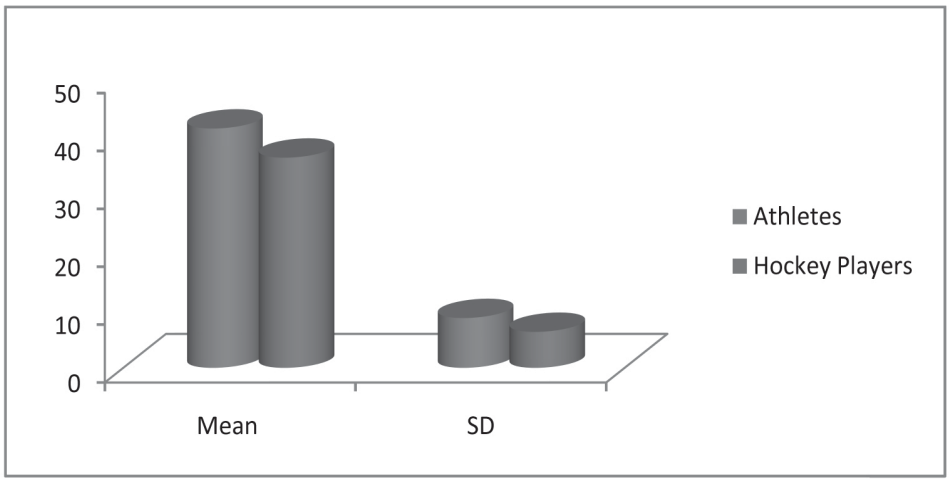
Methods and materials: The sample for the study consists of 50 Male Athletes and 50 Male Hockey Players. The Standardized Dr. B. N. Mukharji Achievement Motivation scale was used for the study. The Questionnaire was administered in small groups.

Results and discussions

The table showing the significance difference between athletes and hockey players of achievement motivation

Sl. No	Groups	N	Mean	SD	t- value
1.	Athletes	50	41.32	8.60	5.14
2.	Hockey Players	50	36.29	6.21	

The Graph showing the significance difference between athletes and hockey players of achievement motivation



Conclusion: Hence it is concluded that the Athletes have high level of Achievement than Hockey Players must have more achievement motivation to excel in sports. The Decision for individual game will be made by Athletes persons is final for his performance. Whereas in Team Game like hockey there will be group effort among all players and their achievement motivation differs from each sports persons to sports persons. It was found the Athletes are having high level of Achievement Motivation than Hockey Players the Athletes required compulsory Motivation to achieve excel in Performance at peak stage. Therefore the Individual Sports persons like Athletes set goals and aims to give level best performance to win the Competition, where as the Hockey Players depend upon their group to give the high level of performance. It is recommended that achievement motivation is compulsory for all sports persons to achieve high excellence in sports. The Coaches must prepare all the sports persons with high level of motivation to excel in sports and games.

References:

- Herman H."A Questionnaire measure of achievement motivation" Journal of Applied Psychology Vol.54,(1970) 252-256
- Kinikema, K. and Harris,J.(1992) sport and the mass media, Exercise and Sport Science reviews 20,127-159.
- Mc Evoy A. and Erikson E. (1981) Heroes and villains: A Conceptual strategy for assessing their influence. Sociological factors, 14,111-122.

KINEMATICS OF THE SHOULDER JOINT IN TENNIS PLAYERS

Dr. A. Shankar Reddy, Associate Professor in Physical Education, Rayalaseema College of Physical Education, Proddutur, Kadapa.
Dr. R. Venkatesh, Principal, Sri Venkatapathappa, College of Physical Education, CVV Campus, Chikka Ballapur, Karnataka

INTRODUCTION:

Shoulder pain and injury are common in tennis players, with a prevalence of 50% for certain categories of age. A majority of shoulder pain is caused by impingement and instability due to repetitive lifting and overhead arm movements. Two types of impingements have been described: external and internal. External types include subacromial impingement of the rotator cuff between the anterior acromion or lateral acromion and the superior humeral head that could occur with serves and overhead shots. Another type of external impingement is the less common subcoracoid impingement of the subscapularis or biceps tendon. It results from contact between the coracoid process against the lesser tuberosity of the humeral head and is more likely to occur at the backhand preparation phase and the late follow-through phase of the forehand. Internal impingement consists of (1) posterosuperior impingement of the supraspinatus and infraspinatus tendons between the greater tuberosity of the humeral head and the posterosuperior aspect of the glenoid when the arm is in extreme abduction, extension and external rotation during the late cocking stage of the serve; and (2) anterosuperior impingement[6] of the deep surface of the subscapularis tendon and the reflection pulley on the anterosuperior glenoid rim that could also occur at the backhand preparation phase and the late follow-through phase of forehand.

The precise causes for these impingements remain unclear, but it is believed that repetitive contact, glenohumeral instability, scapular orientation, rotator cuff dysfunction, and posteroinferior capsular contracture with resultant glenohumeral internal rotation deficit (GIRD) may play a role in the development of symptomatic impingement. Measuring the dynamic in vivo shoulder kinematics seems crucial to better understand these pathologies and to propose an adequate treatment. Indeed, a patient with an internal impingement will be treated differently if the etiology is a posteroinferior capsular contracture with resultant GIRD (that generally responds positively to a compliant posteroinferior capsular stretching program or to an arthroscopic selective posteroinferior capsulotomy and concomitant partial articular sided tendon avulsion (SLAP) lesion repair) or a repetitive contact of the undersurface of the rotator cuff on the posterosuperior glenoid labrum (that can respond to debridement, glenoidplasty or derotational humeral osteotomy). However, such kinematic measurements remain a challenging problem due to the complicated anatomy and large range of motion of the shoulder. To our knowledge, impingements at critical tennis positions and glenohumeral stability have never been dynamically evaluated. Unfortunately, the motion of the shoulder cannot be explored with standard Magnetic Resonance Imaging (MRI) or Computed Tomography (CT) because they are limited by space and the velocity of the movement and might therefore miss some specificities of dynamic motion. Fluoroscopy-based measurements provide sufficient accuracy for dynamic shoulder analysis, but they use ionizing radiation. Motion capture systems using skin-mounted markers provide a non-invasive method to determine shoulder kinematics during dynamic movements. However, none of the current motion capture techniques have reported translation values at the glenohumeral joint. One reason that might explain this void is that current

techniques have either concentrated their efforts on the analysis of a single shoulder bone (e.g., scapula) or focused on the description of humeral motion relative to the thorax rather than to its proximal bone.

Fig. 1

(A) Gilles Walch's theory: the deep layer of the posterosuperior rotator cuff impinged with the posterior labrum and glenoid. (B) Christopher Jobe's theory: the impingement is mainly due to hyperextension of the humerus relative to the scapula. (C) Frank Jobe's theory: lesions in throwing athletes are related to subtle anterior instability.

The purpose of the study was thus: (1) to develop a dedicated patient-specific measurement technique based on optical motion capture and MRI to accurately determine glenohumeral kinematics (rotations and translations) taking into account the whole kinematic chain of the shoulder complex from the thorax to the humorous through the clavicle and scapula, (2) to evaluate impingement, stability, and other motion-related disorders during dynamic movements in high-level tennis players.

METHODOLOGY:

Ten volunteers who are practicing Tennis at Proddatur were recruited for this study. Exclusion criteria were reported previous shoulder injuries, shoulder surgery or contraindications for MRI.

The outcomes of interest were the prevalence of internal and external impingement and glenohumeral instability in this particular population. Furthermore, the prevalence of other radiographic pathologies was evaluated in relation to the main outcomes of interest. The following baseline characteristics were assessed: age, sex, body mass index, shoulder side, and limb dominance.

Rotator cuff examination included the belly-press, bear hug, and Jobe tests, and external rotation strength again resistance. Constant score, American Shoulder and Elbow Surgeons (ASES) score, a single assessment numeric evaluation (SANE) score, and a visual analog scale (VAS) pain score graded from 0 points (no pain) to 10 points (maximal pain) were recorded.

All volunteers underwent an MR shoulder arthrography. The MRI examinations were conducted after a fluoroscopically guided arthrography with a contrast agent and with an anterior approach. MRI was performed with a 1.5 T HDxT system (General Electric Healthcare, Milwaukee WI, USA). A dedicated shoulder surface coil was used. A sagittal T1 weighted fast spin echo sequence, a coronal and sagittal T2 weighted fast spin echo sequence with fat saturation, a coronal and axial T1 weighted fast spin echo sequence with fat saturation, and three 3D fast gradient echo (Cosmic® and Lava®) sequences were achieved. Table 1 details the imaging parameters of each MRI sequence.

Table 1MRI sequences and their imaging parameters.

MRI sequence	Imaging parameters
Sagittal T1 weighted fast spin echo without fat saturation	Section thickness 3.5 cm; intersection gap 0.5 cm TR/TE 380/11; FOV 16 cm × 16 cm
Coronal T2 weighted fast spin echo with fat saturation	Section thickness 4 mm; intersection gap 0.5 cm TR/TE 1920/101,6; FOV 16 cm × 16 cm
Sagittal T2 weighted fast spin echo with fat saturation	Section thickness 3.5 cm; intersection gap 0.5 cm TR/TE 5680/103.5; FOV 16 cm × 16 cm
Coronal T1 weighted fast spin echo with fat saturation	Section thickness 4 mm; intersection gap 0.5 cm TR/TE 320/13; FOV 16 cm × 16 cm
Axial T1 weighted fast spin echo with fat saturation	Section thickness 4 mm; intersection gap 0.5 cm TR/TE 640/26,8; FOV 16 cm × 16 cm
Axial Cosmic® 3D fast gradient echo with fat saturation	Section thickness 1.8 mm; no intersection gap; TR/TE 6.1/3.0; FOV 28 cm × 28 cm
Axial Cosmic® 3D fast gradient echo Without fat saturation	Section thickness 4 mm; no intersection gap; TR/TE 5.7/2.8; FOV 28 cm × 28 cm
Axial Lava® 3D fast gradient echo with fat saturation	Section thickness 5.2 mm; no intersection gap; TR/TE 3.7/1.7; FOV 35 cm × 35 cm

MR arthrograms were assessed by a musculoskeletal radiologist for shoulder pathology including rotator cuff, labral or ligament (HAGL) lesion and bony changes.

Based on the 3D MR images, patient-specific 3D models of the shoulder bones (humerus, scapula, clavicle and sternum) were reconstructed for each volunteer using ITK-SNAP software (Penn Image Computing and Science Laboratory, Philadelphia, PA).

Kinematic data were recorded using a Vicon MX T-Series motion capture system (Vicon, Oxford Metrics, UK) consisting of 24 cameras (24 × T40S) sampling at 240 Hz. The volunteers were equipped with spherical retroreflective markers placed directly onto the skin using double-sided adhesive tape (Fig. 2).Four markers (Ø 14 mm) were attached to the thorax (sternal notch, xyphoid process, C7 and T8 vertebra). Four markers (Ø 6.5 mm) were placed on the clavicle. Four markers were fixed on the upper arm, two placed on anatomical landmarks (lateral and medial epicondyles) and two as far as possible from the deltoid. For the scapula, one marker was fixed on the acromion. In addition, the scapula was covered with 56 markers (Ø 6.5 mm) to form a 7 × 8 regular grid. Finally, additional markers were distributed over the body (non-dominant arm and legs).

Fig. 2 Markers placement.

After appropriate warm-up, participants were asked to perform the following tennis movements: forehand, backhand, flat and kick serves. They were also instructed to perform three motor tasks: internal-external rotation of the arm with 90° abduction and the elbow flexed 90°, flexion of the arm from neutral to maximum flexion, and empty-can abduction from neutral to maximum abduction in the scapular plane. Three trials of each motion were recorded. The same investigators attached all markers and performed all measurements.

Shoulder kinematics were computed with custom-made software using the recorded markers' trajectories. The major drawback with optical motion capture systems is the soft tissue deformation due to muscle contractions and skin sliding, causing marker movements with respect to the underlying bones. In the upper extremity, the scapula is particularly affected. To solve this issue, it was demonstrated that the use of global optimization could help reduce soft tissue artifacts (STA) errors globally. Therefore, we developed a patient-specific kinematic chain model of the shoulder complex (including the thorax, clavicle, scapula and humerus) using the subject's 3D bony models. The shoulder joints were each modeled as a ball-and-socket joint (3 degrees of freedom) with loose constraints on joint translations. The optimal pose of the kinematic chain was then obtained using a global optimization algorithm. To verify its accuracy, kinematic data were collected simultaneously from an X-ray fluoroscopy unit and the motion capture system during clinical motion patterns (flexion, abduction and internal–external rotation of the arm) in a validation test. Glenohumeral kinematics were derived from the marker position data and compared with the one obtained with the fluoroscopy gold-standard. The accuracy of the model for glenohumeral orientation was within 4° for each anatomical plane and between 1.9 and 3.3 mm in average for glenohumeral translation. Moreover, the results showed that the translation patterns computed with the model were in good agreement with previous research.

Finally, the computed motions were applied to the tennis player's shoulder 3D models reconstructed from their MRI data. Fig. 3 shows examples of computed tennis positions. A ball and stick representation of the overall skeleton was also added to improve the analysis and visualization of the motion. The method is summarized in video 1.

Fig. 3

Computed tennis positions (here the right shoulder) according to the three main phases, showing the markers setup (small colored spheres) and the virtual skeleton. Top: serve shot. Position 4, 7 and 8 are commonly known as the cocking, deceleration and finish stages, respectively. Middle: forehand shot. Bottom: backhand shot.

To permit motion description of the shoulder kinematic chain, local coordinate systems (Fig. 4) were established based on the definitions suggested by the International Society of Biomechanics to represent the thorax, clavicle, scapula and humerus segments using anatomical landmarks identified on the subject's bony 3D models. The glenohumeral joint center was calculated based on a sphere fitting method that fits the optimal sphere to the humeral head using the points of the 3D humeral model.

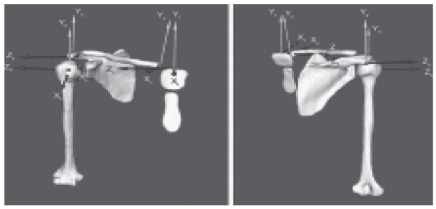


Fig. 4 Bone coordinate systems for the thorax ($X_t\ Y_t\ Z_t$), clavicle ($X_c\ Y_c\ Z_c$), scapula ($X_s\ Y_s\ Z_s$) and humerus ($X_h\ Y_hZ_h$).

Glenohumeral range of motion (ROM) was quantified for flexion, abduction and internal–external rotation movements. This was obtained by calculating the relative orientation between the scapula and humerus coordinate systems at each point of movement and then expressed in clinically recognizable terms by decomposing the relative orientation into three successive rotations. It is important to note that these computations were performed independently from the major anatomical planes (i.e., sagittal, transverse, frontal planes). To facilitate clinical comprehension and comparison, motion of the humerus with respect to the thorax was also calculated. This was achieved with the same method but using the thorax and humerus coordinate systems.

Glenohumeral stability was assessed during flexion and abduction movements and during flat and kick serves at the late cocking, deceleration and finish stages. Glenohumeral translation was defined as anterior–posterior and superior–inferior motion of the humeral head center relative to the glenoid coordinate system. This coordinate system was determined by an anterior–posterior *X*-axis and a superior–inferior *Y*-axis with origin placed at the intersection of the anteroposterior aspects and superoinferior aspects of the glenoid rim (Fig. 5A) . Subluxation was defined as the ratio (in %) between the translation of the humeral head center and the radius of width (anteroposterior subluxation) or height (superoinferior subluxation) of the glenoid surface (Fig. 5B). Instability was defined as subluxation >50%.

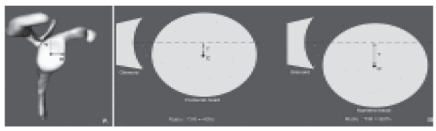


Fig. 5

(A) Definition of the glenoid coordinate system used in this study. (B) Schematic representation of glenohumeral subluxation (C = center of the humeral head; R = radius of the width or height of the glenoid surface; T = translation of the humeral head center). Left: the ratio is 40%, there is no instability. Right: the ratio is >50%, instability is noted.

Impingement was evaluated at critical tennis positions. While visualizing the tennis player's shoulder joint in motion, minimum humero-acromial, humero-coracoid and humero-glenoid distances that are typically used for the diagnosis of impingement were measured (Fig. 6). The distances were calculated in 3D based on position of the simulated bone's model and were reported in millimeters.

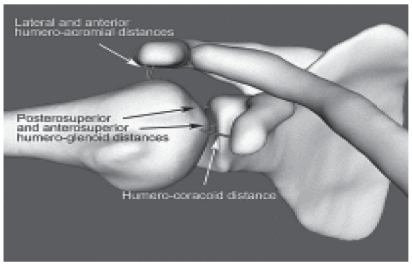


Fig. 6

Visualization of the humero-acromial, humero-coracoid and humero-glenoid distances during motion. The red lines represent the minimum distances. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

Given the thickness of the potential impinged tissues, impingement was considered when the computed distance was <6 mm for the humero-acromial distance and <5 mm for the other distances, as suggested in previous studies.

For the three trials of flexion, abduction and internal–external rotation movements, we computed the mean values and the standard deviations (SD) of the ROM at the maximal range of motion. For all critical tennis positions, we calculated the frequency of impingement and the mean and SD of the minimum humero-acromial, humero-coracoid and humero-glenoid distances. We also computed the percentage of subluxation at the different stages of serve. Finally, we analyzed glenohumeral translations at the different elevation angles during flexion and abduction movements.

RESULTS

The 10 volunteers, nine male and one female, had all been playing tennis for more than 17 years. The mean ± SD age, weight, height and body mass index of the subjects were 39.7 ± 8.9 years, 180.2 ± 7.1 cm, 76.7 ± 8.62 kg, and 23.5 ± 1.9 kg/m^2, respectively. Nine volunteers were right-handed.

None of the tennis players displayed sudden loss of serving ability during the late cocking stage (so-called late "dead arm"). All subjects had a competent rotator cuff. The mean Constant, ASES, SANE and VAS pain scores were 99.2 ± 1.4 points (range, 96 to 100 points), 99.5 ± 1.6 points (range, 95 to 100 points), 95.0 ± 7.5 points (range, 80 to 100 points) and 0.6 ± 1.3 points (range, 0 to 4 points), respectively. Only 2 of the 10 subjects reported shoulder pain at the time of the examination. Nine had a history of shoulder pain during their career. Shoulder ROM determined by motion capture during clinical motor tasks are shown in Table 2. None of the tennis players had 180° ROM in internal-external rotation.

Table 2 Shoulder range of motion (deg) determined by motion capture during flexion, empty-can abduction and internal–external rotation with 90° abduction according to the two referentials (n = 30; 10 subjects, 3 trials).

Motion	Humerus motion relative to the thorax		Glenohumeral motion	
	Mean ± SD	Range	Mean ± SD	Range
Flexion	144.8 ± 8.0	125–157	98.7 ± 9.7	83–116
Abduction	139.4 ± 10.9	119–161	88.8 ± 11.8	65–108
Internal rotation (IR)	44.0 ± 9.8	30–70	22.3 ± 11.1	11–45
External rotation (ER)	52.6 ± 10.8	36–77	58.6 ± 10.3	43–79
Total IR–ER	96.6 ± 17.5	74–147	80.8 ± 14.9	60–107

MR images revealed 11 rotator cuff lesions in six subjects (three interstitial tears of the supraspinatus and PASTA tears in three supraspinatus, three infraspinatus, and two subscapularis tendons), and 6 labral lesions in five subjects (two inferior, two posterior and two posterosuperior). There was no radiographic evidence of Bennett lesions, thrower's exostosis, intraosseous cysts or Bankart lesions.

The type and prevalence of impingement and the bony distances are summarized in Table 3. No subcoracoid impingement was detected during the late follow-through phase of forehand or the backhand preparation phase, but anterosuperior impingement was observed in two subjects during forehand (29% of the cases). Anterior and lateral subacromial impingement occurred during the late cocking stage of serve in three and four subjects, respectively. Posterosuperior impingement during the late cocking stage of serve was the most frequent (seven subjects, 75% of the cases). In this position, glenohumeral translation was anterior (flat serve, mean: 34%; kick serve, mean: 34%) and superior (flat serve, mean: 12%; kick serve, mean: 13%), as shown inTable 4. During the deceleration stage of serve, anterior and superior translation varied from 8% to 57% and from 5% to 34%, respectively. During the finish stage of serve, anterior translation was slightly more intense (flat serve, mean: 46%; kick serve, mean: 42%), while

superior translation remained low (flat serve, mean: 3%; kick serve, mean: 0%). There was no static posterosuperior shift of glenohumeral contact point.

Table 3 Frequency of impingement and minimum humero-acromial, humero-coracoid and humero-glenoid distances (mm) at critical tennis positions (n = 30; 10 subjects, 3 trials).

Distances	Flat serve	Kick serve	Forehand	Backhand
	Frequency Mean ± SD	Frequency Mean ± SD	Frequency Mean ± SD	Frequency Mean ± SD
Lateral humero-acromial	29% 7.5 ± 3.2	42% 6.8 ± 3.7	–	–
Anterior humero-acromial	29% 7.4 ± 2.9	29% 7.0 ± 3.1	–	–
Humero-coracoid	–	–	0% 15.9 ± 1.6	0% 15.0 ± 2.7
Anterosuperior humero-glenoid	–	–	29% 5.5 ± 1.2	0% 6.9 ± 1.3
Posterosuperior humero-glenoid	76% 3.6 ± 1.4	75% 3.3 ± 1.8	–	–

Table 4 Pourcentage of subluxation of the glenohumeral joint during tennis serves (n = 30; 10 subjects, 3 trials).

Shot, position	Anterior–posterior subluxation[a]		Superior–inferior subluxation[b]	
	Mean ± SD	Range	Mean ± SD	Range
Flat serve, late cocking stage	34 ± 9%	14–47%	12 ± 6%	−1–21%
Kick serve, late cocking stage	34 ± 6%	22–44%	13 ± 9%	0–32%
Flat serve, deceleration stage	34 ± 14%	8–57%	18 ± 7%	8–34%
Kick serve, deceleration stage	37 ± 9%	20–56%	19 ± 7%	5–32%
Flat serve, finish stage	46 ± 15%	18–68%	3 ± 5%	−5–14%
Kick serve, finish stage	42 ± 13%	17–67%	10 ± 8%	0–30%

A positive value means that the subluxation is anterior, otherwise it is posterior.
A positive value means that the subluxation is superior, otherwise it is inferior.

During abduction, superior translation of the humeral head in relation to the glenoid was observed until 65°, followed by an inferior translation beyond this amplitude (Fig. 7). Consequently, the lateral and anterior subacromial spaces decreased until 65° and then increased progressively. At rest, the humeral head was slightly anteriorly translated. When flexion began, posterior translation was noted until 70° followed by a return to a more anterior translation (Fig. 8). There was no posterior subluxation at any degree of flexion.

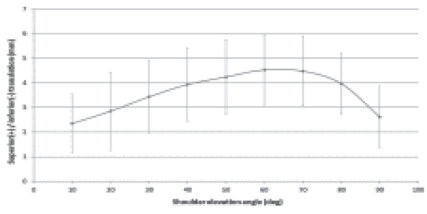


Fig. 7

Superior–inferior translations of the humeral head center relative to the glenoid during abduction. Means and standard deviations for all 10 shoulders.

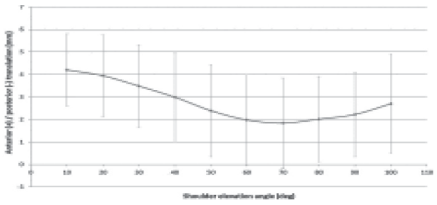


Fig. 8

Anterior–posterior translations of the humeral head center relative to the glenoid during flexion. Means and standard deviations for all 10 shoulders.

DISCUSSION

Shoulder pain and pathologic lesions are common in overhead athletes. In the present study, 9 of 10 tennis players presented with radiographic signs of structural lesions that could be related to impingement syndrome that occurred with overhead arm movements. However, the precise causes for these lesions remain unclear. It might result from several factors (e.g., repetitive contact, subtle glenohumeral instability, torsional overload with repetitive hypertwisting, scapular orientation and dyskinesis, etc.). The theory of internal impingement in these athletes, which occurs with the arm in the cocked position of 90° abduction, full external rotation and extension holds that repeated contact between the rotator cuff insertion and the posterosuperior glenoid rim lead to articular-sided partial thickness rotator cuff tears and superior labral lesions. If the contact is physiologic, repetitive contact applied at a rate exceeding tissue repair or torsional and shear stresses may be responsible for rotator cuff or labral damage.

This article evaluated dynamically and in vivo the different aforementioned causes of lesions in tennis players. As shown by the results of this study, anterosuperior and subacromial impingement remain occasional in this particular population. No shoulder instability could be noted during tennis movements. However, posterosuperior impingement was frequent when serving. Thus, as expected, this movement seems to be the most harmful for the tennis player's shoulder. Regarding this type of impingement, repetitive contact could be the cause of posterior and posterosuperior labral lesions, as well as PASTA lesions of the posterosuperior cuff. Indeed, we were not able, as other authors, to confirm the role in the impingement development from other culprits like (1) static posterosuperior shift of glenohumeral contact point leading to torsional overload or (2) instability due to gradual repetitive stretching of the anterior capsuloligamentous structures. Nevertheless, this could be explained by the fact that there are many kinds of overhead athletes, and tennis players do not have the same external rotation in abduction and arm speed as do, for example, throwers which have previously been studied. In addition, this could also reflect the efficiency of injury prevention programs that have been established in many tennis clubs (e.g. promotion of compact serve).

Concerning subacromial impingement during abduction, superior translation of the humeral head in relation to the glenoid was observed, followed by inferior translation beyond 65°. Such superior and inferior translation confirms previous observations Consequently, subacromial space decreased until 65° and then increased progressively. Anterior and lateral impingement could hence occur at the beginning of abduction and not at or above 90° like previously believed.

Regarding motion of the glenohumeral joint, the range in internal and external rotation should remain constant between the dominant and the non-dominant arm, with a shift in the external rotation sector of the dominant arm in overhead throwers. We could not confirm the 180° rule in tennis players, as the mean values of the ROM computed in this study were approximately two times smaller than similar measurements found in handball players. We are,

therefore, not convinced that a contracted posterior band, evoking the posterior cable to shorten with resultant GIRD, is a theory that can be extrapolated in tennis players. This theory might be specific to baseball players.

Finally, we also evaluated posterior humeral head translation in relation to the glenoid during flexion. An hypothesis of the development of posterior static subluxation described by Walch et al. could be posterior subluxation during normal anterior elevation. At rest, the humeral head was slightly anteriorly translated. When forward flexion began, slight posterior translation was noted until 70° followed by a return to a more anterior translation. There was no posterior subluxation at any degree of flexion. Therefore, since no dynamic or physiologic posterior instability was observed, it is probably not responsible (at term) for static instability in these subjects without hyperlaxity.

We acknowledge the following limitations in our study: (1) the accuracy of the kinematics computation from motion capture data, which was only validated for low velocity movements. Glenohumeral orientation errors were within 4° for each anatomical plane, which is acceptable for clinical use in the study of shoulder pathology.There is potential for difficulty in the calculation of glenohumeral translation from skin markers due to the high mobility of the shoulder. Although the translations could be significant with our model, we demonstrated in the validation work and in this study that the computed translation patterns and amplitudes were in good agreement with published data. To our knowledge, this non-invasive method is the first attempt to calculate both rotations and translations at the glenohumeral joint based on skin markers. (2) The use of bone-to-bone distances to assess impingement which do not take into account precise measurements of the thickness of the impinged soft tissues. One improvement could be to perform a more advanced simulation accounting for the 3D shapes and movements of cartilage, the labrum and the rotator cuff. (3) The findings may not be generalizable. This was a relatively small sample size of primarily males in a single sport and skill level, with a narrow age range. (4) The use of 1.5 T MRI, as stronger magnet strengths would enhance image resolution. Moreover, MRI is not a gold standard to demonstrate bony changes. This study may hence underestimate bony lesions such as Bennett exostosis, and (5) as volunteers were not known for any pathology, a criticism could be to have tested healthy players that would prevent extrapolation of results to complaining patients. However, 9 out of the 10 volunteers reported previous symptoms, so we think that they were a good representation. Despite these limitations, we do believe that they did not call into question the results of this study.

CONCLUSION:

Tennis players presented frequent radiographic signs of structural lesions that could mainly be related to posterosuperior impingements due to repetitive abnormal motion contacts. This is the first study demonstrating that a dynamic and precise motion analysis of the entire kinematic chain of the shoulder is possible through a non-invasive method of investigation. This premier observation offers novel insights into the analysis of shoulder impingement and instability that could, with future studies, be generalized to other shoulder pathologies and sports. This original method may open new horizons leading to improvement in impingement comprehension.

Practical implications

- Anterior and lateral subacromial and posterosuperior impingements are frequent in overhead athletes.

- Repetitive contact in extreme abduction, extension and external rotation could be the cause of posterior and posterosuperior labral lesions, as well as PASTA lesions of the posterosuperior cuff.
- Coaches and medical staff should consider promotion of compact serve.
- This study has highlighted the benefits of a non-invasive, dynamic and in vivo evaluation of shoulder pathologies.

References

1. Abrams, G.D., Renstrom, P.A., and Safran, M.R. **Epidemiology of musculoskeletal injury in the tennis player.** *Br J Sports Med*. 2012; 46: 492–498
2. Neer, C.S. 2nd. **Anterior acromioplasty for the chronic impingement syndrome in the shoulder: a preliminary report.** *J Bone Joint Surg Am*. 1972; 54: 41–50
3. Nyffeler, R.W., Werner, C.M., Sukthankar, A. et al. **Association of a large lateral extension of the acromion with rotator cuff tears.** *J Bone Joint Surg Am*. 2006; 88: 800–805
4. Gerber, C., Terrier, F., and Ganz, R. **The role of the coracoid process in the chronic impingement syndrome.** *J Bone Joint Surg Br*. 1985; 67: 703–708
5. Walch, G., Boileau, P., Noel, E. et al. **Impingement of the deep surface of the supraspinatus tendon on the posterosuperior glenoid rim: an arthroscopic study.** *J Shoulder Elbow Surg*. 1992; 1: 238–245
6. Gerber, C. and Sebesta, A. **Impingement of the deep surface of the subscapularis tendon and the reflection pulley on the anterosuperior glenoid rim: a preliminary report.** *J Shoulder Elbow Surg*. 2000;9: 483–490
7. Jobe, C.M. **Posterior superior glenoid impingement: expanded spectrum.** *Arthroscopy*. 1995; 11:530–536
8. Burkhart, S.S., Morgan, C.D., and Kibler, W.B. **The disabled throwing shoulder: spectrum of pathology. Part I: Pathoanatomy and biomechanics.** *Arthroscopy*. 2003; 19: 404–420
9. Levigne, C., Garret, J., Grosclaude, S. et al. **Surgical technique arthroscopic posterior glenoidplasty for posterosuperior glenoid impingement in throwing athletes.** *Clin Orthop Relat Res*. 2012; 470: 1571–1578
10. Riand, N., Boulahia, A., and Walch, G. **Posterosuperior impingement of the shoulder in the athlete: results of arthroscopic debridement in 75 patients.** *Rev Chir Orthop Reparatrice Appar Mot*. 2002; 88:19–27
11. Riand, N., Levigne, C., Renaud, E. et al. **Results of derotational humeral osteotomy in posterosuperior glenoid impingement.** *Am J Sports Med*. 1998; 26: 453–459
12. Zhu, Z., Massimini, D.F., Wang, G. et al. **The accuracy and repeatability of an automatic 2D–3D fluoroscopic image-model registration technique for determining shoulder joint kinematics.** *Med Eng Phys*. 2012; 34: 1303–1309

NUTRITION AND HABITS

*Dr. L.Sandeep Kumar Jadhav, **Dr. R. Arvind Kumar

*Physical Director, Osmania Medical College, Hyderabad.
**Physical Director Teacher, G.H.S. Seetarampet, Hyderabad.

First and for most in this world we have performance to perfect health. We should think it that for progress of life, become healthy for whole life Knowledge of food and Nutrient is directly related in which food is much more important food nutrition always promote good health. Health professional have an important role on promoting health by assisting consumers in making informed food choices:

Nutrition may be simply defined as:

"The food you eat and how your body uses it", Nutrients are the chemical which can be obtained from food that allow the proper functioning of the body. Nutrient play may function as follows:

Providing energy for exercise.
Providing structural material as for Bones and Muscles.
Participating in the regulation of Body Process.

There are 50 different Nutrient similar ones are grouped together categories include Carbohydrate, Fat, Protein, Vitamins', Minerals, and Water minerals are needed in small amount called trace elements (e.g. Zinc, Iron, Copper) Non-Nutrient complements of food include Fiber, Caffeine, Alcohol, most food additives.

Nutrition plays a significant role in the prevention of illness as well as in treatment and recovery. We should improve the taste by adding herbs, Spices or Flavor enhances. Such as mono sodium glutamate (MSG) government is working to develop better guidelines and programmers for Nutrition, perhaps even specialized recommendation for physically active. Nutrient for athletes will never be as straight forward as "Take this Pill " "Eat this Bar", Calories requirements of athletes depends on body size demands of the sport person required as well balanced diet which contains adequate energy and Nutrients to maintain both normal and daily activities and activities associated with training and competition.

With technological advancements ever increasing activities on sort. Nutrient has become an integral / central part of sport activities Sports Nutrition is a discipline and

Physiological scientific knowledge for the purpose of promoting optional performance while remaining health.

Gating Behavior and Nutritional Status are among the factors that contributes performance in sports. The need for adequate energy and nutrient intake is especially relevant for adolescent sports participants given that total Nutrient needs during adolescent are higher than any other time in the life cycle.

Particularly Protein, Iron, Zinc and Calcium among adolescents participating in weight related sports and power team sports and compared energy and nutrient in take of these groups to their non-involved peers.

We must create our correct blend by distributing our energy supply between three sources that bending is as follows:

% Daily Calories	***Food Type***	***Approx Energy yield per grams***	***Sample of Food***
57	Carbohydrates	4 Calories	Sugar, Sweet, Bread and Preserves cake, etc.
30	Fats	9 Calories	Vegetables and Nut oils, animals fats ,Dairy Produce etc.
13	Proteins	4 Calories	Egg, Milk, Meat, Fish, Soya etc.

Body wt in Kg	50	55	60	65	70	75	80	85
Basic energy requirement in Calories per day	1600	1760	1920	2080	2240	2400	2560	2720
2 Buss	30		10		03			
Total	340		84		86			

By referring to any of the several foods it is now possible to put together a **Diet for one Day**

DIET	*CARBOHYDRATES(Grams)*	*FAT(Grams)*	*PROTIES(Grams)*
4 Slices Bread	52	03	10
4 Portions of Margarine	--	08	--
4 Slices Cheese (60Grams)	01	12	12
4 Glasses Milk (600 ml)	28	09	21
8 Cups teat sugar/milk	64	--	--
Good portion Meat(150Grams)	--	27	30
Gravy	--	15	--
1 Portion vegetables (150 Grams)	10	01	04
4 Boiled Potatoes (200 Grams)	40	--	02
3 Pieces Fruit (450 Grams)	45	--	--
4 Glasses coke	70	--	--

REFERENCES FOR FURTHER READING:

1. B.A.A.B. National Coaches-Senior Coach Coaching theory Manual",-Francis House, Francis Street London S.W.I.P.ID.L-1998.

2. Manual of Nutrient –Bush D & Rotertson J.H.M.S.O.-1976.

3. Diet in Sports-Paish W.H.C.E.P. Publication-1979.

A VIEW ON SPORT PSYCHOLOGY DEVELOPMENT IN INDIA

Gopi Barupati, Physical Director, AVV Junior College, Warangal, TS
Dr. Yerra Sridhar Raju, Swastik Manovikasa Hospital, Kothawada, Warangal, TS.

INTRODUCTION

That psychology grew out of methods of philosophy, is an open secret today. Within a few decades of the modern era of science and education, psychology developed into a great panorama of highly-specific and specialized branches viz. educational psychology, child psychology, military psychology, experimental psychology, developmental psychology, legal psychology, industrial psychology etc., to quote a few. Sport psychology is a recent addition to this pantheon; a concrete concept of the subject began to appear only after the First International Congress of Sport Psychology at Rome in 1965. The physical educators, who constituted bulk of the participating audience at this congress, carried home some image (though still hazy) of sport psychology, evincing interest and stimulating research in different behavioral aspects of performance in activity and sport as well as in the application of psychological principles in the training of athletes for competitive endeavours. It is little surprise that the fast-track development of sport psychology as a subject of academic interest and practical application took place in Europe (especially in the Eastern Bloc) and the United States. Elsewhere, the progress on this account was rather slow.

As an area of academic interest, research and training, the development of sport psychology in India can neither be thoroughly discussed nor clearly understood without reference to the growth of physical education in general and organized sport-coaching system in particular. Historically, it all began with the establishment of Y.M.C.A College of Physical Education in 1920 at Madras (Chennai), where curricula of the newly introduced teacher-training courses – certificate, and diploma in physical education – included the study of principles of educational psychology in rudimentary form perfectly in line with the general pattern of teacher-education and curricular arrangement of the training courses. Other colleges of physical education that appeared on the scene in due course followed suit. Consideration of educational psychology or psychology with special reference to physical education (as it was known then) an essential ingredient of the curricular structure of the professional courses in physical education became perhaps the first important milestone in

the development of sport psychology as a subject of great significance "largely on academic lines" (Kamlesh, 2001). The emphasis on research and training came at a little later stage.

With the introduction of master's course in physical education in 1957 both at Laxmibai National College of Physical Education, Gwalior, and Punjab Government College of Physical Education, Patiala simultaneously, (and subsequently at many other institutions), educational psychology became a sport-oriented subject and came to be better known as psychology of physical education and sport.

REASONS FOR DEVELOPMENT

This situation continued until 60s and 70s, when, at the Global level, sport psychology began to shape as an emerging discipline of applied nature. Thereafter, mainly on account of changing academic scenario in physical education, the inspired and academically sound physical educators and coaches who were sponsored to German Democratic Republic and Soviet Union for updating themselves under the sports cultural exchange programme of the Government of India brought into the country the concept of sport psychology as it is understood today. This went a long way in creating a niche for this newly emerging discipline in the university academia and institutions of sport especially the National Institute of Sports, Patiala.

With the publication of sport psychology studies in the international journals of sports medicine, physical education and sport psychology, which began to pour in the country, convinced the physical educators and sports coaches that it was high time sport psychology raised itself from the status of a class-room subject and looked beyond the narrow confines of academics. The portals and precincts of teacher training institutions began to reverberate with the clarion call of the coaches for developing performance-enhancement strategies to be applied in the training of all kinds of athletes as a long-term focus of sport psychology.

Against this general background, the two prominent reasons for the development of sport psychology in India are well known to all and sundry: First, there was an all-round recognition especially among other sports scientists (physiologists, sports medicine practitioners, experts in biomechanics) of the fact that the performance-enhancement – both in exercise and sport – could not be assured without due consideration of certain crucial psychological factors. Sport & exercise physiology and sport biomechanics had already found an important place in the curricular fabric of the professional courses in physical

education and sports, and were also acclaimed as potential areas of research. Gradually, it became clear that performance-enhancement, in fact, hinged on a sport science triad – biomechanics, sport physiology and sport psychology – rather than one or two of these. Obviously, inputs and benefits from biomechanics and sport physiology were of little help unless propped up by psychological infusions. Our colleagues in exercise and sport physiology supported an interest in mental processes, as many scientists and practitioners came to understand that mental aspects were also important for elite (high) performance in sports. This realization speeded up the metamorphosis of psychology with special reference to physical education into sport psychology (as it is known today) with immense scope for applied research. Second, it dawned on the coaches and athletes that in order for them to be successful at the international sports competitions mental training (also known as mental conditioning or mental preparation) was as important as physical preparation, especially when competition was becoming more intense as performance horizons were receding "beyond the utmost bound of human thought". Evidently, the decline of performance of the Indian sportspersons at the international athletic encounters in such well practiced sports such as hockey, football, volleyball etc., 'generated a great deal of concern and hastened the acceptance of sport psychology as one area to aid the performance of athletes' (Kamlesh & Mohan, 1987). Slogans like "psyche up sportsman", "catch them young", "sport war", "training body is not enough, train the mind too", and many others became a battle cry with people everywhere, paving the way for sport psychology to grow in importance.

The establishment of a Faculty of Sports Sciences in 1980 at the Netaji Subhas National Institute of Sports, Patiala accelerated the development of sports sciences in general and sport psychology in particular in India. Large scale appointments of qualified personnel in the departments of exercise physiology, biomechanics, sport psychology, nutrition etc., were made in order to get the things going. These sports scientists, though working under several constraints, undertook a few research studies specific to their field and also provided needed-based backup to the national teams during their coaching camps varying in periodicity of fifteen days to six months. Sport psychology turned a new leaf as it became a subject of practical application in the true sense of the term when sport psychologists at the National Institute (including regional centres at Bangalore and Kolkatta) were associated with training of sportspersons prior to international fixtures, and at times accompanied the teams abroad when they took part in the Asian and/or Olympic contests.

RESEARCH AND ACADEMIC ACTIVITIES

The interest in sport psychology research began to manifest more prominently in the 1970s in universities, primarily at the master's degree level, and later at M.Phil., and doctoral level. Though the research studies undertaken by the scholars of these courses were severally handicapped by debilitating resource crunch, lack of sophisticated equipment, expert guidance, and methodological problems, the research endeavour, nevertheless, prepared a fertile ground for a brighter future. Under such a circumstance, most research studies that resulted from this primary thrust, were, by and large, descriptive in nature – either analytical or comparative surveys – and correlation studies; experimental studies were few and far between. These studies (Kamlesh, 1990) could be categorized as: - studies relating to personality centered on athletic and non-athletic groups of junior, youth, senior and elite levels; - comparative studies relating to participants versus non-participants in physical activity and exercise programmes at school, college and university levels; - correlation studies involving selected psychological variables along with anthropometric, physiological and biomechanical parameters; - studies in cognitive behaviour; - studies in motivation, interest, aptitude, intelligence etc.; and - experimental studies in reaction time, cognitive behaviour, motivation etc.

Creditably a few studies undertaken by the Indian sport psychologists and/or physical educators could measure up to international standards and were well reported in the international journals (International Journal of Sport Psychology, The Sport Psychologist, International Journal of Physical Education, The Research Quarterly for Exercise and Sport etc.). The bulk of studies, however, were found seriously flawed on account of design, instrumentation, data treatment and language. Absent in the research work of this kind was a professional approach; it was amateurish and non-directional. Most studies were bereft of specific focus,

Objective, need, and usage. By and large, the research effort in India has been individualistic, with personal excellence as the major objective. There was no thrust on creating a strong theoretical base for sport psychology and establishing a behavioral data bank on various categories of athletes across sports so important for research and development. Consequently, in quality the research papers thus produced over the years did

not measure up to research standards and were not fit to find place in the annals of international research

Today, sport psychology is a recognized option for study in the department of psychology at several universities resulting in a flood of research studies conducted on athletic behaviour and under activity settings. It is a compulsory curricular subject in all the physical education courses without exception and several universities offer doctoral programmes in sport psychology both on part-time and regular basis. The study of sport psychology is mandatory for the students of sport coaching diploma and diploma in sports medicine at the National Institute of Sports, Patiala.

The Laxmibai National Institute of Physical Education (Deemed University), Gwalior, Laxmibai National College of Physical Education, Thiruvananthapuram under the Sports Authority of India, and the Netaji Subhas National Institute of Sports, Patiala (and its regional centres at Bangalore and Kolkatta) excel all other institutions in offering facilities for sport psychologists to undertake multi disciplinary research projects and engage in multidimensional direct specialist athlete interaction, free and frank communication, data-gathering and data processing facilities, documentation and publication of research. For the last many years, these institutions have turned out the greatest number of research degree holders in sport psychology. The research in sport psychology in India is funded by the University Grants Commission, Ministry of Youth Affairs and Sports, Indian Council of Social Science Research and other agencies depending on resources available.

SPORTS PSYCHOLOGY ASSOCIATION OF INDIA

In the mid-70s a few enthusiasts from physical education and psychology founded the Indian Association of Sports Psychology during a national seminar at Hyderabad. The newly formed society organized a national meeting and also published the first issue of the Journal of Sports Psychology but absence of continuing financial support and no-too-sound organizational setup rendered the association defunct.

OBJECTIVES OF THE SPAI:

A conglomerate of physical educators, psychologists, sports coaches, sports medicine personnel, doctors, sports administrators and others, the Sports Psychology Association of India has the following major objectives:

1. to promote advancement of the knowledge in the field of sports psychology;
2. to facilitate communication and arrange scientific meetings and conferences among the individuals actively engaged in teaching and/or pursuing research in psychology having direct relationship with and implication in physical activity and sports;
3. to make it possible to gather and communicate to the members and selected institutions/organizations latest information on the subject, and related concerns; and
4. to admit to its fold members from such diverse fields as physical education, psychology, sports, medicine and other allied disciplines, and create a well-knit society of individuals devoted to a common cause, and strengthen it.

MAJOR FEATURES OF THE SPAI

1. The SPAI is a voluntary organization of the well-focused and self-less individuals having an open mind and professional approach towards generation, proliferation and application of the knowledge of psychology as related to all kinds sport and physical activity – both in their competitive and recreational nuances.

2. The Organization is registered under the Society's Act XXI of 1860 at with the Registrar of Firms and Societies, Punjab, Chandigarh.

3. Any individual having good academic credentials and a clear vision of the subject of psychology is welcome to join the SPAI and he/she can aspire to be at helm of affairs in the organization without distinction of caste, creed, language, or institutional affiliation.

4. The SPAI is a non-profit organization and no financial gains are attached to any of the positions held by its members.

5. The SPAI has linkages with International Society of Sport Psychology, and Asian South-Pacific Association of Sport Psychology on the one hand, and national sports federations, and such organizations as the Sports Authority of India, National Institute of Sports, and others on the other.

I could hardly believe that you would be having such a fantastic fund of knowledge about the working and training of mind so elaborately discussed in your ancient Yogic,

philosophic and spiritual literature. If you expose the world of sport psychology to all this, really wonderful things could be accomplished.

REFERENCES

Kamlesh, M.L. & Mohan, Jitendra (1987) The development of sport psychological research in India. The Sport Psychologist, 1, 257-261.

Kamlesh, M.L. (1987) Sports psychology in India: a historical perspective. An unpublished annual report of the Honorary Secretary, Sports Psychology Association of India, Patiala.

Kamlesh, M.L. (1990) A review of research studies in sports psychology in India up to 1986. In L.A. Thakkar, Jitendra Mohan, and M.L. Kamlesh (Eds.) Psychology and Sports Excellence.Ahemdabad, Gujrat University , 227-256.

Kamlesh, M.L. (1992) Sport psychology in India. In John H. Salmela (Ed.) The World Sport Psychology Source Book. Champaign, Illinois; Human Kinetics: 20-22.

Kamlesh, M.L. (2001) Sport psychology in India. In Ronnie Lidor. Tony Morris, Nicole Bardaxoglou & Benno Beckor, Jr. (Eds.) The World Sport Psychology Source Book (2nd edition). International Society of Sport Psychology, 50-55.

PERSONAL HYGIENE FOR ADOLESCENT GIRLS AND WOMEN

Odela Raju, Part time instructor, National Institute of Technology, Warangal

Introduction:

Hygiene refers to the set of practices perceived by a community to be associated with the preservation of health and healthy living. When a young girl starts to mature, many physical changes take place. Some of these changes include an increase in body hair, an increase in sweat (accompanied with body odor), facial skin problems and an oily scalp. Good personal hygiene should be practiced to combat the problems associated with these changes and to avoid contracting any diseases related to poor personal grooming.

A finely tuned body in good working order from head to toe promotes and reflects a sense of wellbeing. If we treat our body with respect we actively encourage a feeling of vibrant health, energy and confidence.

Understanding how our body works and knowing how to take care of it on day to day basis are the two of the important elements to fitness and wellbeing. Such type of body care includes looking after our skin, whatever its type, caring for our hair, keeping hands and nails well groomed Booking after teeth and gums and also maintain cleanliness during the menstrual cycles. We have to also keep our eyes and ears healthy as these are delicate organs which need regular care and attention to serve us well for life. Having good personal hygiene is important for both your health and physical appearance. Because a man and a woman's chemistry is different, a woman needs to pay more special attention to her personal hygiene, especially during the days we have our menstrual period. Personal hygiene is the process of maintaining cleanliness. Individual standards for personal hygiene vary from person to person depending on factors like culture, personal preference and learned habits. Laying out specific objectives for person^' hygiene is a helpful way to ensure that all goals are met. Understanding the consequences of poor hygiene can serve as motivation for planning and accomplishing personal hygiene objectives.

Everyone needs to understand the basics of personal hygiene. Personal hygiene is the process of keeping your body clean. If you stop taking care of yourself and allow your level of personal hygiene to fall, you have a greater risk of becoming sick or being ostracized by others.

This paper discuss about the personal hygiene on day to day basis especially for teenage girls and young women.

Personal hygiene basics:

SHOWER DAILY: Shower daily to remove the offensive odour that develops when bacteria caused from sweating is left on the skin to grow. The odour from these bacteria has a strong smell to it, especially in the area of the armpits and the feet. The groin area may develop an unpleasant odour. Cleanse your body with warm water and a gentle soap. Apply deodorant, antiperspirant or talcum powder to underarms to keep sweating under control and to mask underarm odour if needed. An antiperspirant works to stop sweating, and it may help sweat dry up. Deodorant or talcum powder is designed to mask the unpleasant odour that comes from bacteria growth associated with sweating. Antiperspirants and deodorants may be irritating to sensitive skin.

KEEP HAIR CLEAN: Wash your hair at least once in a week basis and use oil-free hairstyling products. The sebaceous glands make more than enough oil in the teen years, so do not add to it with greasy products. The objective of hair care is to keep the hair clean and well-groomed. Choosing a shampoo formulated for your particular hair type can produce the best results.

Take care of your hair. Care for your hair each day. Don't forget to comb it. Knotty, frizzy, and unkempt hair is harder to manage or clean.

Nails Hygiene: Trim your nails regularly to keep them how you like, also washing your hands often should keep them relatively clean underneath, but if not, use an under nail scraper to get the dirt under your nails. Clip and clean your fingernails and toenails at least once every week or once every two weeks, it depends on how much your nails grow.

FACIAL SKIN HYGIENE: Wash your face two times a day without fail. Adolescents go through a period in which their oil glands produce more oil, and some adolescents wind up with acne. Use skin care products made to treat acne, and if your acne symptoms do not improve after eight weeks, go to a dermatologist to see what he/she can do to help you. Avoid using anything on your face that contains oil if you have acne, and do not rub the skin on your face with a heavy hand. Do not spend too much time under the sun, and keep your hands off your face. Skin care is vital for a youthful and attractive appearance. Daily washing of the face skin is vital for a youthful and attractive appearance. Daily washing of the face and body with mild soap and water is the best way to remove oil and debris that cause acne breakouts. Regular exfoliation using a scrub brush or exfoliating lotion helps remove dead skin cells that build up and clog pores.

BODY HAIR HYGIENE: Shave your under arms and legs if you desire, but do so with care. Use a new blade if you are going to shave with a manual razor to lessen your risk of cutting yourself. You can also use hair removing creams, waxing to remove hair on your arms and legs. Take your time when shaving to avoid nicks and cuts. Removing hair from under arms reduces the body odour to a large extent.

Many women feel cleaner and more confident after they remove some or all of the hair from their genital region. You can rid yourself of pubic hair by waxing, shaving or using a depilatory cream. Do not apply the cream to your genitals it can cause burning and tissue damage.

Oral Hygiene: Do not let halitosis, bad breath, become a problem. Brush your teeth after eating, especially after eating foods that contribute to bad breath. Clean your teeth for two minutes minimum, and replace your toothbrush after six months. Brush your tongue as well as the top of your mouth, using a light touch. Use floss to remove plaque and pieces of food from between your teeth. Schedule an appointment to have your teeth cleaned by a dentist once a year.

Cover your mouth or turn away from people when you cough and sneeze. It's not just manners, as you could spread illness even when healthy. It is now being taught to cough or sneeze into the crook of your elbow sleeve. This keeps germs from your hands which might contaminate others before you get an opportunity to wash.

CHANGE YOUR CLOTHES EVERY DAY: Put on clean clothes even' day to prevent smelling bad, as fabrics have a tendency to absorb odours. Make sure your socks and undergarments are freshly laundered. Wear dresses and blouses made of cotton or dresses which have a cotton lining as this fabric and other natural fabrics are good at blotting up perspiration. Do not wear clothes with stains, wrinkles, and smells on them. Sometimes reusing clothes are okay, as long as you are sure they're not dirty.

HAND WASHING: Hand washing is instrumental in preventing infections of all kinds. Food-borne illnesses, contagious infections like the flu and many other pathogens can enter the body via unwashed hands According to medical practioners hands should be washed for 20 seconds with soap and water to effectively kill harmful microbes. Always wash hands before eating and after handling garbage, pets or raw meat. While anti-bacterial hand sanitizers are a convenient option, the friction created by soap-and-water washing is the most effective method for killing germs. The basic rule is to wash hands before preparing food and after handling uncooked meat and poultry, before eating, after changing diapers, after coughing, sneezing, or blowing one's nose, after using the bathroom, and after touching animals or anything in the animal's environment. Use warm water

and soap every time you wash your hands. Create a soapy lather and rub your hands for 15 to 20 seconds. You can sing Happy Birthday in this amount of time.

Practice good bathroom hygiene. Always wipe yourself clean and wash your hands using plenty of soap and warm water.

EAR HYGIENE: The ears are normally efficient, self-cleaning organs that take care of themselves. The wax in the outer ear contains a bactericide that helps to trap dust and potential irritants. Body warmth melts the wax which travels outward with the help of the movement of the hairs in the outer ear. Never poke the wax with any type of cotton bud, hairpin or any instrument this can damage the ear drum and can result in deafness. Wash or wipe only the outer ear with a wash cloth.

VAGINAL HYGIENE: Don't use soap to clean your private parts, this will disturb your natural pH-balance, and might result in yeast infection. It is good to clean any of the sweat and bacteria gathered around your inner thighs and around your private general area, but there is no need to clean the outer or especially inner parts of your vagina. The vagina is a self-cleaning ecosystem of good bacteria's, and your discharge (the clear fluid that comes from your vagina) is what sweeps out anything unwanted. Do not douche (a method of washing inside a part of someone's body, using. A narrow stream of liquid) as doctors do not recommend douching. Wash the pubic area with a mild soap and water to keep the area clean and free of odour. See a gynecologist if you experience abnormal itching, pain, a burning sensation or a yellow/green or lumpy white fluid coming out of your vagina or if you experience pain when you urinate.

Women, especially the college going and working professionals often have problems about maintaining hygiene during periods. The dirty restrooms, unavailability of paper towels, water problems are some of the common problems encountered when they are badly in need during this time.

Women are more prone to infection if they do not maintain a proper hygiene during this time. Here are few suggestions on personal hygiene during menstruation.

Menstrual Hygiene Tips

1. What Should Your Bag Contain: Paper towels, sanitizers, sanitary pads, water, chocolates, pain killers (not advised but only in case of emergency). The paper towels will help in cleaning, sanitizers keep your hands dry and smell fresh, pads for changing. Water and chocolate to provide you energy and make you feel better. Pain killers if you suffer from severe muscle cramps.

2. Never calculate the number of napkins (sanitary pads) you use as it is at the cost of health and personal hygiene. Discard it after certain hours of use as it may stink due to sweat and the damp pad may even irritate skin.
3. In case you are using homemade cloth napkins wash them properly with soap and water and dry them in sun to get rid of all the bacteria present on it.
4. Soak the stained clothes in warm soapy water and wash it after minutes. Stacking up the stained clothes for long will make stains stubborn and stink even after wash.
5. For personal menstrual hygiene, maintain a separate set of clothes and under garments for that time as even if the clothes stink or carry germs, it won't spread to the clean ones.

CONCLUSION: The above methods if followed will undoubtedly help all the girls and young women free from any infections.

Poor hygiene deters people from getting to know you. If people find your body odour or unkempt, unclean appearance offensive, they're likely to pass judgments on your personality and your ability to care for yourself on a basic level. This can dissuade those forming friendships and meaningful bonds with you. People generally avoid smells and situations they find unpleasant. Maintaining good personal hygiene will benefit your social life in that it will remove this barrier to interaction and connections. Appearances broadcast more than just how we look to the world. For example, when you present to a job interview well-dressed, displaying good hygiene, you look like a capable professional, able to handle yourself with care and respect. If you appear with poor hygiene, even if you're the most qualified candidate, it may send the message that you're sloppy, you don't care about your performance and you don't value and respect yourself. If your hygiene declines in school, college or the workplace, it can lead people to question your abilities and even your mental and physical health. At the very least, good hygiene in the workplace or school/College environment avoids creating unnecessary distractions to those around you.

References

U.S. Centers for Disease Control: Wash Your Hands

Hygiene on the Skin: When is Clean Too Clean?

Hygiene Expert: What is Personal Hygiene?

Healthy living and wellbeing By Readers Digest

Antimicrobial Activity of Leaf Extracts of Aloevera, Lantana & Neem

Sudhakar Lakhavath, Non Medical Assistant, Dept. of Pharmacology, KMC, Warangal

Introduction of Medicinal plants:-

Plants can neither run away from their enemies nor get rid of them as humans or other animals do, so what have they evoked to protect themselves? What ever this protection is it must be successful, for the diversity and richness of green plants i. e. extraordinary, and their dominance in most ecosystems of the world is unquestioned. Plant successes are closely intertwined with the evolution of and production of highly diverse compounds known as secondary metabolites, compounds that are not essential for the growth and reproduction, but rather, through interaction with their environment, enhance plants prospects of survival. These metabolites are therefore plant agents for chemical warfare, allowing plants to ward off microorganisms, insects, and other animals acting as predators and pathogens. Such compounds may also be valuable to humans for the same purposes, and therefore may also be used as medicines.

What Characterizes Medicinal Plants:-

There are twenty thousand known secondary plant metabolites. All exhibiting a remarkable array of organic compounds that clearly provide a selective advantage to the producer, which many of cost of production. Humans benefit from their production by using many of them for medicinal purposes to fight infections and diseases. An estimated two-fifths of all modern pharmaceutical products in the United States contain one or more naturally derived ingredients, the majority of which are secondary metabolites, such as alkaloids, glycosides, terpenes, steroids, and other classes grouped according to their physiological activity in humans or chemical structure. To illustrate the breadth of the most significant plants, their uses in modern medicine, and the major secondary metabolites responsible for their activities. This list grows annually as new plants are found with desired activities and remedies to become pharmaceuticals for use in medicine.

How Plant Pharmaceuticals are discovered

The search for new pharmaceuticals from plants is possible using a number of distinct strategies. Random collecting of plants by field gathering is the simplest but least efficient way. The chances are much greater that new compounds of medicinal value will be discovered if there is some degree of selectivity employed by collecting those plants that a botanist knows are related to others already having useful or abundant classes of secondary metabolites. Even more relevant is to collect plants already targeted for specific medicinal purposes, possibly

among indigenous or ethnic peoples who use traditional, plant-derived medicines often with great success to provide for their well-being. Such data are part of ethno botany, when researchers often obtain detailed information on the plants people use to treat illnesses. In this project we evaluated the antimicrobial activity of 3 leaf extracts these include.

Sl.No.	Name	Scientific Name
1	Aloevera	Aloevera
2	Lantana	Lantana Camara
3	Neam	Azardiracta Indica

1. **Aloevera:**

Botanical Name : Aloevera

Family : Asphodelaceae

Aloe, a popular houseplant, has a long history as a multipurpose folk remedy. Commonly known as Aloe vera, the plant can be separated into two basic products: gel and latex. Aloe Vera gel is the leaf pulp or mucilage, a think clear gelly like substance obtained from the parenchymal tissue that makes up the inner portion of the leaves. The gel contains Carbohydrate Polymers, such as glaucomannas or pecticacid, plus various other organic and inorganic compounds. Aloe latex, commonly referred to as "Aloejuice" is a bitter yellow exudates from the pericyclic tubules just beneath the outer skin of the leaves. For pharmaceutical use as a laxative, the juice is often dried to produce "Aloe" granules that are dark brown from exposure to air. The terms "gel" and "juice" are not clearly defined by manufacturers and often are confused by consumers.

Uses:

- Aloe gel has been used for topical treatment of wounds, minor burns, and skin irritations.
- American consumers are most familiar with aloe's use in skin-care products, but aloe can also be used as a beverage.
- Aloe products for internal use have been promoted for constipation, coughs, wounds, ulcers, diabetes, cancer, headaches, arthritis, immune system deficiencies and many other conditions.
- Aloevera can be used by men, women and even children. It is also good for keeping the functioning of bowels smooth.
- Aloevera increases the strength of collagen which is required in building of damaged tissues.
- It is also good for the treatment of psoriasis, eczema and other skin problems.
- It is also helpful in the treatment of acid bums, radiation bums and frostbilte. If one is

affected by frostibite or sunburn, then one or two cups of fresh aloejuice can be added to the lukewarm water. After taking bath, apply aloe gel to the affected areas.

- It includes different 75 nutrients such as vitamins, sugars, Ca, Na, N_2, A.A's, enzymes, acids and minerals.
- It is used both internally and externally and is also good for number of treatments like eye inflammations, ulcers, skin cancer, gall bladder problems, abscesses and hemorrhoids.
- There are some other uses of aloe vera such as if aloevera plant is grown in the kitchen then it helps in preventing mishaps and bums during cooking.
- It is useful in muscles which help in digestion, anti-baceterial and heal wounds and more. It is believed that aloevera is beneficial to treat common cold. It is effective to treat fungal infections such as ringworm.

2. Lantana:

Botanical Name	:	Lantana Camara
Family	:	Verbenaceae

Common Lantana is a rugged ever green shrub from the tropics. The species will grow to 6 feet (1.8 m.) high and may spread to 8 feet (2.4 m) in width with some varieties able to clamber vine like up supports to greater heights with the help of support. The items and leaves are covered with rough hairs and emit an unpleasant aroma. The small flowers are held in clusters (called umbels). Flower colour ranges from white to yellow, orange to red pink to rose in unlimited combinations, in addition the flowers usually change in colour as they age. A lantana may look orange from a distance but the flower head is examined at close range it consists of individual white, yellow and red flowers that blend when viewed from a far.

Uses:

- Lantana is agenus of about 150 species of Perennial-flowering plants, native to tropical regions of the America and Africa. The species include both herbaceous plants and shrubs growing to 0.5 -2 m. tall.
- Lantana Berries are poisonous. Lantana flowers and berries are attractive to insects and birds.
- Lantana species are used as food plants by the Larvae of Hepialid Moths of the genera Aenetus
- Other Lepidoptera whose larvae feed on Lantana include Hypercompe orsa and Setaceous Hebrew Character.
- Most of the plants sold as Lantana Camara, Lantana Montevidensis, or Hybrids between the two L. Camara (Syn.L. Aculeata or L. Armata) is the most common species in cultivation. Numerous cultivars of this species exist, including 'Irene', 'Christine' and "Dallas Red' (all tall-growing cultivars) and several recently introduced shorter ones. The shorter cultivars may flower more prolifically than the taller ones. Lantana montevidensis is known as Trailing Lantana. The species gives blue (or white) flowers all year round. Its foliage is dark green and has as typical odour.

3. Neem:

Botanical Name	:	Azadiracta Indica
Family	:	Meliaceae

It is also called as Margosa. This tree was worshipped by our ancestors as an invaluable, gift to mankind. It is a tall tree upto 30 meters high, with leafy spreading branches. May white coloured flowers appear. Two Indian Scientists, R.N. Chopra and M.A. Hussain, used a 0.001% aqueous suspension of ground Neem kernels to repel desert locusts.

Medicinal uses of neem tree are manifold are known since vedic times.

Uses:

- Neem is mainly used as medicinal plant. Every part of this free-leaf, flower, fruit, seed, bark, wood and root has been in use. It is used in Ayurvedic and Unani Systems of medicine.
- Recent studies in USA have show that neem leaf extracts can inhibit certain enzymes in the hepatitis-B Virus and Herpes Virus.
- Germany and U.K. are on their way to extract an enzyme which inhibits the division of AIDS Virus infected cells.
- It is found helpful in some chronic skin diseases and ulcers. It also cure piles. It has some external applications for Rheumatism, leprosy and sprains. This oil also have anti-fertility properties.
- The flowers arc useful in some cases of dyspepsia and general weakness. Flowers along with leaves are used for dressing of wounds.
- The bark of stem and root contain compounds like mimbin and nimbiblin. The bark is used in dental diseases like bleeding gums and pyorrhea, jaundice and various skin diseases like scabies, eczema etc. It is used as anti-allergic agent.
- The seeds contain 40-49% oil. The neem oil is used in making soaps, toothpastes, herbal shampoos and antilice shampoos for dogs.
- Derivatives of neem have been reported to act as insecticide, fungicide and nematicide.
- Neem is potential source of organic manure which is rich in plant nutrients like N2, Phosporous and Potassium and is antimicrobial.
- Neem seed cake is used as an organic fertilizer.
- Neem seed cake and leaves provide an excellent bulk to the cattle and animal nutrients.
- As the wood of neem is resistant to pests.

Materials & Methods

Leaves of Aloevera, Neem and Lantana, Nutrient Broth, Nutrient Agar, Methanol or Ethanol, Petriplates etc. Procedure:

1) The leaves of Aloevera, Neem and Lantana were collected from our college garden.
2) The leaves were dried for about one week and after week, leaves are grinded into a fine powder.
3) A fine powder is diluted with 100 ml. of ethanol. *

4) Mean while, Nutrient agar media was prepared and sterilized in an autoclave.
5) The media was cooled and bacterial suspension of Staphylococcus aureus and Streptococcus aureus was poured into the media separately.
6) The media was poured into petriplates and allowed it to solidify.
7) After solidification of media, wells were made with the help of a gelborer and filled with a leaf extract.
8) Control plates were also maintained without the leaf extract, the plates were maintained in duplicates.
9) All the plates were incubated in for 36 °C for 24 hours.
10) After the incubation period, the inhibition zone were measured.

Results & Discussion:

Table showing the inhibition zone produced by different leaf extracts.

SI. No.	Name of the Plant	Inhibition Zone (mm)	
		Staphylococcus	Streptococcus
1	Aloevera	20 mm	19 mm
2	Neem	18 mm	17 mm
3	Lantana	19 mm	18 mm

Aloevera : The inhibition zone measured to be against 20 mm Streptococcus Aureus & 19 mm. against Staphylococcus aureus. ,

Neem: The inhibition zone measured to be against 18 mm Streptococcus Aureus & 17 mm. against Staphylococcus aureus.

Lantana: The inhibition zone measured to be against 19 mm Streptococcus Aureus & 18 mm. against Staphylococcus aureus.

From the above results we can concluded that:

- Neem acts as antibacterial agents against only Gram-Positive Bacteria. It shows good antimicrobial activity against Staphylococcus and Streptococcus aureus.
- Aloevera showed good antimicrobial activity against Staphylococcus and Streptococcus aureus.
- Lantana showed good antimicrobial activity against Gram-positive bacteria.

So above three leaves show good antimicrobial activity against Staphylococcus aureus and Streptococcus aureus.

References

1. Tyler V. The Honest Herbal: A Sensible Guide to the Use of Herbs and Related Remedies, Third Edition, Binghamton, NY: Pharmaceutical Products Press; 1993.
2. Tyler V. Herbs of Choice: The Therapeutic Use of Phytomedicinals. Binghamton, NY : Pharmaceutical Products Press : 1994.
3. Odes H.S., Madar Z. A double-bind trial of a celandine, aloevera and psyllium laxative preparation in adult patients with constipation. Digestion 49:65-71,1991.
4. Brusick D, Mengs U. Assessment of the genotoxic risk from laxative senna products. Environmental and Molecular Mutagenesis 29: 1-9,1997.
5. Ishii Y, Tanizawa H, Takino Y. Studies of aloe. V. Mechanism of cathartic effect (4). Biological and Pharmaceutical Bulletin 17: 651-3,1994.
6. Grindlay D, Reynolds T. The Aloe vera Phenomenon: A review of the properties and modern uses of the leaf parenchyma gel. Journal of Ethnopharmacology 16 (2-3): 117-151,1986.
7. Davis RH, Leitner MG, Russo JM, Byrne ME. Wound healing. Oral and topical activity of aloe vera. Journal of the American Podiatric Medical Association79: 5599-562,1989.
8. Hecht A. The Overselling of aloe vera. FDA Consumer 15(6):26-29,1981.
9. Agarwal OP. Prevention of atheromatous heart disease. Angiology 36:485-492,1985.
10. Ghannam N and others. The antidiabetic activity of aloes: Preliminary clinical and experimental observations. Hormone Research 24:288-294,1986.
11. Ajabnoor MA. Effect of aloes on blood glucose levels in normal and alloxan diabetic mice. Journal of Ehtnopharmacology 28:215-220,1990.
12. A1-Awadi F, Fatania H, Shamte U. The effect of a plants mixture extract on liver gluconeogenesis in streptozotocin induced diabetic rats. Diabetes Research 18:163-168,1991.
13. Roman-Ramos R and others. Experimental study of the hypoglycemic effect of some anti-diabetic plants. Archives de Investigacion Medica22(l):87-93,1991.
14. Premium Aloe Company Web site, June 22, 1998.
15. Nature's Choice Aloe Vera Online Catalog, June 22, 1998.
16. Smith L., Struck D. The aloe vera trail: Investigation of four patient deaths leads officials to company based in Maryland. Washington Post. Oct 11, 1997; Sec.C, 1:2.
17. Schultz W. Proposed Rules. Federal Register. Sep 2,1997; Vol 62(169): 46223-46227.
18. Smith L., Blum J. Police probe death of second patient trated by Manassas Doctor. Washington Post. Sept 26,1997; SecB, 1:2.
19. Smith L., Lipton E. Panel suspends the license of VA physician; Doctor's aloe therapy suspected in 3 deaths. Washington Post. Sept 27, 1997; Sec.A, 1:2.