



IJFANS

International Journal of Food
And Nutritional Sciences

Volume 2, Issue 4, Oct-Dec-2013,

www.ijfans.com

e-ISSN: 2320-7876



Official Journal of IIFANS

PHYSICAL FITNESS FOR HEALTH AND A SUSTAINABLE FUTURE OF YOUNG ADULT FEMALES AGED 18 to 24 YEARS

Manjusha Bhakay*

Department of Food Science and Nutrition, S.M.R.K.B.K.A.K. Mahila Mahavidyalaya , Nashik , India.

*Corresponding Author: manjushabhakay@gmail.com

ABSTRACT

The study was undertaken to evaluate the physical fitness level of final year young women students as, by this age physical development is complete and in the near future these girls would be shouldering a major responsibility of marriage and family. The concern was that, would they be able to take care of their homes, bear healthy children, tolerate the stresses and tensions, perform all the household chores and lead a healthy life? Aim was to evaluate the physical fitness levels of young women between the age of 18 to 24 years. Physical fitness tests were actually performed on a sample of 154 young women. Measurement of Muscular strength, Muscular endurance, Cardio -Respiratory Endurance was taken. They were tested for flexibility and their body composition was also assessed. The results reflected that the women were poor in muscular strength, Muscular endurance (40.8 % had very poor muscular endurance), while 63.3 % of the women had very poor cardio- respiratory endurance, they had relatively good trunk flexibility, their Body Mass Index was normal so was the Waist to Hip Ratio. There is a tendency towards sedentary lifestyle among the young women. The concept of health, physical fitness was not clear among them. There is an urgent need to undertake intervention strategies at home, family level, at college and within the community.

Key Words: Physical fitness, physical activity, muscular strength, cardio- respiratory endurance, BMI (Body Mass Index), flexibility.

INTRODUCTION

After a decade into the 21st century , we are facing a rising trend of non – communicable diseases associated with sedentary lifestyle . Lifestyle diseases are a result of an inappropriate relationship of people with their environment. The onset of these lifestyle diseases is insidious , they take years to develop and once encountered do not lend themselves easily to cure .

Many young people today spend more time watching television , playing video games and surfing the internet than they do riding their bicycles or playing out door games . Several factors are driving this shift from physical activities to more sedentary activities . Such factors include advances in technology , a decrease in safe recreational areas and a lack of parental involvement.

Physical fitness is the ability to carry out daily tasks with vigour and alertness without undue fatigue and ample energy to enjoy leisure time pursuits and meet unforeseen emergencies (www.Presidents challenge.org). Physical fitness is a set of attributes that people have or achieve that relates to the ability to perform physical activity (www.cdc.gov).

The aim of the study was to evaluate the physical fitness of the young adult girls , as by this age physical development is complete and in the near future these girls

would be shouldering a major responsibility of marriage and family . The components of Health related physical fitness measured were muscular strength, muscular endurance , cardio – respiratory endurance , trunk flexibility and body composition – BMI , Waist to Hip Ratio.

MATERIAL AND METHOD

PARTICIPANTS

A total of 154 girls from a local Women's college were selected for the study by random sampling method. All the girls selected were healthy individuals without any physical handicap or diseases like asthma or anemia. The college was selected due to ease of accessibility, co- operation from the management. The girls were in the age group of 18 to 24 years .

ASSESSMENT OF HEALTH RELATED FITNESS COMPONENTS WERE DONE BY

MUSCULAR STRENGTH

Muscular strength was assessed by the Hand grip dynamometer . Three readings each of both the hands were recorded and the best score was taken as the reading of muscular strength.

MUSCULAR ENDURANCE

This component of fitness was evaluated by the sit up test . The maximum number of sit ups performed in a minute were recorded . The completion of one complete curl up (up and back) was counted as one . Only those sit ups performed completely were counted.

CARDIO- RESPIRATORY ENDURANCE

The cardio – respiratory endurance was evaluated by the Harvard’s step test .

FLEXIBILITY

It was measured by the sit and reach test . The sit and reach test involved sitting on the floor with legs stretched ahead . The sole of the feet were placed flat against the sit and reach box . The girl was asked to reach forward as far as possible , and hold that position for atleast two seconds , while the distance was recorded . The score was recorded to the nearest centimeter as the distance reached by hand .

BODY COMPOSITION

Weight was assessed to the nearest 0.1 kg using a certified electronic scale (Avon Scale) . Height to the nearest 0.01 m was measured using a stadiometer. The Body Mass Index (BMI) was calculated as Kg/m². Girth was taken at the waist and the hip using fibreglass tape , the Waist- to – Hip (W/H) ratio was calculated. All the procedures for conducting the test and evaluation of the tests were done according to Scott K Powers and Stephen L Dodd (Scott *et.al.*, 1996).

A self reporting, pre tested questionnaire was distributed among the girls to elicit information regarding: Hours of sleep, Time spent on having meals, Time spent in doing household chores. Time spent on commuting to college, mode of transport, Time spent in class room, studying at home, Time spent on watching television, Listening to music, Playing video games, Internet for social networking. This indicated their physical activity pattern.

STATISTICAL ANALYSIS

Data was analysed using SPSS version 9 . Only percentage and frequencies were calculated.

RESULTS AND DISCUSSION

Regular activity, fitness and exercise are critical for the health and well being of people of all ages. Women’s Sports Foundation research studies (Robert, 2001) point to physical activity as a fundamental solution to the serious and unique health and social problems faced by girls today. Fig. 1.1 shows the percentage of duration of sleep in a day . Majority of the girls (38%) slept for 8 hours in a day, which is the normal requirement for people of all age groups. 6 % of the girls slept for 5 hours, it was not due to time spent doing physical activity but, it was due to time spent on listening to music and sitting at the computer. 26% of the girls slept for more than 8 hours indicating that they did not have enough stamina for performing all the activities throughout the day.

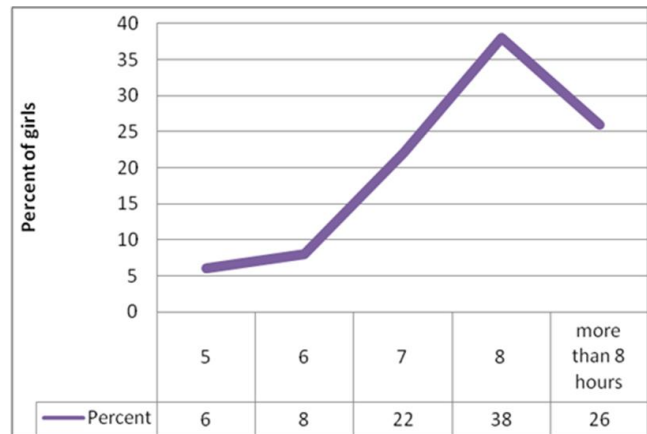


Fig.1.1 Time spent in sleeping in a day

Fig. 1.2 indicates the time spent in having meals. Since the college timings were in the morning, maximum girls (70 %) spent least time among all the meals on breakfast (15 min) . Dinner was a relaxed meal where more than 50 % of the girls spent 30 min. It was quite revealing to find out that nearly 21 percent of the girls did not have breakfast before coming to the college. They had their first meal of the day at 10.30 am during the recess, which is quite late for having breakfast.

Percentage of time spent in recreational activities is seen in fig. 1.3 .Girls spent a lot of time in recreational activities which were of sedentary nature. 39 % of the girls watched television for 1 hour in the evening. Not a single household was without television, which shows the addiction to the idiot box. 28 % of the girls were at the internet for about 30 min. per day. 43 % of the girls listened to music for more than 90 mins. 49 % of the girls read books other than academics for only 30 mins. A large proportion of young people engage in sedentary behaviors such as watching television for prolonged periods of time. Data from the National Health and Nutrition Examination Survey and the Centers for Disease Control and Prevention show that at least 1 in 4 youth watch television and/or play computer games >4 hours per day (Robert, 2009).The proportion of young people that practice sport declines after the age of 15, in girls (Hern’an *et.al.*, 2004). In girls television/video and computer use were positively associated with BMI (Jennifer *et.al.*, 2003) Within most countries physical activity levels were lower and television viewing times were higher in overweight compared to normal weight youth (Janssen *et.al.*,2005).

Fig. 1.4 shows the percentage of time spent in sports. A staggering 59% of the girls did not play any sport throughout the day or week, only 27 % girls played sports for an average 30 mins per day. This was also free play in the housing complex. A National survey of children and young people’s activity and dietary behaviors in New Zealand (2008/ 2009) showed that physical activity declines markedly with age.

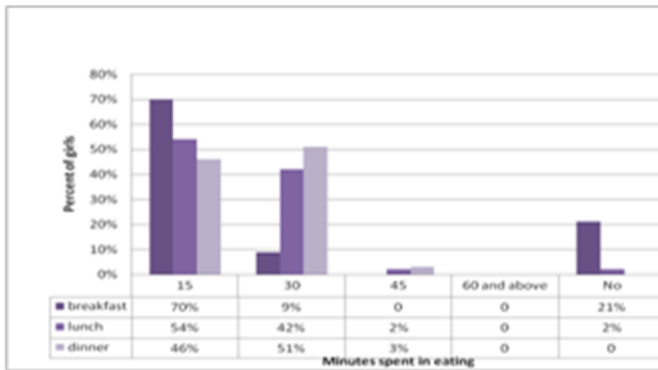


Fig. 1.2 Time spent in eating

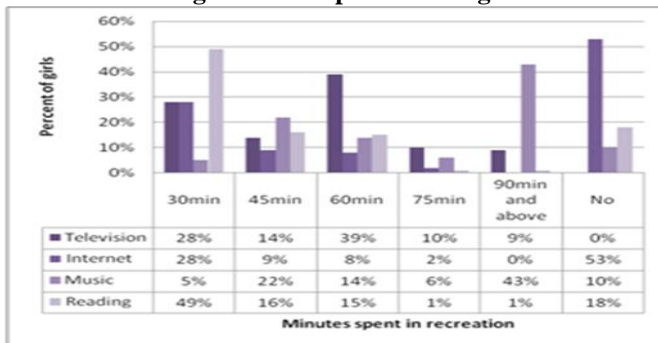


Fig.1.3 Percentage of time spent in recreational activities

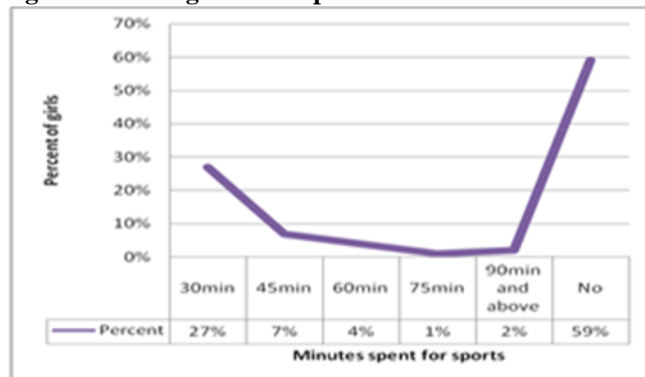


Fig. 1.4-Percentage of time spent in sports

Fig 1.5 indicates the fitness rating given by the girls, to themselves. The girls were asked to rate what they thought was their fitness level. 47 % of them thought that they were quite fit and were between 7 to 9 on a 10 point fitness level scale. Their self evaluation about physical fitness was not reflected in the actual fitness tests.

Fig 1.6.shows the percentage of priority given by the girls themselves to health. Health was not the most important thing in the lives of young adult females. 62 % have given medium priority to health and only 38 % had said that health had a high priority in their lives. This could be because they were in the prime of their health and could not visualize the consequences of their current lifestyle in later life.

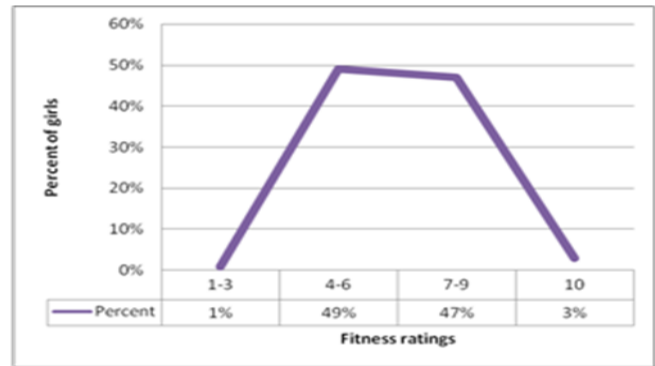


Fig. 1.5 Percentage of fitness level self rating by girls

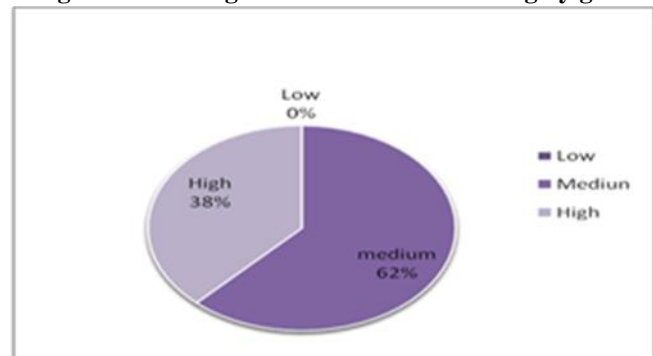


Fig.1.6. Percentage of health priority according to girls

Fig. 2.1 shows the muscular strength in percentage. To maintain their shape and for their proper functioning, the muscles within the body need to be used regularly and continuously- not using them results in the loss of shape and function. If muscles are severely weakened due to lack of use or because of illness, then muscular strains can occur frequently and recur again and again.

Use it or lose it is a rule that applies to your strength and endurance. The study revealed that majority of the girls (45%) had poor muscular strength. 35 % had fair muscular strength, 18 % had average muscular strength and only 2 % scored good in muscular strength. It was reported earlier that physical performance had a strong association with body strength, shape, size, form and structure of an individual. It is also reported that hand grip strength determines the muscular strength of an individual. So, an increase in hand grip strength determines the physical strength of an individual (ShyamalKoley *et.al.*, 2007).Very simple physical activities such as regular walks lead to the strengthening of muscles. The result of muscular fitness in the present study consolidated the above mentioned reviews.

Fig. 2.2 shows the muscular endurance in percentage .Muscular endurance is the ability of muscles or muscle systems to access, process, store and utilizes energy for repeated muscular contractions against a given resistance. When a muscle contracts it metabolizes energy that is used to fuel the contraction. When the muscle is trained to repeatedly contract, it develops endurance over time. Muscular endurance allows us to sustain the use of our muscles in

physical activity for long periods of time. The better our muscular endurance is, the better our performance is as well.

The results of muscular endurance were saddening. 16 % of the students could not perform the test at all. They could not lift up their body for doing the sit ups. 41 % were very poor in muscular endurance and nearly the same amounts (40 %) were poor in muscular endurance. Only 3 % of the girls could do 29 to 32 sit ups and were average in performing the test. Considerable evidence suggests that the ability to perform a physical task is determined by a threshold level of muscular strength and endurance. Individuals lacking the requisite strength may not be able to perform various activities of daily living that are important determinants of independence. A decline in functional status is determined at least in part by muscle strength, flexibility, range of motion, physical fitness, and body composition. Those who already report some limitations are more likely to develop additional limitations over time. The changes leading to functional limitation do not generally occur suddenly and may have their origins in lifestyle habits developed over many years (Brill *et.al.*, 2000).

Fig. 2.3 indicates the Cardio- respiratory fitness in percentage. Cardiovascular Endurance is the body's ability to process, store and utilize energy through oxidation. Endurance or fitness comes into the equation when the demand for oxygen increases.

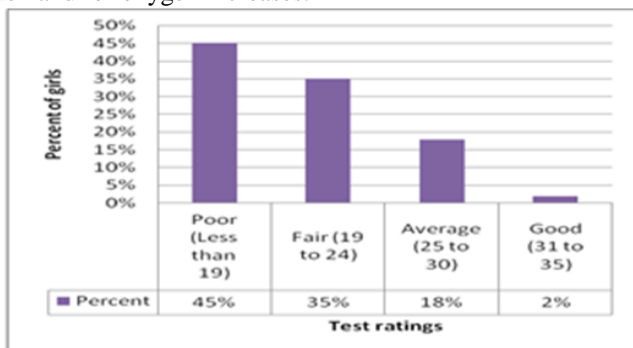


Fig. 2.1- Muscular strength (Percentage)

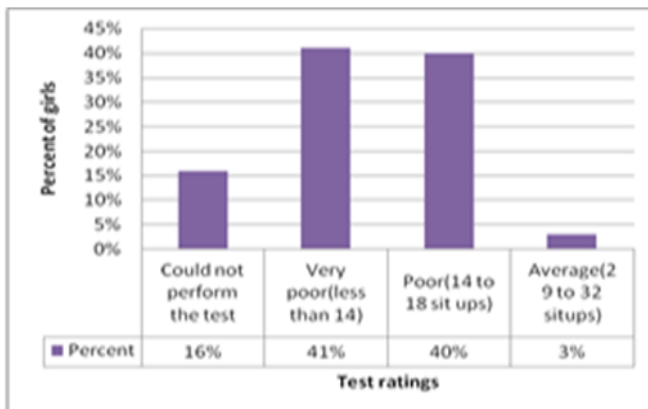


Fig. 2.2- Muscular endurance (percentage)

The oxygen is delivered to where it is needed because it plays a role in making energy from food available for the body to use as fuel. When physical activity increases,

the need to process more energy increases and so the body has to utilize more oxygen. The results show that majority of the girls (63 %) had poor cardio- respiratory endurance, followed by 16 % who had very poor endurance. Only 2 % of the girls had excellent cardio -respiratory endurance. The combined influence of cardio -respiratory fitness and body mass index on cardiovascular disease risk factors among 8-18 year old youth revealed that females in the low BMI group, either fit or unfit, had lower BP and blood lipid values than those in the high BMI group. The high BMI/low fit group had the highest (most adverse) metabolic syndrome score. The results provide some evidence for the consideration of both variables when interpreting cardio vascular disease risk factors in young people. 50% of the girls in the present study were also in the "at risk" category. An improvement in cardio- respiratory endurance increases the ability of the lungs, heart, and muscles to perform work over a extensive period of time (Eisenmann *et.al.*, 2007).

Fig. 2.4.shows the result of Flexibility in percentage. Flexibility can be termed as the ability of your joints and body parts to execute their full range of motion. Flexibility is required in all your day-to-day activities such as bending, walking, lifting, etc. Being flexible allows your muscles to remain mobile. To get out of bed, lift children, or sweep the floor, we need flexibility. Flexibility tends to deteriorate with sedentary lifestyle. Flexibility of the body has also been attributed to agility and swiftness in body movements.

The study shows that maximum girls (35 %) had good flexibility, 21 % had excellent flexibility. This was done by sit and reach test which is a marker for trunk flexibility. 14 % of the girls had poor flexibility and 6 % had very poor flexibility. On an average the girls did well in the flexibility test. Adolescent flexibility, endurance strength, and physical activity as predictors of adult tension neck, low back pain, and knee injury was studied (Mikkelsen *et.al.*, 2004). It was a 25 year follow up study and they concluded that overall good flexibility and good endurance strength in girls may contribute to a decreased risk of the above mentioned disorders.

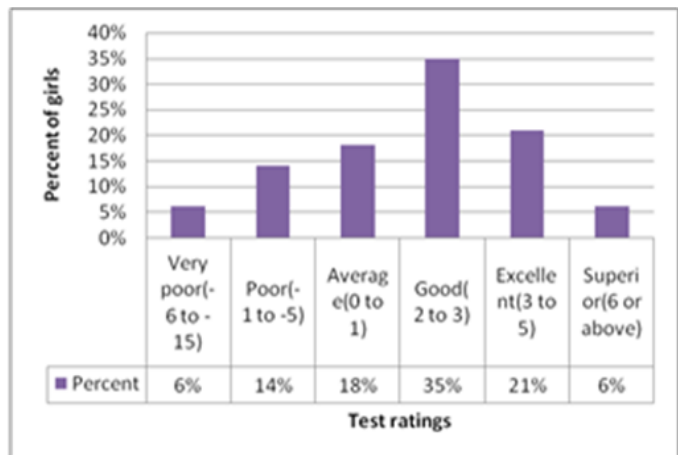


Fig. 2.3- Cardio – respiratory fitness (Percentage)

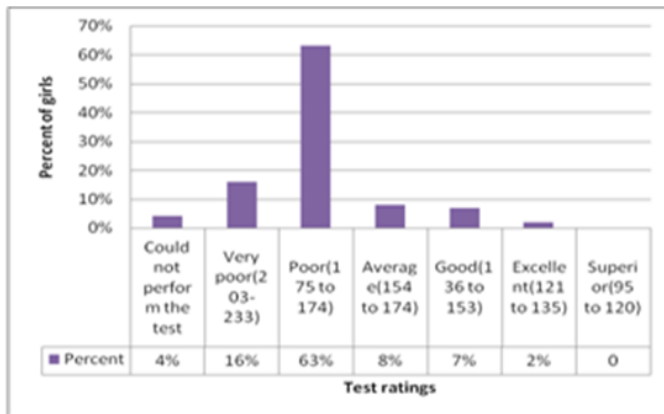


Fig. 2.4-Flexibility (Percentage)

Fig. 2.5. shows the waist to hip ratio in percentage. A gynoid pattern of fat distribution, with small waist and large hips (low waist-to-hip ratio, or WHR) holds significant fitness benefits for women: Women with a low WHR of about 0.7 are more fecund, are less prone to chronic disease, and (in most cultures) are considered more attractive. The study shows that 94 % of the girls were having a waist to hip ratio of less than 0.80, which is they had a low risk of cardio vascular disorders. The female WHR, especially in non-Western populations, is higher than the putative optimum even among samples that are young, lean, and dependent on traditional diets. The evidence indicates that the hormonal profile associated with high WHR (high androgen and cortisol levels, low estrogens) favors success in resource competition, particularly under stressful and difficult circumstances, even though this carries fitness costs in fecundity and health. Adrenal androgens, in particular, may play an important role in enabling women to respond to stressful challenges (Elizabeth, 2008). The waist to Hip ratio was normal in majority of the girls.

Fig. 2.6.reveals the Body mass index in percentage. Body mass index (BMI) is an estimate of body composition that correlates an individual's weight and height to lean body mass. The BMI is thus an index of weight adjusted for stature. Research has shown that both high BMIs and low BMIs can indicate increased morbidity and mortality. .

49 % of the girls had an BMI between 18.5 to 23.9 indicating that majority of them were normal. 33 % of them had BMI less than 18.5 indicating that they were weighing less for their height. Studies have shown that a minimum of 45 kgs pre pregnancy weight is essential to sustain pregnancy later on. Girls who weigh less than 45 kgs pre pregnancy have difficulty in conception and also have complications during pregnancy. 15 % had BMI between 24 to 29.9. These show that their weight is more than their height and were suffering from mild obesity, which is commonly seen in adult sedentary girls of today's generation. 3 % of the had BMI above 30, that is they were moderately obese and could develop some metabolic disorders later in life if they did nothing to control their weight. Insufficient vigorous physical activity was the only risk factor for higher body mass index for adolescent girls (Patrick *et.al.*, 2004). Similar observations were seen in the present study.

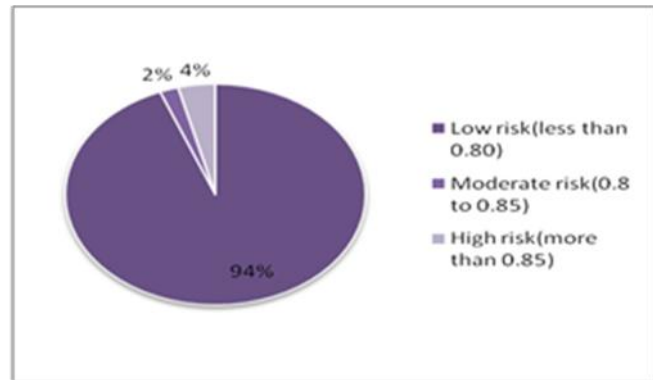


Fig. 2.5- Waist to Hip ratio (Percentage)

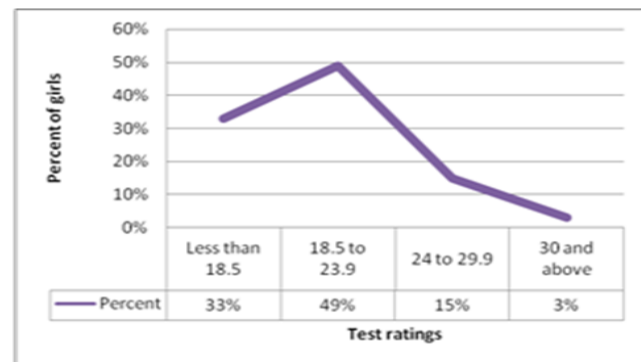


Fig. 2.6-Body Mass Index (Percentage)

Most parents of inactive children wrongly consider their children to be sufficiently active; parents of children with a lower fat mass index appear to assume that their children are adequately active. Increasing awareness regarding health benefits of physical activity beyond weight control might help reverse misperceptions of physical activity levels and encourage behavior change (Corder *et.al.*, 2010). The adolescent population subsets most at risk of scoring badly on the physical domain are those having low physical activity levels and being female (Gordia *et.al.*, 2009).

CONCLUSION

The main results of the present study, conducted in 154 adult girls aged 18 to 24 years from a local college, are as follows: Majority of the girls were not indulging in adequate physical activity, there is a tendency towards sedentary lifestyle among the young people, what they “thought” was their fitness level was not reflected in the actual physical test score, majority of the girls had poor muscular strength, muscular endurance, cardio – respiratory endurance, they did quite well in the flexibility test.

Majority of them had a low waist to hip ratio and only 50% of the students had normal Body Mass Index. Poor health will have severe negative implications on the girls who are on the threshold of marriage, jeopardizing their reproductive health and in turn could affect the growth of economy.

RECOMMENDATIONS

The following are the recommendations of this study they are get at least eight hours of sleep a night, avoid skipping meals, eat a healthy breakfast, engage in some active sport, exercise regularly at least 4-5 times in a week. Exercise at least for half an hour each time, make use of staircase, rather than using the lift, instead of using the vehicle for short distance, walk the distance and Cultivate an active hobby eg. Gardening, dancing.

A healthy diet coupled with physical activity will encourage lifelong disease prevention and other health benefits. Heredity holds the gun, but it is the lifestyle that pulls the trigger. By modifying the lifestyle right from childhood, let us cherish, nurture this individual for a sustainable future.

REFERENCES

- U.S Centers for Disease Control and Prevention. www.Presidents challenge.org
- President's Council on Physical Fitness and Sports. www.cdc.gov
- Scott K.Powers and Stephen L.Dodd. *Totao Fitness, Exercise, Nutrition and Wellness*. University of Florida, 1996. Pub. Allyn and Bacon .ISBN 0-13-095894-8.
- Robert M Malina . Physical activity and fitness: Pathway from childhood to adulthood. *American Journal of Biology*, Vol 13, issue 2, pg 162 – 172, February / March 2001.
- Robert R Zoeller Jr. Physical Activity, Sedentary Behavior, and Overweight / Obesity in Youth: Evidence From Cross – sectional, Longitudinal, and Interventional Studies. *American Journal of Lifestyle Medicine*, March / April 2009, Vol 3, No 2, Pg 110 – 114.
- Hern'anM ,Fern'andez A , Ramos M. [Health among teenagers and young adults] . *Observatorio de la Infancia en Andalucia , Consejeria de AsuntosSociales , Junta de Andalucia , Granada , Spain , 2004 , May 18; Suppl 1 : 47 – 55 . Gaceta sanitaria.*
- Jennifer Utter, Dianne Neumark – Sztainer . Couch potatoes or French fries: Are sedentary behaviors associates with body mass index, physical activity, and dietary behaviors among adolescent? *Journal of American Dietetic Association*, 2003, Oct; Vol. 103 (10): 1298 – 305.
- Janssen I , Katzmarzyk P T , Boyce W F , Vereecken C, Mulvihill C , Roberts C , Currie C , Pickett W . Health Behavior in school – aged Children Obesity working Group. Comparison of overweight and obesity prevalence in school – aged youth from 34 countries and their relationship with physical activity and dietary patterns. *Journal of International Association for the Study of Obesity*, 2005, May; 6 (2): 123 – 32.
- ShyamalKoley, Meenal Gandhi, Arvinder Pal Singh. An association of Hand Grip strength with Weight and BMI in Boys and Girls aged 6 – 25 years of Amritsar, Punjab, India. *The internet Journal of Biological Anthropology*™ 2007 ISSN: 1939 – 4594.
- Brill, Patrica A, Macera, Caroline A , Davis , Dorothy R . Muscular strength and physical function *Medicine & Science in Sports &Exercise*: February 2000, Vol. 32, Issue 2, Pg 412.
- Eisenmann J C, Well G J , Wickel E E , Blair S N . Combined influence of cardio- respiratory fitness and body mass index on cardiovascular disease risk factors among 8 – 18 years old youth. *International Journal of Pediatric Obesity*, 2007; 2 (2) : 66 – 72 .
- Mikkelsen L O, Nupponen H, Kaprio J. Adolescent flexibility, endurance strength and physical activity as predictors of adult tension neck, low back pain, and knee injury: a 25 year follow up study. *Br. J. Sports Med* 2006; 40: 107 – 113. doi: 10.1136/bjism.2004.017350.
- Elizabeth Cashdan. Waist to Hip ratio across cultures: Trade – offs between Androgen and Estrogen – Dependent Traits. *Current Anthropology*, Vol. 49, No. 6, Dec. 2008.
- Patrick K , Norman G J , Calfas K J , Sallis J F , Zabinski M F , Rupp J , Cella J . Diet, physical activity, and sedentary behaviors as risk factors for overweight in adolescence .*Archives of Pediatric and adolescent medicine*, 2004, April: 158 (4): 385 – 90.
- Corder K , Van Sluijs E M , McMinn A M , Ekelund U , Cassidy A , Griffin S J . Perception versus reality awareness of physical activity of British children. *American Journal of Preventive Medicine*, 2010, Jan.; 38 (1): 1 – 8.
- Gordia A P, de Quadros T M, de Petroski E L. Adolescent's physical quality of life: associations with physical activity and sex. *Centro de PesquisaemExercicio e Esporte, Universidad Federal do Parana, Curitiba*. 2009 Jan – Feb ; 11 (1) : 50 – 61 , *divista de saludpublica , bogota , Columbia.*