REVIEW OF RELATED LITERATURE

The review provides us with an opportunity of gaining right into the methods, measures, subjects and approaches employed by other research workers. Study of related literatures implies locating reading evaluating reports of research as well as reports of casual observation and opinion that are related to the individual planned research project.

Napradit and Pantaewan (2009) studied the relationship between physical fitness and anthropometric characteristics in Royal Thai Army (RTA) personnel. Body weight, height, waist circumference, hip circumference and blood pressure were measured. Body mass index (BMI) and waist-hip ratio (WHR) were calculated. Subsequently, 4,030 males aged 20 to 60 years were field tested using 2-minute push ups/sit-ups and 2-kilometer run to measure muscular strength/endurance and cardiorespiratory endurance, respectively. Data were analyzed for the relationships between BMI and anthropometric variables and blood pressure and physical fitness results. The average BMI for RTA personnel was 24.0 ± 3.3 kg/m2. Correlation coefficient between BMI and waist circumference (r = 0.847, p < 0.001) was better than BMI and WHR (r = 0.553, p < 0.001). Both systolic blood pressure (SBP) and diastolic blood pressure (DBP) had a significant positive correlation with BMI. The numbers of push-ups/sit-ups had a negative correlation with BMI (r = -0.121 and -0.109, respectively), whereas 2-kilometer run times had a positive correlation with BMI (r = 0.291, p < 0.001). In conclusion, RTA personnel with increasing BMI tend to have low physical fitness level.

Koley et al. (2010) cross-sectional study was of two-fold: firstly, to evaluate the back strength of Indian inter-university male cricketers and secondly, to study its relation to leg strength, along with selected anthropometric characteristics. Thirteen anthropometric characteristics were from 98 Indian inter-university male cricketers aged 16–25 (mean age 21.03, ± 1.72), all students at nine Indian universities, and the competition was held in Guru Nanak Dev University, Amritsar, Punjab, India. An adequate number of control participants (n = 99, mean age 21.50, ± 1.13) were also collected from students at the host university for comparison. The findings of the present study indicated statistically significant differences (p ≤ 0.05) in weight, BMI, thigh length, total leg length, biceps, triceps, subscapular and calf skinfolds, percentage of body fat and back strength between the cricketers and control participants. The striking findings of the present study were that back strength showed significant positive correlations only with leg strength but not with any of the other studied anthropometric characteristics.

Anderson et al. (2006) examine the effects of an 8-week program of regular brisk walking, regular brisk walking with abdominal electrical muscle stimulation (EMS), and no exercise on
hierarchical self-perceptions, and consider the mediating role of changes in anthropometric measures and body composition. Thirty-seven sedentary healthy women (mean age ¼ 38.1; SD ¼ 9.3) provided written informed consent and participated in baseline testing on a range of anthropometric, body composition, and hierarchical self-perception measures. Subsequently participants were randomly assigned to an 8-week program of walking (n ¼ 13), walking+EMS (n ¼ 14), or a control (n ¼ 10) condition. At 8 weeks anthropometric, body composition and self-perception measures were re-assessed. In comparison with the control group, both walking groups had significant reductions in a number of anthropometric measures and improvements in self-perception measures. The improvements on both anthropometric measures and self-perceptions were greater for the walking+EMS condition, which indicated that changes in self-perception might be mediated by body changes. However, an assessment of the mediation effect between changes in anthropometric measures and self-perception changes did not support this finding.

Matton et al. Tracking of Physical Fitness and Physical Activity from Youth to Adulthood in Females. Med. Sci. Sports Exerc., Vol. 38, No. 6, pp. 1114 – 1120, 2006. Purpose: To evaluate stability of physical fitness and physical activity from adolescence into middle adulthood in Flemish females. Methods: Within the scope of the Leuven Longitudinal Study on Lifestyle, Fitness and Health, 138 females (mean age = 16.6 T 1.1 yr) from the Leuven Growth Study of Flemish Girls were seen in adulthood (mean age = 40.5 T 1.1 yr). Several body dimensions and motor fitness tests were taken. Physical activity was assessed by means of a sports participation inventory. Intergen correlations were calculated between adolescent and adult values. Cross-tabulation was used to identify the percentage of subjects remaining in the same BMI and physical activity group or shifting from one group to another from adolescence to adulthood. Odds ratios for less activity and overweight in adulthood according to adolescent activity or weight status were calculated. Results: Except for flamingo balance, plate tapping, leg lifts, and arm pull, all anthropometric and physical fitness characteristics were stable from adolescence to adulthood (r ranging from 0.49 to 0.96). Sports participation was not a stable characteristic (r = 0.13). From adolescence to adulthood, 84.5 and 63.6%, respectively, remained in the normal-weight and overweight group, whereas 62.5 and 54.4%, respectively, remained in the less active and active group. The odds of being overweight in adulthood was 9.53 (95% CI: 3.1–29.8) times greater in overweight compared with normal-weight adolescent girls. Conclusion: In Flemish females, anthropometric and fitness characteristics demonstrate higher levels of stability from adolescence to middle adulthood than physical activity. Weight status during adolescence is indicative of adult weight status, and a pattern of less activity rather than activity tends to continue from youth to adulthood.

Amusa et al. (2011) studied Health-related physical fitness among rural primary school children in Tshannda, South Africa. The socioeconomic transformation in South Africa over the previous decade
may have created a less active lifestyle and a decline in fitness among South African children. This study seeks to present the data on the health-related physical fitness of the Tshannda rural school children in grades 1 to 7 and to evaluate age and gender differences in physical fitness among the Tshannda children, of which information is not yet available. The stature, body mass and skinfolds of the children were measured and the Eurofit test battery was used to assess the children’s physical and performance fitness. Percentage body fats, fat mass and fat-free mass were calculated. There was progressive increase and improvement in the performance values from grade level one to seven. In the physical performance tests requiring moving the body, power and strength, the boys generally performed higher than the girls. Girls were superior to boys in the tests of flexibility. Body fat was higher in girls than in boys at all grades and increases with advancement in grades. The physical performance measures of our samples increase in grade levels and with the boys having higher values than girls as well as performing better in activities requiring physical exertion and expenditure of energy. In contrasts, the girls showed superiority in flexibility measures and accumulate more body fat than the boys. Physical fitness of these rural school children seems to be low, thus confirming the worldwide decline in fitness levels of children.

Lefevre and Dufour (1993) Relationships between 12 anthropometric characteristics and motor performance, as measured by various fitness tests, were considered in a sample of 165 Flemish adults observed at age 30 years. In addition to a bivariate correlation study, a canonical correlation analysis was carried out. More than 72% of the variance was shared by the first three canonical variables. The first canonical variable can be explained as a general size function. Static and functional strength are clearly related to this function. The second canonical variable can be interpreted as a size-fatness function. Nearly a U motor tests are projected on the second composite, indicating that in adult men, subcutaneous fatness is negatively related to physical fitness. By means of a bi plot of the first two canonical variables, interrelationships between body dimensions and motor performance are clarified. A combination of the first two functions seems to provide information about physique.

Benefice (1998) Relationships among estimated body composition, habitual physical activity, and physical fitness were considered in Senegalese children 8.5-13.5 years of age. Anthropometric dimensions (arm and calf circumferences, trunk, and extremity skin folds, body mass index), four motor performances (dash, standing long jump, throw, grip strength), a step-test (cardio respiratory fitness), and heart rate (HR) monitoring (physical activity) were collected in 140 children (66 boys and 74 girls). Age and sex had a major effect on indicators of body composition and physical fitness. Height stunting used as an indicator of chronic under nutrition had a remarkable effect on body composition but only a limited influence on physical fitness. Physical activity, represented by percentage of time above the flex-HR (%f HR), did not vary with sex, age, and nutritional status. However, there was a low-to-moderate correlation between %f HR and several body composition indices, grip strength, and cardio respiratory fitness.
Comparisons of children in the upper and lower quartiles of %f HR indicated that better indices of body composition in boys, and better strength and cardio respiratory fitness in girls were positively associated with a higher level of physical activity.

Perissinott et al. (2002) studied clinical practice and epidemiological surveys, anthropometric measurements represent an important component of nutritional assessment in the elderly. The anthropometric standards derived from adult populations may not be appropriate for the elderly because of body composition changes occurring during ageing. Specific anthropometric reference data for the elderly are necessary. In the present study we investigated anthropometric characteristics and their relationship to gender and age in a cross-sectional sample of 3356 subjects, randomly selected from an elderly Italian population. In both sexes, weight and height significantly decreased with age while knee height did not. The BMI was significantly higher in women than in men (27:6 SD 5:7 v. 26:4 SD 3:7; P,0:001) and it was lower in the oldest than in the youngest subjects (P,0:05) of both genders. The 75th year of age was a turning point for BMI as for other anthropometric measurements. According to BMI values, the prevalence of malnutrition was lower than 5% in both genders, whereas obesity was shown to have a higher prevalence in women than in men (28% v. 16%; P,0:001). Waist circumference and waist: hip ratio values were higher for the youngest men than for the oldest men (P,0:05), whereas in women the waist : hip ratio values were higher in the oldest women, suggesting that visceral redistribution in old age predominantly affects females. In conclusion, in the elderly the oldest subjects showed a thinner body frame than the youngest of both genders, and there was a more marked fat redistribution in women.

Mohamed (2010) studied anthropometry measurements, which represent the basic dimensions of the body in both sports, volleyball and handball, from Egyptian juniors in the age from 15 to 18 years, by moving from diversity and abundance which are represented in the original anthropometric included in the study to the few that are in clusters or common factors derived from the study for each sports the same search every individual and determine the number of anthropometry measurements under search - included in the analysis - to a smaller number depends on the amount of factors saturates joint derived from the analysis, which may provide researchers and trainers time and effort when trying to apply these anthropometry measurements for the selection of juniors and identifying the anthropometric factors associated with each sport, volleyball and handball, separately and the name of these factors and hypotheses of the research building factorial analysis of forty-four anthropometric measurements and identify the most important standard anthropometric factors in both volleyball and handball and find the statistical differences the function in the most important measurements anthropometric between volleyball and handball for volleyball. The researcher used the descriptive manner, the survey, as an appropriate method to achieve the objectives of the research, as the researcher used factorial analysis as a picture approach, descriptive. The research sample included 61 juniors, divided into 25 juniors of volleyball and
36 for handball. Selecting the research sample was by using of the method of random sample and included a sample of some Egyptian juniors in volleyball and handball, registered in Egyptian sports federations of the two sports. The researcher applied the 44 anthropometry variables under study on a pilot study, on the number of 30 juniors were selected from junior and outside the sample basic research and that was at 15 juniors of volleyball, 15 juniors of handball and be credited to the validity and reliability of the measurements of anthropometric, has made transactions stability elevated limited between 1 to 0.934, and all statistically significant at 0.01 level, which indicates the stability of measurements.

The results of recycling factorial orthogonal for a class volleyball revealed the admission of five main factors, three factors expatriates, that the results of recycling factorial orthogonal to the category of handball revealed on the acceptance of three key factors, five factors other than pure, that the results of recycling factorial orthogonal to the category of volleyball revealed for the admission of five key factors are: along the lower limb, lengths and offers some parts of the body, circumference of upper limb, obesity of the upper part, of the lower limb and three factors expatriates, that the results of recycling factorial orthogonal to the category of Handball revealed on the acceptance of three key factors are the breadth, obesity and circumferences and five factors other than pure, there are significant differences in the abstract level 0.01 between both volleyball and handball from the results of anthropometric measurements, the values of "t" calculated ranged from -0.77 to -22.17, in light of the objectives of the research and the limits of the sample and on the basis to refer to the results and conclusions, the researcher recommends that the anthropometric measurements, resulted from the current study, are among the most important foundations which take into account when choosing players of volleyball and handball.

Hanlon (2010) Increasingly, health organisations and governing bodies in developed countries are paying serious attention to the problem of adult inactivity. Many of the programs designed to increase levels of activity, particularly amongst target populations, such as women, have not been systematically assessed for their effectiveness in recruiting women and helping them maintain activity levels. The purpose of this study was to determine what attracted and sustained women to participate in physical activity programs. Responses from a survey to sport and recreation program providers identified 64 successful programs in the state of Victoria, Australia. Eight of these programs were purposively selected for case study analysis. Data was collected from a focus group with women participants from each of these eight programs. Six core themes emerged from inductive content analysis of the focus groups. The most frequent participant responses related to the social aspects of the exercise environment. Women in the focus groups valued instructor professionalism and instructors’ technical knowledge, however, it was their awareness and sensitivity that participants appreciated most. This exploratory study is important because it reflects the voices of women talking about what made physical activity programs successful for
them. The study raises critical questions that should be examined systematically through large scale survey research and field-based intervention studies, which in turn should stimulate program development to encourage women in physical activity.

O'Keefe et al. (2011) A large proportion of the health woes beleaguering modern cultures are because of daily physical activity patterns that are profoundly different from those for which we are genetically adapted. The ancestral natural environment in which our current genome was forged via natural selection called for a large amount of daily energy expenditure on a variety of physical movements. Our genes that were selected for in this arduous and demanding natural milieu enabled our ancestors to survive and thrive, leading to a very vigorous lifestyle. This abrupt (by evolutionary time frames) change from a very physically demanding lifestyle in natural outdoor settings to an inactive indoor lifestyle is at the origin of many of the widespread chronic diseases that are endemic in our modern society. The logical answer is to replicate the native human activity pattern to the extent that this is achievable and practical. Recommendations for exercise mode, duration, intensity, and frequency are outlined with a focus on simulating the routine physical activities of our ancient hunter-gatherer ancestors whose genome we still largely share today. In a typical inactive person, this type of daily physical activity will optimize gene expression and help to confer the robust health that was enjoyed by hunter-gatherers in the wild.

The previous chapter was introductory wherein the problem was focused. The purpose of the study was enlightened. The study is based on the main factors of the aqua aerobic exercises on the selected physical and physiological variables among the sports Student studying at Osmania University Sports Student. The hypothesis was formulated, the limitations of the study and objective are also explained including operational definitions.

Now, the literature on the similar topic or subject will be reviewed based on the earlier studies with specific references. In this chapter, the review of related literature is presented.

Abraham investigated the effect of six weeks training programme on selected physiological variables (haemoglobin, pulse rate, vital capacity, cardio-vascular endurance and peak expiratory flow rate) of professional college students. The study concluded that cardio-vascular endurance and peak flow improved due to training. There was a significant reduction in resting pulse rate of the subjects and there were no significant changes in haemoglobin content and vital capacity after six weeks of training.
Chakraborti has compared effects of endurance running and vigorous free hand exercises on selected physiological variables. The data was collected on thirty two male students of first year Bachelor of Physical Education class before and after an experimental period of eight weeks. The results indicated that both training programmes improved significantly in haemoglobin content, systolic blood pressure and pulse rates, where as there was no improvement recorded in case of vital capacity and breath holding.²

Cooper³ et al., studied the effect of an aerobic conditioning programme on cardiovascular fitness. Pre- and post-tests were administered to each student by cooper's twelve minutes run and walk test. The experimental group initially ran 5-6 minutes and then progressed to 14 minutes by the end of the programme. The training was given for 15 weeks and from the results it was concluded that an endurance training programme significantly improved the cardio-vascular fitness.

Dolgener⁴ and Brooks determined the effect of an interval and continuous training programme one mile run performance and V̇O₂ Max and found the interval training group demonstrated significant increase in V̇O₂ Max and significant decrease in percent body fat, resting heart rate, and mile run time.

Franc⁵ made an investigation on selected physiological parameters during terminal stages of severe exercises. He selected nine physiological parameters and examined nine male subjects who were divided into sedentary control group that trained for eight weeks. The results showed that training had a beneficial effect on exercise diastolic blood pressure, heart rate and oxygen consumption and on the recovery rate of blood pressure and heart rate.

Hunter and McCarthy⁶ examined the effect of high intensity and anaerobic training on resting blood pressure and a variety of other physical and psychological variables in eight Adut male competitive cyclists who trained five days a week for eight weeks in two training programmes. Significant training effects were found in both programmes for V̇O₂ max, resting heart rate and maximal performance on a bicycle ergometer test.