Chapter - II

REVIEW OF RELATED LITERATURE

A review of the literature related to the present study that the research scholar could gather in order to provide the background material to evaluate the significance of this study as well as to interpret its findings is presented in this chapter.

Giade et al., (1991) studied effects of different types of physical training on lipid metabolism, serum lipids, lipoprotein cholesterol, apoproteins A-I and B, hepatic (HTGL), extrahepatic (LPL) and total (PHLA) post-heparin lipoprotein lipase activities were studied in elite athletes engaged in aerobic ('B', no. 13), anaerobic ('C', no. 17) and mixed ('D', no. 9) training programs and in a group of sedentary controls ('A' no. 15). In the aerobic and mixed groups serum triglycerides were significantly lower compared to sedentary controls while total serum cholesterol and LDL cholesterol, as well as serum apoprotein B levels were only slightly lower. HDL cholesterol and HDL 2 cholesterol (2.89 ±0.37 Vs 3.6 ±0.47, p < 0.01) and LDL cholesterol/HDL cholesterol (1.69±0.38 Vs 2.23 ±0.43 p <0.05) ratios were significantly lower only in aerobic athletes compared to the control group. PHLA and LPL activities were slightly higher in the aerobic group than in controls, while PHLA and HTGL were significantly lower in aerobic and mixed athletes. No significant correlations were found between HDL cholesterol and energy expenditure during training, indexes of adipose mass or lipolytic enzyme activities. The results of this cross-sectional study seem to indicate that specialized training programs
have a different effect on lipoprotein pattern and lipolytic enzyme activities, and only aerobic exercise has a potentially antiatherogenic effect.

Terjung et al. (1983) reported on the influence of exercise on chylomicrons triacylglycerol metabolism: plasma turnover and muscle uptake. Triglycerides, circulating in chylomicrons, represent a potentially rich source of plasma substracts available for tissue uptake. Indirect estimates of the contribution that triglycerides-derived fatty acids may make to the total energy costs during exercise in a fasting condition may be minor. However, the appropriate direct measurements during a postprandial condition, where total plasma triglyceride turnover is very large, have not been made. The authors provide ample indirect evidence to suggest that the uptake of triglyceride may be increased during exercise. The decrease in the concentration of circulating triglyceride may be due to a greater uptake by the working muscle. The increased triglyceride uptake by working muscle could increase the turnover of plasma triglyceride during exercise, This possibility is shown by studies that exercise reduces postprandial plasma triglyceride levels.

To what extent triglyceride sources, when subjected to natural regulatory process contributes to exercise metabolism during exercise remains to be established. The authors recommend for further research evaluating various aspects of circulating triglyceride metabolism, in order to establish overall understanding of lipid metabolism during and after exercise.
Coutinho and da Cunha (1986) compared different degrees of physical activity and levels of blood lipids/lipoproteins, as well as the anthropometric and physiological variants. One hundred fifty seven non smoking males, aged 15 to 31 years old, average 21 years, were divided into two groups: G1 comprises 88 athletes individuals and G2, 69 non-athletes. The G1 individuals showed less corporal fat and better aerobic capacity than the G2 individuals. The levels of cholesterol, triglycerides, and the VLDL/Cholesterol ratio were lower in the G1 individuals, as well as the risk rate 1 and 2, respectively the ratio of cholesterol/HDL cholesterol and LDL cholesterol/HDL cholesterol. There was no difference in both groups regarding the LDL and HDL cholesterol. In the G2 individuals the percentage of corporal fat had a direct correlation to the blood levels of triglycerides and VLDL cholesterol, and an inverse correlation to the HDL cholesterol blood level. Also, in this group there was a significant correlation to the risk rate 1 and 2. However, in G1 individuals the lipidic/lipoprotein levels were more favourable, which suggests a lower risk of developing Ischaemic Cardiopathy. Statistical analysis was obtained through 't' student, X2 and Spearman methods, with significance level of 0.05.

Toth (1995) and others investigated differences in resting metabolic rate (RMR) and cardiovascular disease risk factors among 86 middle-aged men (36 to 59 years) classified as resistance trained ([RT] n=19), aerobic-trained ([AT] n=37), or untrained ([UT], n = 30) according to habitual exercise patterns. RMR, body composition, body fat distribution, supine blood pressure, maximal aerobic capacity
(VO2 max), plasma lipid levels, and fasting levels of insulin, glucose and thyroid hormones were measured. We found that RMR, adjusted for differences in fat-free mass, showed a tendency to be greater in AT men as compared with RT men (P=0.99) and was greater in AT men as compared with UT men (P<0.05). No differences in RMR were noted between RT and UT men. UT men had higher values for total cholesterol, triglycerides, low-density lipoprotein cholesterol (LDL-C), and the insulin to glucose ratio and lower values for high-density lipoprotein cholesterol (HDL-C) all P<0.01) as compared with RT and AT men, whereas no differences in these variables were noted between RT and AT men. Supine diastolic blood pressure was lower in RT men as compared with both AT and UT men. Stepwise regression analysis showed that variations in body fatness accounted for the greatest variation in fasting lipid profile, blood pressure, and the insulin to glucose ratio among groups.

Grandjean et al., (1996) examined the influence of a worksite aerobic training program serum lipid and lipoproteins and cardiovascular fitness in female employees (ss) from Westinghouse corporation, (College Station, Texas) volunteered for the study. Ss were randomly assigned to either an exercise group (EX) (N=20) or control group (n=17). Prior to training (PRE) and following training (POST), all Ss were measured for weight (WT), body composition (%FAT) and tested for maximal oxygen consumption (VO2 max.) PRE and POST Lipid analysis included. Total cholesterol (TC), high density lipoprotein cholesterol (HDL-C), low density lipoproteins (LDL-C), triglycerides (TGL). Following PRE testing, the Ex group aerobically trained by walking, jogging and/or
cycling, at least 3 days per week for 24 weeks in VO2 max (p<0.0006) and a 2 kg WT loss in Ex (p<0.025) with no change in C. both Ex and (SSs exhibited a loss in %FAT (p<0.0001), and a decrease in TC (p<0.0001) and LDL-C (p<0.0001). No differences were observed between groups or over the training period for VLDL-C difference did not reach statistical significance (p<0.0625). These results demonstrate that aerobic training by females in a worksite fitness program significantly improves cardiovascular fitness without altering lipids or lipoproteins.

Albert (1978) conducted the study to determine the effect of a 12 week quantitative aerobic training programme (Jogging) on the fasting serum concentration of cholesterol (C) and triglyceride (TC) in the high density lipoprotein (HDL), low density lipoprotein (LDL) and very low density lipoprotein (VLDL) classes in middle aged men after 3,6,9 and 12 weeks. Significant changes were observed in the concentration of total serum (LDL-C, HDL-TG, LDL-TG and the ratio of HDL-C/LDL-C). The jogging however had significantly lower level of total serum TG (130. Vs 177.5 mg.%), VLDL-TG (83.6 Vs 128 mg.%) and VLDL-C (21.4 Vs 34.2 mg.%) than the TRL. The analysis of covariance indicated that these changes in the lipoprotein fraction were independent of diet and alterations in weight and adipose tissue.

Cohen (1982) examined the effect of varying intensities of aerobic interval training upon plasma lipid profile of sedentary male faculty members. The effects of varying intensities of aerobic interval training on lipid function, body weight, body
composition and a cardio-respiratory function were studied in 49 sedentary male Brooklyn College faculty, 30-63 years.

The analysis of covariance “F” test showed that there were no significant difference in lipid levels among groups as a result of conditioning. Additional analysis using the ‘t’ test showed significant intragroup increase in maximum oxygen consumption in the experimental groups training at 85%, 75% and 65% of maximum heart rate. Significant intragroup increases in HDL level were also been following training at 85% and 75% of maximum heart rate, and significant intragroup decrease in the LDL level and LDL/HDL risk ratio were seen following training at 75% of maximum heart rate. There were no significance within group difference in body weight, body composition, dietary habits, or alcohol consumption following training.

Tooshi (1971) investigated to determine the effects of three different durations of endurance training on serum cholesterol, body composition and other fitness measures. Twenty four adult men between the age of 27-54 years were selected randomly. The subjects were divided on the basis of their serum cholesterol values into three groups, (1) Group A, exercised fifteen minutes a day, (2) Group B, exercised thirty minutes a day, (3) Group C, exercised forty five minutes a day, for five days a week for a total of twenty weeks. The fortyfive minutes endurance training produced significant reduction in total cholesterol levels and total body fat, while endurance training of thirty and fifteen minutes a day did no appear to be significant to alter serum cholesterol and total body fat significantly. The adult men who participated in fifteen minutes endurance training did
not produce any significant improvement in serum cholesterol, body composition and cardio-vascular variables, but they produced a significant change in motor fitness measures.

Thomas et al. (1981) studied on the effect of different running program on percent body fat and plasma lipids. Fifty nine untrained men and women, aged 18-32 years, were randomly assigned to one of four groups: (1) 4 mile: running continuously at 75% of maximum HR, (2) 2 mile: running continuously at 75% of maximum HR, (3) 3 minutes of walking for eight sets, and (4) Control: no exercise program. The training was performed three times per week for 12 weeks. Analysis of covariance indicated that only the interval group improved more than the control in VO₂ max. Percent fat decreased in all exercise group, but no programme was superior. TG decreased in the exercise group, but cholesterol was unchanged. However, the interval runners exhibited greater increase in HDL-C/LDL-C than the other exercise group. Although men and women differed on the pre-test in VO₂ max, percent fat and HDL-C, their response to the training was similar.

Robert and Wallance (1987) determined whether 12 months of dynamic exercise conditioning modifies concentrations of plasma lipids and lipoproteins in 22 previously sedentary men and women. Subjects were divided by sex an adherence to a program of walking jogging or swimming for three days per week, at 60 to 80 percent of heart rate reserve. High adhering women (HAW) decreased concentration of total cholesterol and LDL-C. There were no changes in concentrations of HDL-C and VLDL-C
in high adhering men (HAM) and high adhering women (HAW). Concentration of triglycerides (TG) were lower in HAM compared to low adhering men post conditioning. The findings demonstrated that dynamic exercise of this magnitude of this study increases VO2 max and favourably modifies TC, TG and LDL-C but no HDL-C and VLDL-C.

Cardoso Saldana (1995) and others investigated the effects of long-term high level physical exertion on plasma lipids and lipoproteins. Ninety-one young athletes, 70 men and 21 women, who practiced sports such as running, swimming, rowing, boxing and soccer, were studied. The control group included 101 healthy subjects, 77 men and 24 women, with sedentary life style. The mean plasma levels of total cholesterol (TC) [P = 0.04], low-density lipoprotein cholesterol (LDL-C) (P = 0.04) and the atherogenic index (P = 0.01) were lower, and high-density lipoprotein cholesterol (HDL-C) (P < 0.005) significantly higher in male athletes than in controls. Mean plasma lipids and lipoproteins concentrations were not significantly different in sports women when compared with their controls. The prevalence of hypercholesterolemia, hypertriglyceridemia and low HDL-C levels, were lower in male and female athletes of the five sport disciplines than in sedentary controls; however only hypocholesterolemia, (P < 0.05) and the atherogenic index (P < 0.01) were statistically different. These results, consistent with data previously published, show that low plasma levels of TG and high levels of HDL-C characterizes the athletes who practice an aerobic physical activity; additionally, in male athletes we found that long-term exercise appears to reduce LDL-C
plasma levels. This latter finding agree with most, but not all, studies in the literature. They conclude that athlete's have a lipid profile that may be protective against the development of atherosclerosis.

Roger et al. (1986) determined the effect of long term exercise training on exercise capacity and plasma lipids in patients with Ischemic heart disease. Nine male patients with coronary heart disease were studied after one year participation in a vigorous cardiac rehabilitation program and then again after six being researched in various laboratories throughout the world. Epidemiologic research indicates that a vigorous exercise programme may bring about an increased level of HDL-C in young and middle aged men, while at the same time, exercise appears to bring about, if any, decreases in total serum cholesterol levels.

Matson and others (1993) opine that exercise training can have favourable affects on the lipid profile in humans. However, the magnitude and direction of the gender effect is not clear. Using meta-analysis, a method for statistically integrating separate research findings, the results of 187 studies (published 1955 to 1992) examining the effects of exercise training on lipid and lipoprotein levels were reviewed, of which 152 met the conclusion criteria for this analysis. Data were divided into two groups by gender. Results show that exercise training appears to have a similar effect on the lipid profile for both men and women, with expected significant interaction with initial levels (i.e. subjects with higher initial levels showed greater decreases). Similar significant increases in VO2 max and decreases in body weight occurred in both groups.
<table>
<thead>
<tr>
<th></th>
<th>CHOL</th>
<th>LDL-C</th>
<th>HDL-C</th>
<th>CHOL/HDL-C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>200</td>
<td>131</td>
<td>46.2</td>
<td>4.43</td>
</tr>
<tr>
<td>Post</td>
<td>192</td>
<td>124</td>
<td>48.2</td>
<td>4.07*</td>
</tr>
<tr>
<td>Women</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>199</td>
<td>120</td>
<td>54.9</td>
<td>3.56</td>
</tr>
<tr>
<td>Post</td>
<td>193</td>
<td>115</td>
<td>56.0</td>
<td>3.36</td>
</tr>
</tbody>
</table>

Note: Units are mg/dl; for pre-post changes* p < .05.

The authors conclude that exercise training may be useful in decreasing risk in both men and women for coronary artery disease due to high cholesterol levels.

Adiputra et al., (1992) studied to find out the effects of Modern Balinese Baris Dancing Exercise (MBBDE) on serum lipid profiles. Subjects of the study were 30 healthy young male Balinese as an experimental group and another 30 healthy young Balinese as control group. The MBBDE involved exercise intensity at 70-80% of targeted heart rate, for 50 minute period, 3 times per week for 8 weeks. Pre- and post-control group design was applied. Total cholesterol and triglyceride were measured enzymatically. Following MBBDE 3 x 50 min/week for 8 weeks duration, serum level of high density lipoprotein cholesterol (HDL-C) concentration increased significantly.

Bauman and Owen (1991) analysing the relationships between different levels of participation in physical activity and biological indices of cardiovascular risk examined a sample of 6814 male and female adults who took part in a national risk factor prevalence survey. Participation in physical activity was classified as “aerobic” (14.6% of
total). “moderate” (53.6%) and “inactive” (31.8%). Bivariate analyses found significant associations between level of exercises participation and diastolic blood pressure in men, but not in women; significant associations were found between reported physical activity and systolic blood pressure, total serum cholesterol high-density lipoprotein (HDL) cholesterol, HDL/total cholesterol ratio and triglycerides for both men and women. Further analysis were controlled for age, education, and the survey site, which were potential confounders of the association between physical activity and other coronary heart disease risk factors. After adjustment, significant associations remained between levels of exercise participation and HDL cholesterol levels, HDL/total cholesterol ratio and serum triglyceride levels for both sexes. In women, there was also a significant relationship between activity level and body mass index. In addition, for men only, there was a significant inverse relationship between activity level and body mass index. In addition, for men only there was a significant inverse relationship between physical activity and total cholesterol, and for oldermen, between physical activity and systolic blood pressure. It is well recognised that physical activity has an independent effect on reducing the risk of coronary heart disease. The results of this study suggest that there may be small supplementary effects mediated through the relationship between exercise and other biological cardiovascular risk factors.

Kantor et al. (1983) conducted a study on acute increase in lipoprotein lipase following prolonged exercise. To investigate the acute effects of prolonged exercise on lipoprotein metabolism, data were collecte on ten well trained men (aged 20-
37 yrs) one day before and one day after a 42 km. foot race. LDL-C decreased by ten per cent and total HDL-C levels increased by nine per cent after the race. Triglyceride levels decreased by thirty-nine per cent.

Weltman et al. (1983) conducted a study on time course of serum lipid and body composition change seen with an intense diet., exercise and stress management program. Forty patients (12 men and 20 women) who participated in a 26 day in-resident, intensive dietary modification, exercise and stress management program. Results indicated large reductions in serum cholesterol over the 26 days program. Inspection of week by week changes revealed that the majority of the reduction in serum cholesterol was observed during the first week. HDL-C was not changed over time for males, while females reduced HDL-C by 6 mg./dl. Males reduced body weight (BW) by 5.3 kg. while females reduced BW by 4.0 kg.

Rochelle (1961) investigated plasma cholesterol changes during a physical training programme. Blood plasma Cholesterol levels were followed in six experimental and six control subjects during a five-week training programme (two-mile run for time, five days per week) and an eight-week detraining period. Plasma cholesterol levels were determined by the Duboff-Stevenson ultramicro method. Plasma cholesterol levels were significantly reduced during the course of intensive training. A temporary rise in plasma cholesterol occured during exercise, probably indicative of fat mobilization and ultimate utilization during physical exercise. Plasma cholesterol levels returned to pre-training levels within four weeks after training was stopped.
Guerra, Duarte and Mota (1986) investigated on physical activity and cardiovascular risk factors in school children. The aims of the study were (i) to provide descriptive data about various CVD factors (triglycerides (TG), total cholesterol (TC), blood pressure and physical activity patterns) among school children in a specific sample; (ii) to document the extent to which physical activity is associated with variations in CVD risk factors among school children. The study comprised of 474 children (242 males and 232 females, aged 8-13 yrs) selected in Porto area of Portugal. The multiple regression analysis showed that the physical activity index is not associated with the variation in the biological risk factors in girls, while for boys a significant association was found for systolic blood pressure (SBP) and diastolic blood pressure (DBP). The present study shows that boys were significantly more active than girls, except for the young group. However, except for SBP and DBP in males, no significant benefit from physical activity was related to the CVD risk factors evaluated.

Metternich (1982) determined the effect of aerobic training on the plasma lipids and lipoproteins, functional capacity and body composition of sedentary adult women. All participants were given a pre-test, an intermediate test and a post-test for analysis of lipoprotein variables namely, HDL-C, LDL-C, triglyceride, total cholesterol and HDL-C/TC ratio; body composition variables and functional capacity measured by the Bruce Treadmill Test.
The results of the fourteen weeks aerobic training on adult women significantly increase the functional capacity and decreased body fat. HDL-C, LDL-C, triglyceride and total cholesterol remained unchanged in this particular study.

Gerberich (1983) analysed the potential differences in cardiorespiratory endurance, blood lipids levels, and body composition in twenty sedentary women. Resulting from a 12 weeks period of miniature trampoline (rebound exercise) Exercise session consisted to two 15 minute periods (five days a week), for 12-weeks. No significant differences were observed between the groups for maximal heart rate, body weight, percent body fat, and HDL-C levels.

Kokacinos (1978) examined the effect of weight training on lipoprotein - lipid profiles. Twenty-nine healthy, untrained college age males were studied before and after ten weeks of weight training. A low repetition group (LR) trained using 4 to 6 repetitions maximum, and a high repetition group (HR) used 14 to 16 repetition maximum. VO2 max, body weight and percent fat did not change in either group. No significant post training difference were observed in triglyceride, total cholesterol, HDL-C and LDL-C for the low repetition and high repetition groups.

Savage (1986) examined exercise training effect on serum lipids of prepubescent boys and adult men. Training involved walking/Jogging/running 3 days per week at a distance which progressed from 2.4 km. per day in the first week and 4.8 km. per day from the fifth week. Fasting blood samples, collected on two days during both
pre and post-training, were assessed for triglycerides, total cholesterol and high density lipoprotein cholesterol. Maximum aerobic power was determined from a treadmill test. It was concluded that boys and men did not differ in the changes in serum lipids and lipoproteins and cardio-respiratory fitness from 10 week of aerobic training.

Suter and Hawes (1993) studied the relationship of physical activity, body fat, diet and blood lipid profile in youths of 10-15 years. Blood lipid profile was examined in 39 boys and 58 girls aged 10-15 years. It was concluded that the association between beneficial lifestyle habits and blood lipid profile generally described in adults are already evident in children. Since there is an increasing evidence that risk factor levels have a fair persistency over years, promotion of physical activity at adolescent age seems to be warranted.

Michielli et al. (1981) made a comparison of exercise training intensity on lipoportein cholesterol fractions. Forty-nine men with a mean age of 44±8 years were studied to determine the effect of 12 week of bicycle ergometer training at 65%, 75%, and 85% of HR Max. on lipoprotein cholesterol fractions in fasting venous plasma samples. Lipid values (total cholesterol, HDL-C, LDL-C, VLDL-C, and TG) showed no significant changes related to training. While exercise intensity cause a training effect, it did not significantly effect lipid levels in the blood.

McNaughon and Davies (1982) examined the effect of a 16 week aerobic conditioning programme on serum lipids, lipoproteins and coronary risk factors. Nineteen
people of varying ages undertook a 16 week aerobic conditioning programme in the form of aerobic dance. The exercise was at seventy percent of their maximum heart rate. The result of the programme indicated that fitness parameters increase for the group due largely to the increased brought about by the male group. Female showed no increase in any of the fitness parameters over the 16 weeks. No statistically significant effect were seen in any of the blood measured variables. It was concluded that 16 weeks of aerobic dance is not of sufficient duration to elicit any change in serum lipids and lipoproteins.

Linder (1983) determined the effect of physical conditioning on lipoprotein profiles of white male adolescents. The experimental group participated in 8-week of progressive aerobic exercise while the control group participated in their normal summer activities. Even though the exercise was strenuous enough to increase the physical condition groups, physical working capacity significantly, as compared to the control group, there was no corresponding effect on this group’s serum lipoprotein levels or in their physical measurements.

Oehlsen and Gaessar (1982) studied five men during a seven week, high intensity aerobic exercise programme in order to assess the time course and magnitude of adaptation in VO2 max, percent body fat, and the following plasma lipid constituents: Cholesterol, triglycerides, HDL, LDL-C and VLDL. The training programme consisted of continuous running and intermittent cycling. Total body mass remain unchanged throughout the seven week training programme. This was achieved by a 1kg. gain in lean
body mass and a 1 kg. loss in body fat. The analysis of variance revealed no statistically significant alterations in any of the blood lipid constituents during the 7 week program.

McMurray and others (1990) investigated the effectiveness of a fitness programme designed as an alternative to the standard weight-training and running programme and using limited resources and facilities. 43 men from the North Carolina Justices Academy randomly assigned into two groups, completed 12 week of physical training. The WT group used a standard weight training and running, where as the REC group ran and completed a resistive exercise circuit. The REC circuit consisted of nine exercises designed to improve muscular strength and endurance separated by 80 seconds of aerobic exercise. The exercise used chairs, tables, saw horses and body weight to provide the resistance. The results indicated that the REC program improved muscular strength and aerobic capacity as well as the WT program. Furthermore, the REC group lost more weight, reduced body fat, and improved their lipid profiles significantly more than the WT group. Thus, the REC program is a viable alternative for the training of public safety officers when only limited resources are available.

Young et al. (1993), opined that aerobic exercise training studies involving volunteers generally result in an improved cardiovascular risk factor profile. Little is known, however, about associations between physical activity to evaluate functional fitness, namely flexibility, agility, strength, and endurance, were affected positively by the exercise program (all p<0.1). Adjusting for preprocess by means of an analysis of covariance revealed a significant difference between the groups in psychological well-
being, which favours the exercise \( (p = .012) \). After 12 months, back pain reported by exercisers was lower than that reported by control groups \( (p = .790) \). These results suggest that after 12 months, exercising can produce a significant increase above initial levels in the functional fitness, well-being, and self-perceived health of osteopenic women. Intensity of backpain can also be lowered by exercise. The exercise program succeeded in stabilizing spinal BMD but had no effect on femoral BMD.

**Schurrer (1982)** conducted a study on intensity of training and serum lipid levels. Thirty-one college women participated in a five days per week, 12 week training programme. Subjects were randomly assigned to three groups, above (\( \uparrow \)) the onset of blood lactate accumulation (OBLA) \( (N = 12) \) (trained at two work loads \( \uparrow \) OBLA), below (\( \downarrow \)) OBLA (trained at the workload associated with OBLA) \( (N=11) \) and control \( (C) \) \( (N=8) \) training work loads were equated so that each subject expended 350 kcal/session on the bicycle ergometer regardless of training intensity. Subjects were assessed for total serum cholesterol \( (TC) \), Total serum triglycerides \( (TG) \), high density lipoprotein cholesterol \( (HDL-C) \).

**Wilmore et. al. (1970)** conducted a study on body composition changes with a 10-week programme on jogging. The following conclusion was drawn that the change in body composition induced by training are as follows: (1) a decrease in total body fat, (2) no change or slight increase in lean body weight, and (3) a small decrease of total body weight. For the most part, these changes, particularly that of fat loss are more pronounced for obese men and women than for the already ‘lean’ individual.
Larry et al. (1994) examined the relationship between aerobic dance (AD) volume and Total/HDL cholesterol ratios in 11,826 women (M = 40.4 years), and assessed the effect of potential confounders, such as age, smoking, alcohol use, body mass, estrogen use, and physical activity other than AD, on the AD-Cholesterol association. Physical activity was assessed using a questionnaire that measured frequency and duration of 21 activities. Blood (venipuncture) was analyzed by a certified lab using the enzymatic method. Five AD volume categories were formed, ADO-AD4. ADO subjects were not involved with AD. AD4 reflected the highest AD volume. ADO was used as the reference group. High risk was defined as ratios > 4.5. Risk of elevated Total/HDL ratios was substantially lower for AD4-AD1 compared to ADO without control of the potential confounding factors (Odds Ratio: 0.30; 95% CI = 0.20-0.40, CI = 0.30 – 0.53; 0.56, CI = 0.44 – 0.72; 0.72, CI = 0.53 – 0.97, respectively). After adjusting for all of the potential confounders simultaneously, risk remained significantly lower for AD4 and AD3 (OR: 0.57 CI = 0.33 – 0.99; 0.67, CI = 0.45 – 1.00) respectively. Although cause and prect conclusions are not warranted, regular aerobic dance seems to be strongly related to favorable cholesterol level in women. Women involved in high and moderately high volume AD appear to be at reduced risk unhealthy cholesterol level compared to women not involved in AD.