
Analysis of the lipid profile and anthropometric measurements by the selected variables for the women basketball players after 10 weeks of training

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Introduction: Lipid profile is the panel of blood test to check the abnormalities in the lipids such as cholesterol and triglycerides, which identify the cardiovascular diseases. Even though drug and diet are the standard management for cardio vascular health risks, exercise also have a positive impact on lipid levels and to decrease the risk. Exercise influences the functional efficiency of many systems of our body especially the cardio vascular system. Hence the present study was to analyze the lipid profile and the anthropometric measurements after 10 weeks of training.

Methods: The subjects for this study were twenty women players with minimum criteria of inter college level participations in basketball and they will undergo training for ten weeks with training limitation for 24 hours per week. The experimental procedures, associated risks and the benefits were explained to the subjects before and written informed consent was taken from them. Prior to training and after the training the subjects were tested for the lipid profile and anthropometric measurements.

For lipid profiles, the venous blood samples were drawn after 12 hours of fasting from the ante-cubital fossa of the forearm, between 8.00 and 9.00 a.m. on days prior to the training and after completion of the training. The lipid profile variables; triglycerides (TG), cholesterol (TC), and high density lipoprotein cholesterol (HDLc) levels were measured by an enzymatic spectrophotometric technique with an auto-analyser. These values were then used to calculate the low density lipoprotein cholesterol (LDLc) and the atherogenic indices.

For anthropometric measurements, the Body weight was measured in kilograms using the weighing machine and height using the stadiometer. Body mass index (BMI) was then calculated using the formula $BW/height^2$ (kg/m²). To know the body fat percentage, skin-fold measurements were taken in millimetres at triceps, abdominal, supra-iliac, sub-scapular, front thigh and calf with a skin-fold caliper and Body Fat mass (FM) was calculated using the Faulkner equation.

Analysis:

The data collected prior to training and after the training for lipid and anthropometric variables were analyzed and presented in the following tables. All data are reported as means \pm standard deviations. Statistical analysis was performed using SPSS. A comparison was made of anthropometric characteristics (BW, BMI, Σ 6SF, and FM) and their LP parameters (TG, TC, HDLc, and LDLc, as well as the atherogenic indices) on days prior to the training (T0) and after completion of the training (T10) and also the percentage of change in the outcome variables after 10 weeks was calculated. The differences were considered statistically significant when $p < 0.05$.

The anthropometric measurements of the women basketball players at T0 and T10 and the percentage changes are as follows:

Table:I

	T0 (n= 20)	T10 (n= 20)	% Change	p T0-T10
Weight (kg)	69.6± 9.4	70.1± 9.2	0.8± 3.1	0.274
BMI	21.8± 2.0	21.9± 1.8	0.8± 3.1	0.311
Σ6SF (mm)	93.2± 26.7	87.5± 24.4	-5.2± 6.4	0.027
Fat mass (kg)	14.3± 4.3	13.9± 3.9	-2.0± 10.1	0.240

The levels of lipid profile and associated indices are listed in Table II. There were significant decreases in the levels of LDLc ($p=0.034$), TC/HDLc($p=0.004$) ($p=0.027$) and LDLc/HDLc($p=0.011$)($p=0.030$) after the 10 weeks of training.

Table II

The lipid profile in the women basketball players at T0 and T10 and the percentage changes are as follows:

		% Change	p T0-T10
TG (mg/dL)			
T0	71 ± 35	0.3 ± 29.3	0.329
T10	65 ± 16		
TC (mg/dL)			
T0	182 ± 36	-2.7 ± 15.2	0.284
T10	175 ± 18		
HDLc (mg/dL)			
T0	65 ± 16	7.3 ± 22.6	0.089
T10	71 ± 20		
LDLc (mg/dL)			
T0	102 ± 38	-7.0 ± 18.1	0.034
T10	91 ± 23		
TC/HDLc			
T0	3.0 ± 1.0	-9.5 ± 11.4	0.004
T10	2.7 ± 0.9		
LDLc/HDLc			
T0	1.7 ± 0.9	-13.2 ± 15.4	0.011
T10	1.5 ± 0.7		

Results: The anthropometric measurements of the women basketball players had significant decrease in Σ6SF (0.027) when compared with pre and post training. Also There were significant decrease in low

density lipoprotein cholesterol (LDLc) $p=0.034$, atherogenic indices (TC/HDLc) ($p=0.004$) $p=0.027$ and (LDLc/HDLc) ($p=0.011$) $p=0.030$ after 10 weeks of training.

Conclusion: Hence we can conclude that the physical training for the duration of 10 weeks to the women basketball players is heart healthy as exercise decreases the fat percentage and improves the lipid profile with decrease in sum of six skin fold measurements, the low density lipoprotein cholesterol and the atherogenic indices (TC/HDLc and LDLc/HDLc).

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