

CHAPTER-VII

RESULTS - IV

**ANTHROPOMETRIC CHARACTERISTICS, ADIPOSITY AND SUBCUTANEOUS FAT CONTENT AND
BODY COMPOSITION MEASURES BASED ON PHYSICAL ACTIVITY**

(WITH 15 TABLES AND 60 FIGURES IN THE TEXT)

VII

RESULTS – IV

The overall mean, SD and percentile values (5th, 50th and 95th) of different anthropometric characteristics of PE (n=282) and NPE (n=240) boys group are presented in Table 7.1 and 7.2. Mean of HT, WT, Circumferences are higher the PE boys but all skinfold measurements (except SUBSF) were higher the NPE boys (who are not practiced regular physical exercise) than the PE boys who are practiced regular physical exercise (Figure 7.1 – 7.12).

The overall mean, SD and percentile values (5th, 50th and 95th) of different anthropometric characteristics of PE (n=304) and NPE (n=242) girls are presented in Table 7.3 and 7.4. Mean of HT, WT, Circumferences and all skinfold measurements were higher the NPE girls than the PE girls who practiced regular physical exercise (Figure 7.13 – 7.24).

The overall mean, SD and percentile values (5th, 50th and 95th) of different measures of adiposity and subcutaneous fat content of PE (n=282) and NPE (n=240) boys are presented in Table 7.5 and 7.6. Mean of BMI, STR, CPF and TEFR were higher the PE boys than the NPE boys who are not practiced regular physical exercise. Mean of CI, WHR, WHTR, S5S, STS and SES were higher the NPE boys (who are not practiced regular physical exercise) than the PE boys who practiced regular physical exercise (Figure 7.25 – 7.34).

The overall mean, SD and percentile values (5th, 50th and 95th) of different measures of adiposity and subcutaneous fat content of PE (n=304) and NPE (n=242) girls are presented in Table 7.7 and 7.8. Mean of all adiposity and subcutaneous fat content except CI and WHR were higher the NPE girls (who are not practiced regular physical exercise) than the PE girls who practiced regular physical exercise. Mean of CI and WHR was higher the PE girls (who practiced regular physical exercise) than the NPE girls who are not practiced regular physical exercise. Mean of WHTR was similar of PE and NPE girls (Figure 7.35 – 7.44).

The overall mean, SD and percentile values (5th, 50th and 95th) of different measures of body composition of PE (n=282) and NPE (n=240) boys are presented in Table 7.9 and 7.10. Mean of all body composition except PBF, FMI, AFA were higher the PE boys (who practiced regular physical exercise) than the NPE boys, who are not practiced regular physical exercise (Figure 7.45 – 7.52).

The overall mean, SD and percentile values (5th, 50th and 95th) of different measures of body composition of PE (n=304) and NPE (n=242) girls are presented in Table 7.11 and 7.12. Mean of all body composition were higher the NPE girls (who are not practiced regular physical exercise) than the PE girls, who practiced regular physical exercise (Figure 7.53 – 7.60).

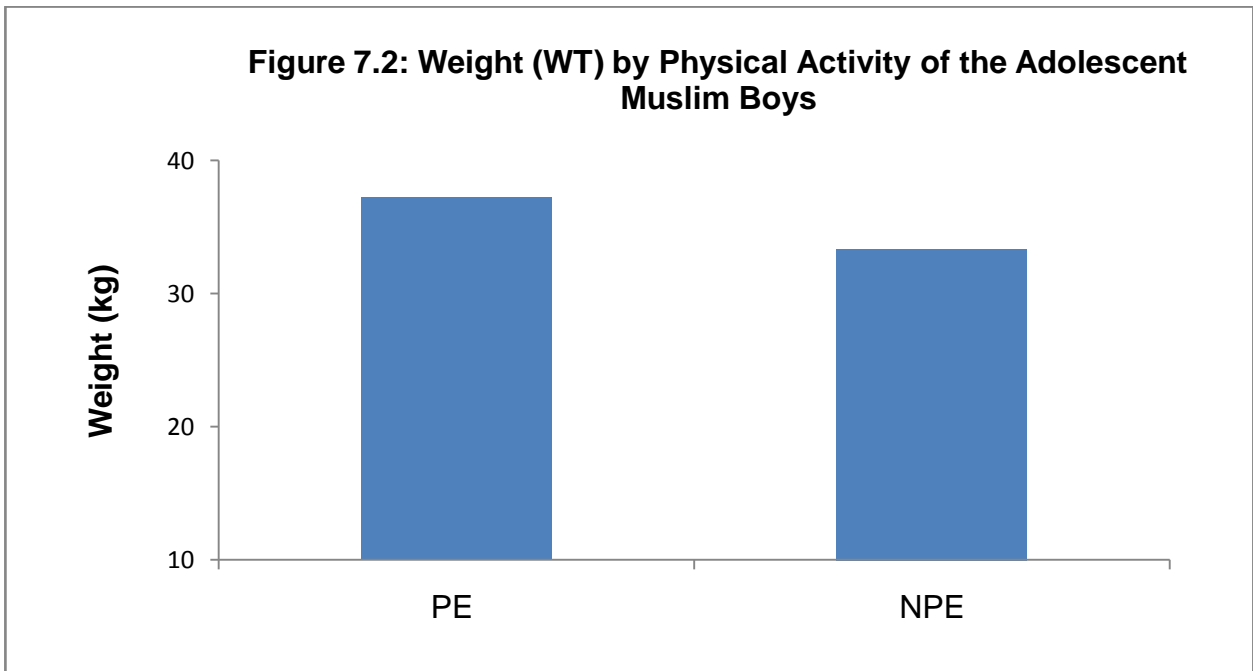
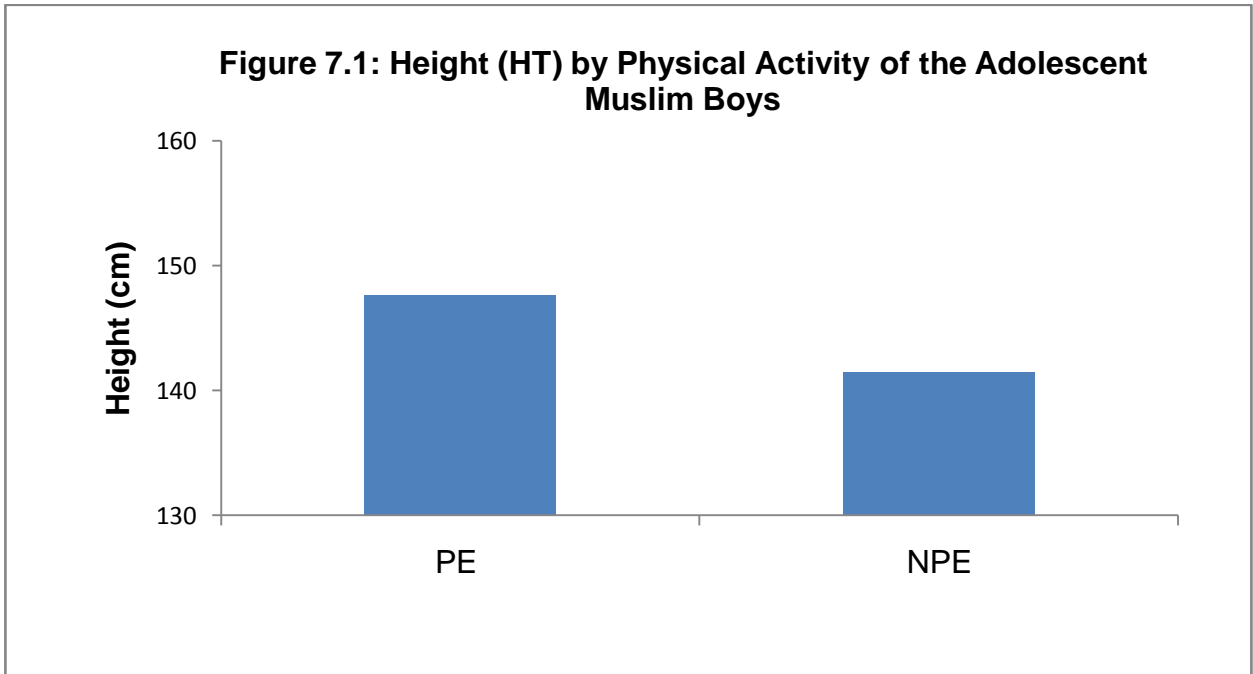
Table 7.13 – 7.15 presented F- Ratio and T- value of different anthropometric characteristics, adiposity and body composition of Muslim adolescents. Variation between PE and NPE boys of all the measurements is statistically significant at the 0.01 level. Furthermore, Variation between PE and NPE girls of all the measurements is statistically significant at the 0.01 level.

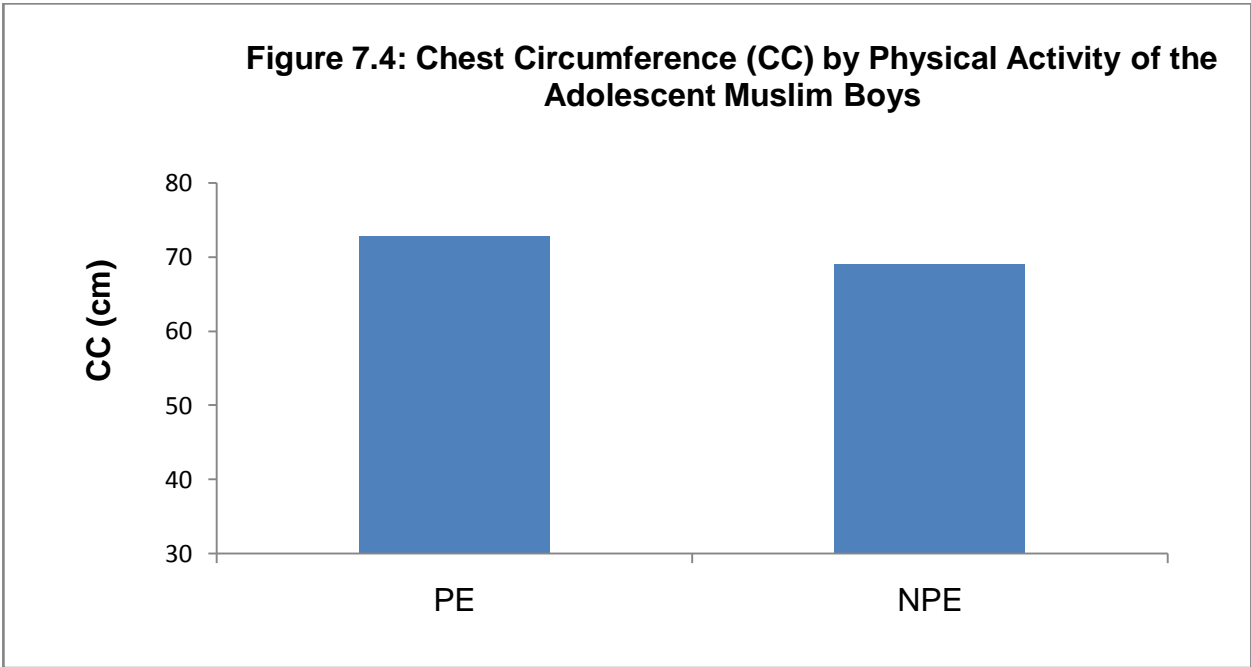
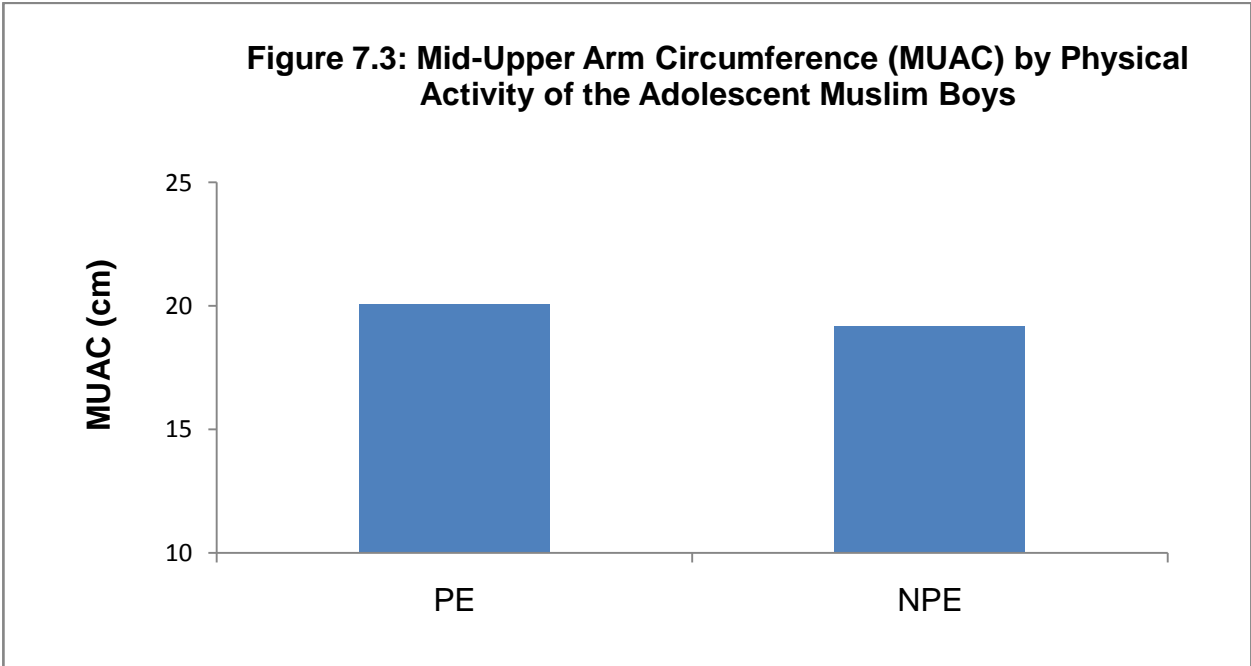
Table 7.1: Mean, SD and Percentiles of Different Anthropometric Characteristics of the Adolescent Muslim PE boys Group (n =282)

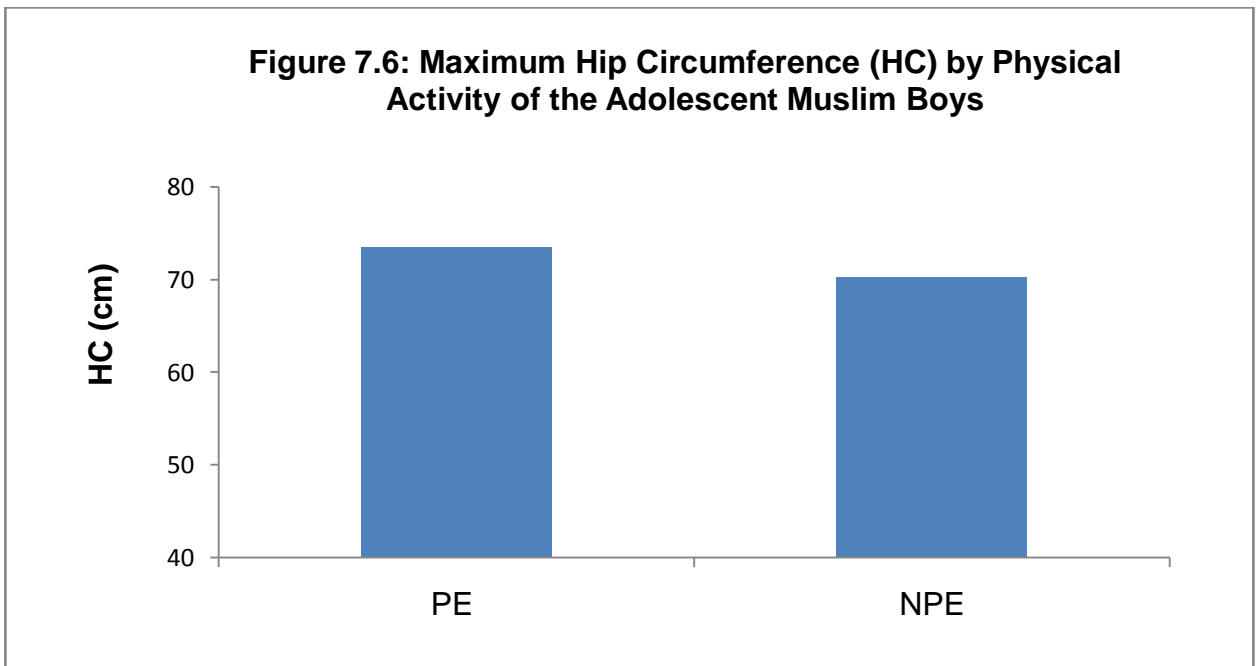
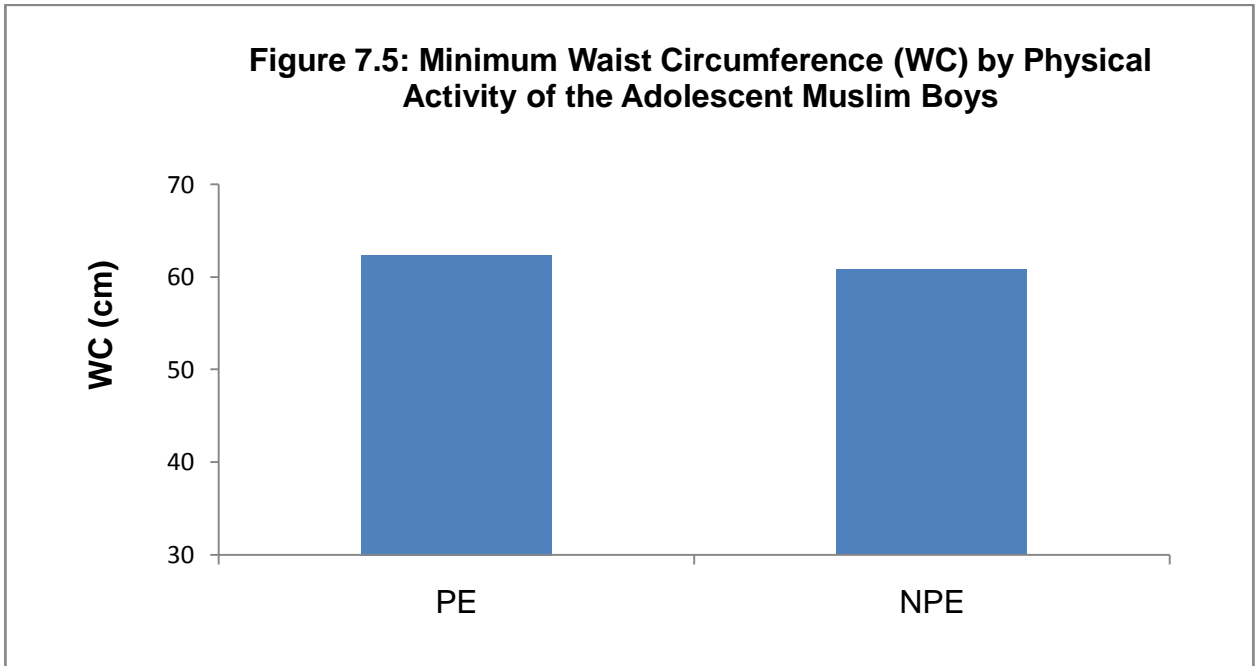
Variable	Mean SD	Percentiles		
		5 th	50 th	95 th
Height (cm)	147.67 (15.60)	126.28	144.90	171.06
Weight (kg)	37.20 (12.10)	23.00	35.00	58.43
Circumferences (cm)				
Mid-Upper Arm	20.06 (3.05)	16.00	19.60	26.00
Chest	72.78 (9.99)	59.50	71.90	90.54
Minimum Waist	62.41 (7.20)	53.60	61.40	76.99
Maximum Hip	73.47 (9.41)	61.10	72.50	89.75
Calf	27.93 (4.60)	22.53	27.60	34.50
Skinfolds (mm)				
Biceps	5.24 (2.07)	3.20	4.80	9.40
Triceps	8.58 (2.98)	5.00	8.00	14.78
Subscapular	7.83 (3.41)	4.40	7.00	14.71
Suprailiac	7.93 (3.91)	4.00	7.00	15.57
Medial Calf	10.36 (2.74)	6.63	10.00	15.57

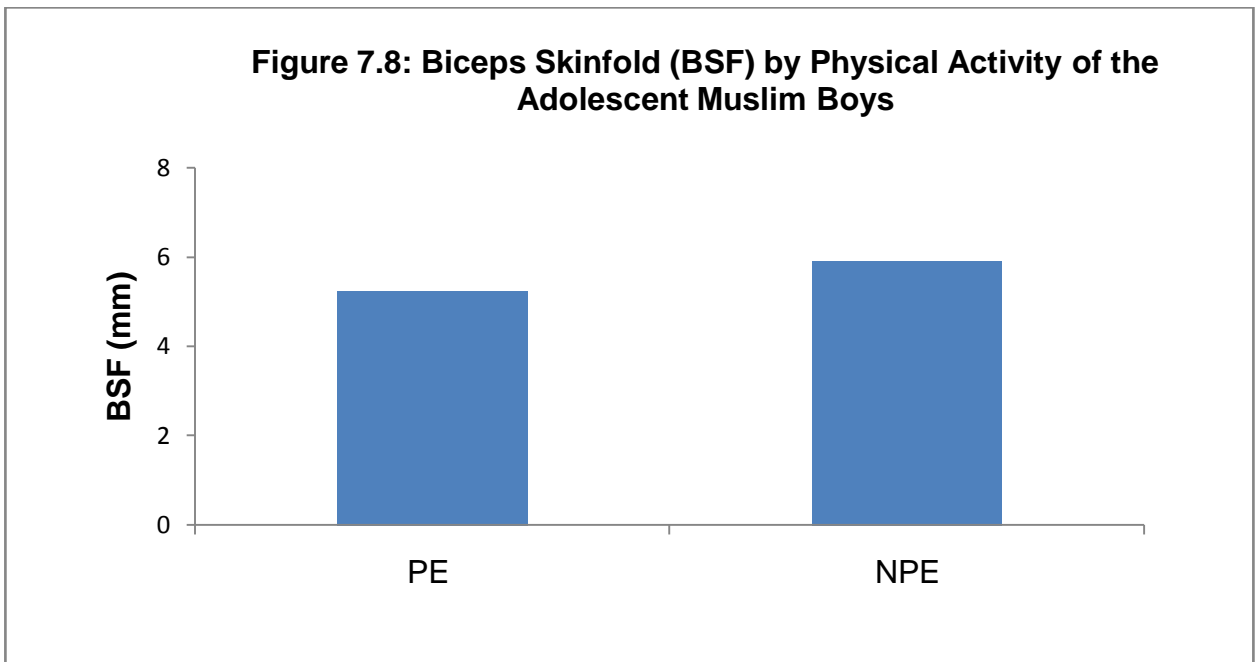
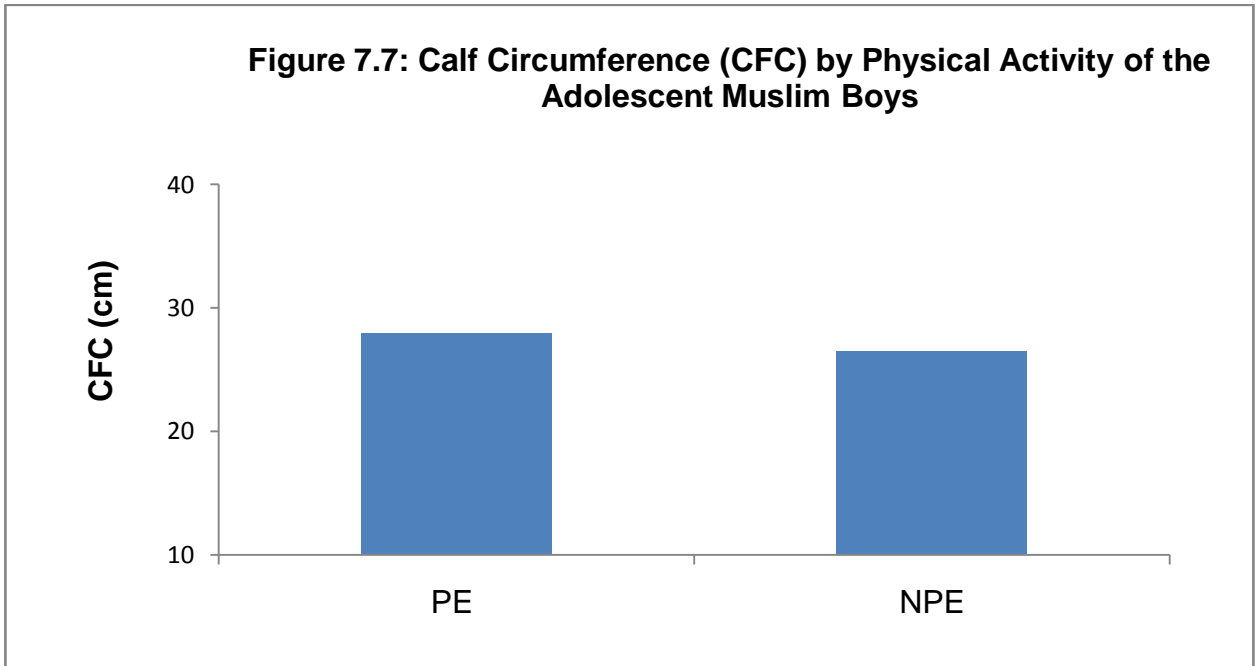
Table 7.2: Mean, SD and Percentiles of Different Anthropometric Characteristics of the Adolescent Muslim NPE Boys Group (n =240)

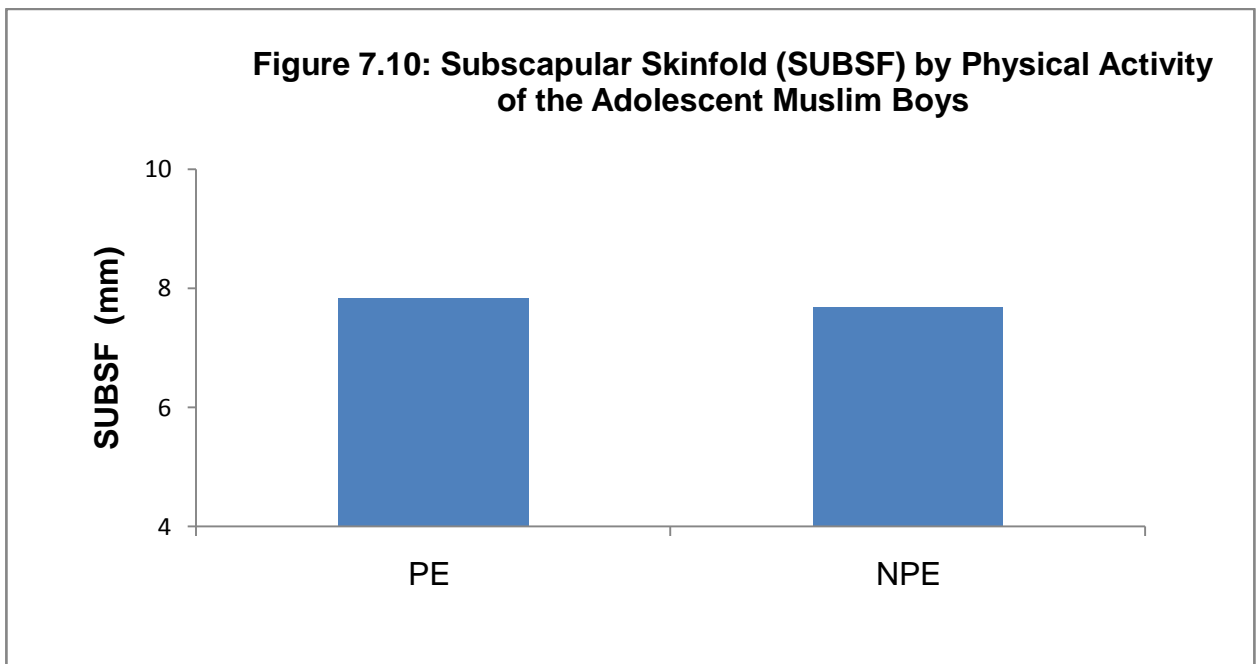
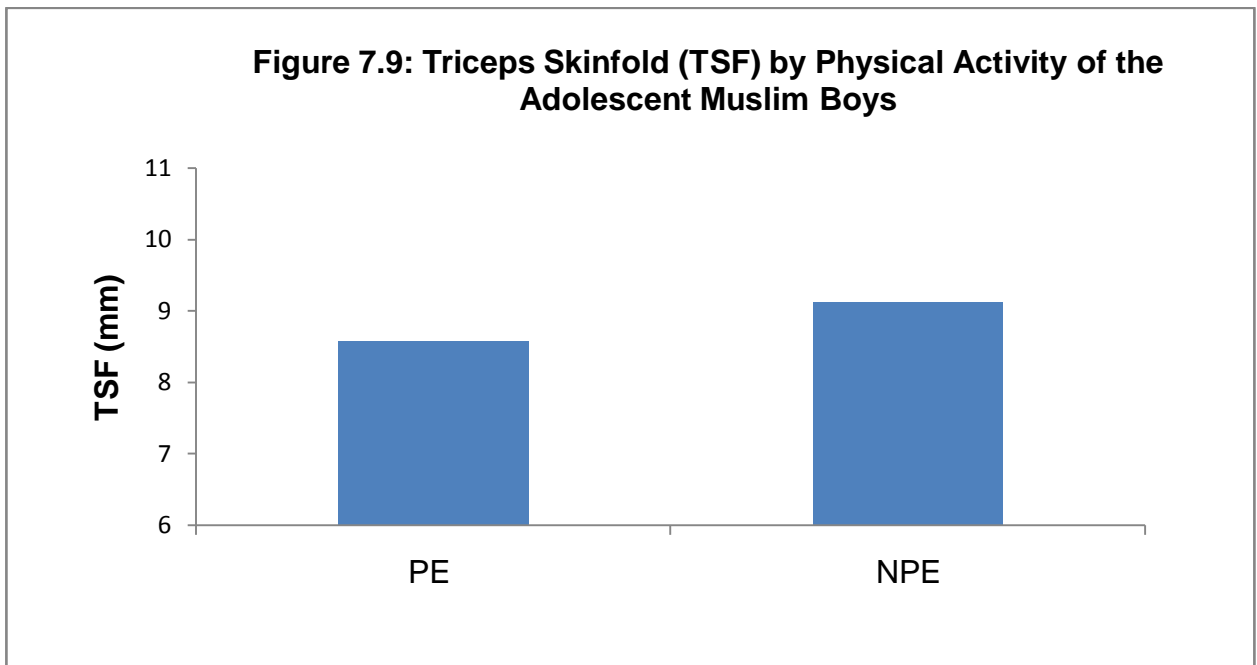
Variable	Mean SD	Percentiles		
		5th	50th	95 th
Height (cm)	141.53 (14.00)	121.54	137.55	165.78
Weight (kg)	33.35 (11.45)	21.03	29.25	58.45
Circumferences (cm)				
Mid-Upper Arm	19.17 (3.05)	15.71	18.55	25.17
Chest	69.08 (9.37)	57.03	66.50	85.98
Minimum Waist	60.79 (8.49)	51.20	58.60	75.50
Maximum Hip	70.30 (9.22)	60.01	67.50	87.60
Calf	26.46 (3.73)	22.00	25.50	33.77
Skinfolds (mm)				
Biceps	5.91 (2.97)	3.20	5.00	12.40
Triceps	9.13 (3.50)	5.20	8.20	16.36
Subscapular	7.68 (3.72)	4.40	6.40	16.58
Suprailiac	8.25 (4.66)	4.20	6.60	19.19
Medial Calf	10.95 (3.39)	6.80	10.30	18.94











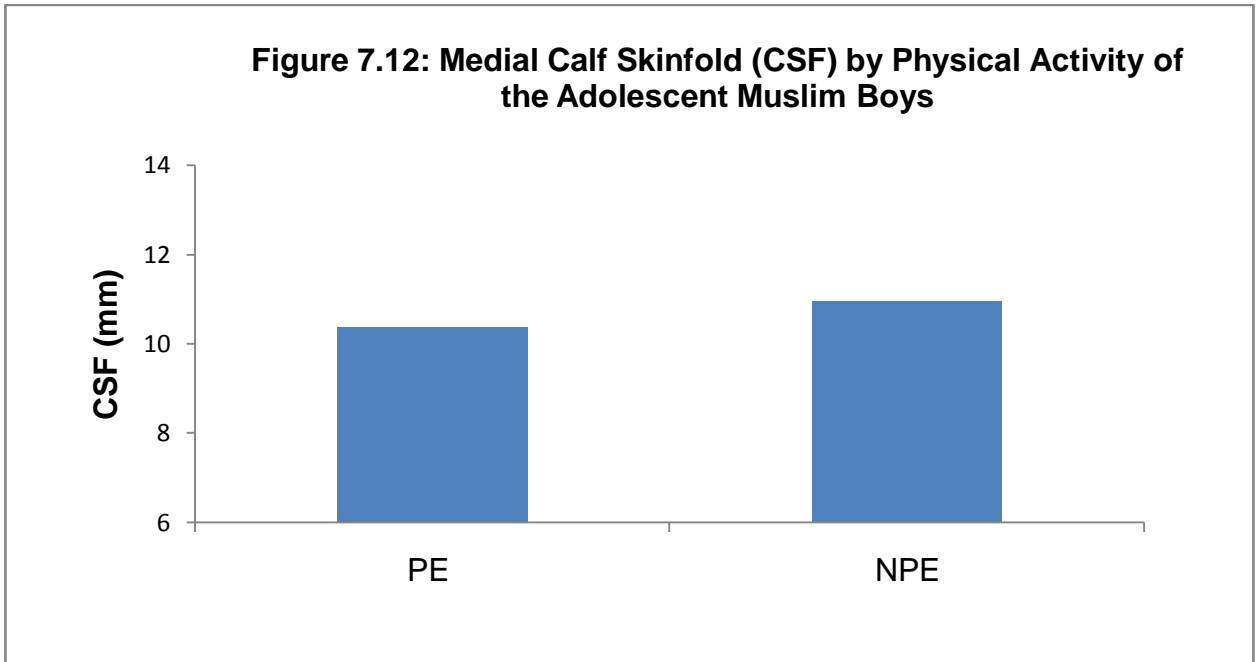
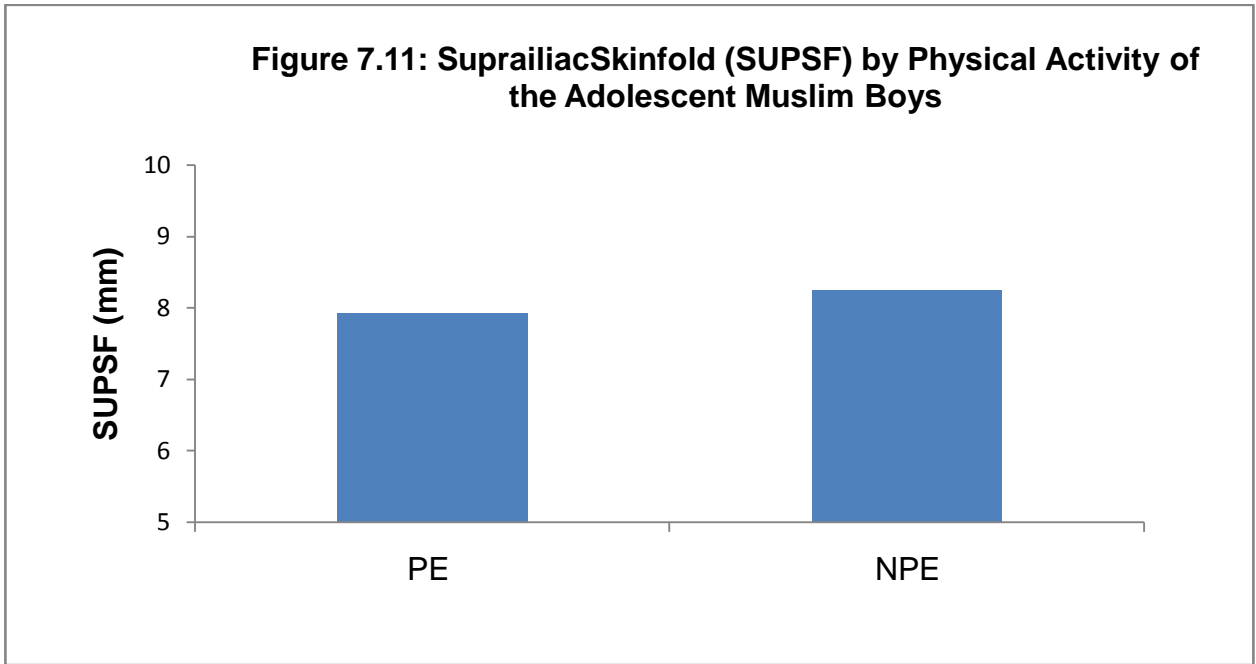
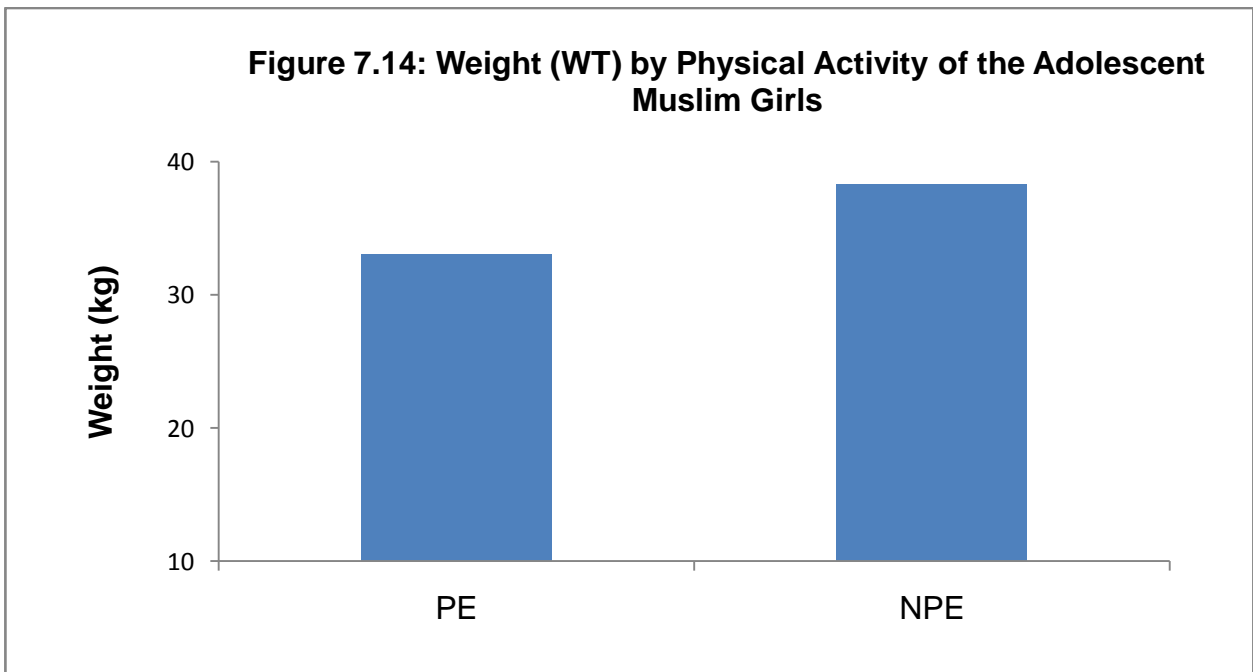
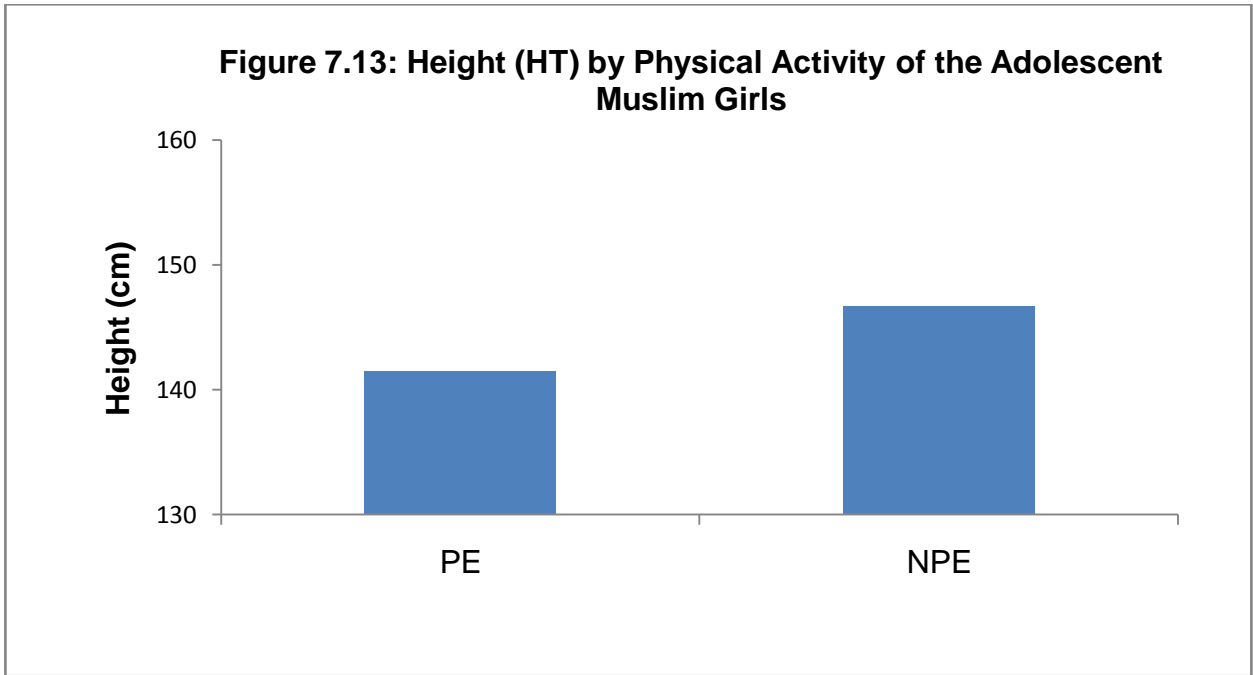


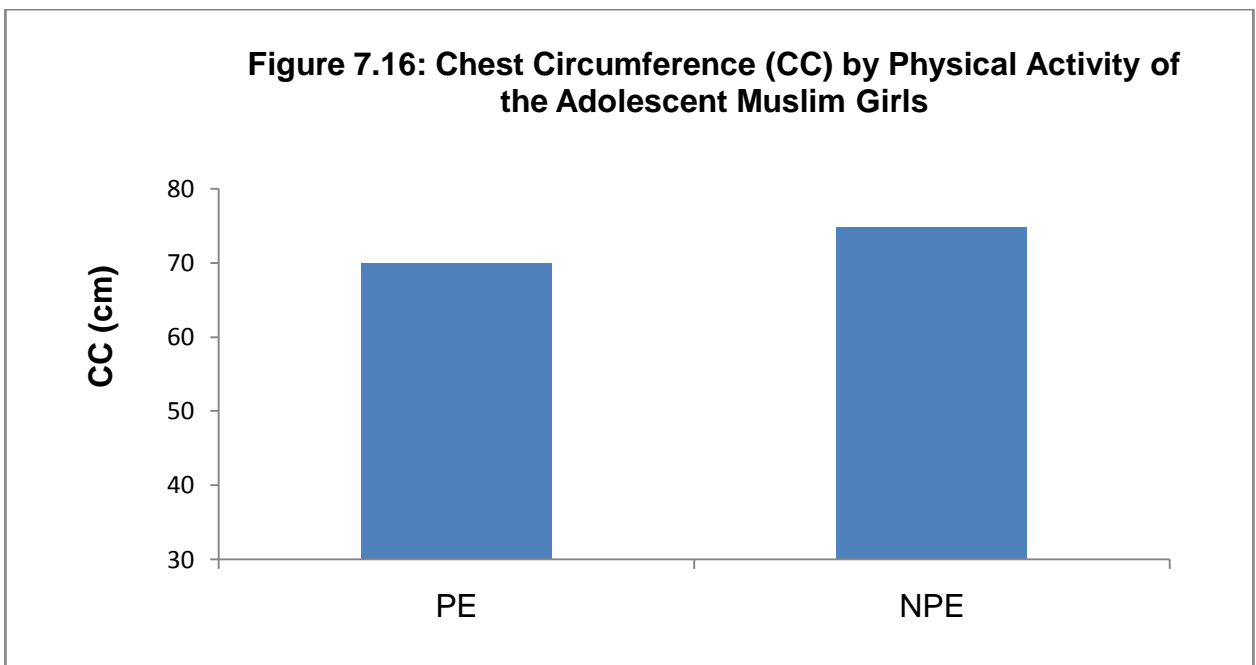
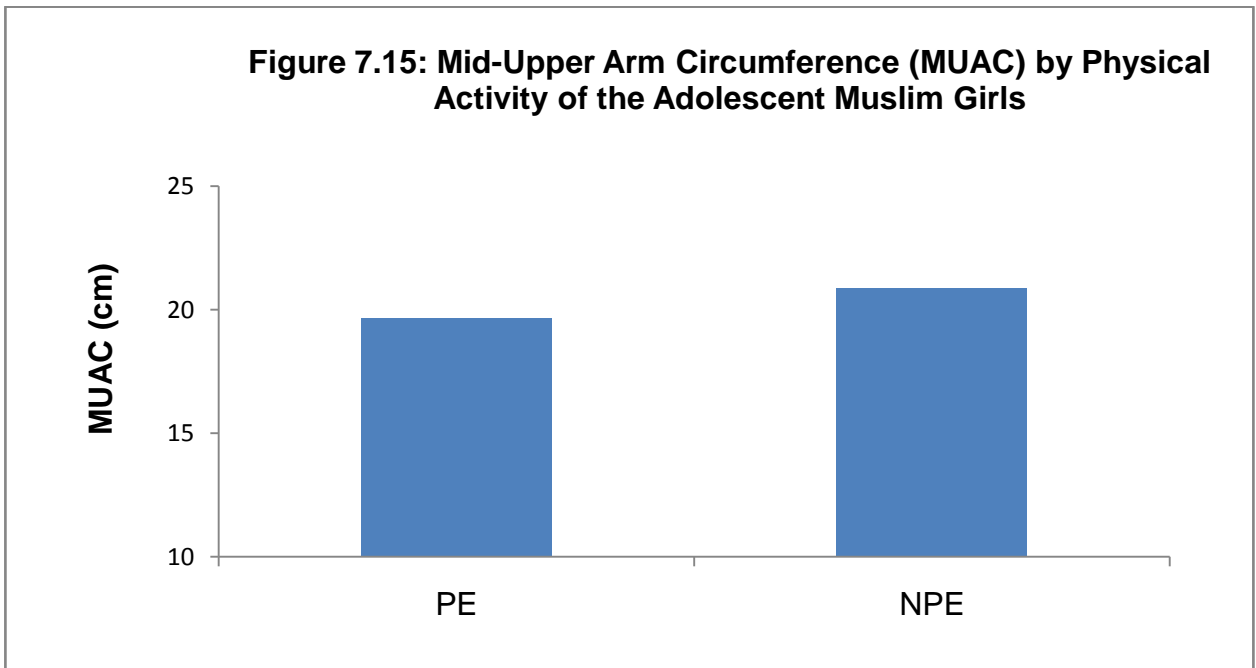
Table 7.3: Mean, SD and Percentiles of Different Anthropometric Characteristics of the Adolescent Muslim PE Girls Group (n =304)

Variable	Mean SD	Percentiles		
		5th	50 th	95th
Height (cm)	141.55 (10.48)	124.78	142.80	157.35
Weight (kg)	33.07 (8.96)	21.50	31.50	47.88
Circumferences (cm)				
Mid-Upper Arm	19.63 (2.69)	16.00	19.40	24.50
Chest	70.02 (7.61)	58.90	69.95	82.88
Minimum Waist	60.38 (6.45)	51.93	59.00	72.50
Maximum Hip	72.17 (8.26)	61.05	71.30	87.15
Calf	26.56 (3.07)	22.00	26.30	31.95
Skinfolds (mm)				
Biceps	7.32 (2.85)	3.80	6.80	12.40
Triceps	12.50 (3.84)	7.45	12.00	19.35
Subscapular	10.74 (4.79)	5.60	9.50	19.70
Suprailiac	10.20 (4.79)	5.60	9.50	19.70
Medial Calf	12.60 (3.27)	8.00	12.20	18.60

Table 7.4: Mean, SD and Percentiles of Different Anthropometric Characteristics of the Adolescent Muslim NPE Girls Group (n =242)

Variable	Mean SD	Percentiles		
		5th	50 th	95th
Height (cm)	146.70 (9.09)	128.79	148.90	158.77
Weight (kg)	38.36 (9.04)	22.50	39.00	51.93
Circumferences (cm)				
Mid-Upper Arm	20.86 (2.83)	16.50	20.80	25.50
Chest	74.92 (7.54)	61.22	75.50	86.19
Minimum Waist	62.87 (7.10)	53.02	62.00	75.17
Maximum Hip	76.60 (8.77)	60.50	78.05	89.62
Calf	28.11 (3.04)	22.80	28.20	32.89
Skinfolds (mm)				
Biceps	8.46 (2.97)	4.40	8.00	14.17
Triceps	13.02 (3.91)	7.40	12.60	20.14
Subscapular	12.47 (5.20)	6.00	11.50	22.97
Suprailiac	12.47 (4.83)	5.63	12.20	23.00
Medial Calf	13.77 (3.61)	8.20	13.60	20.17





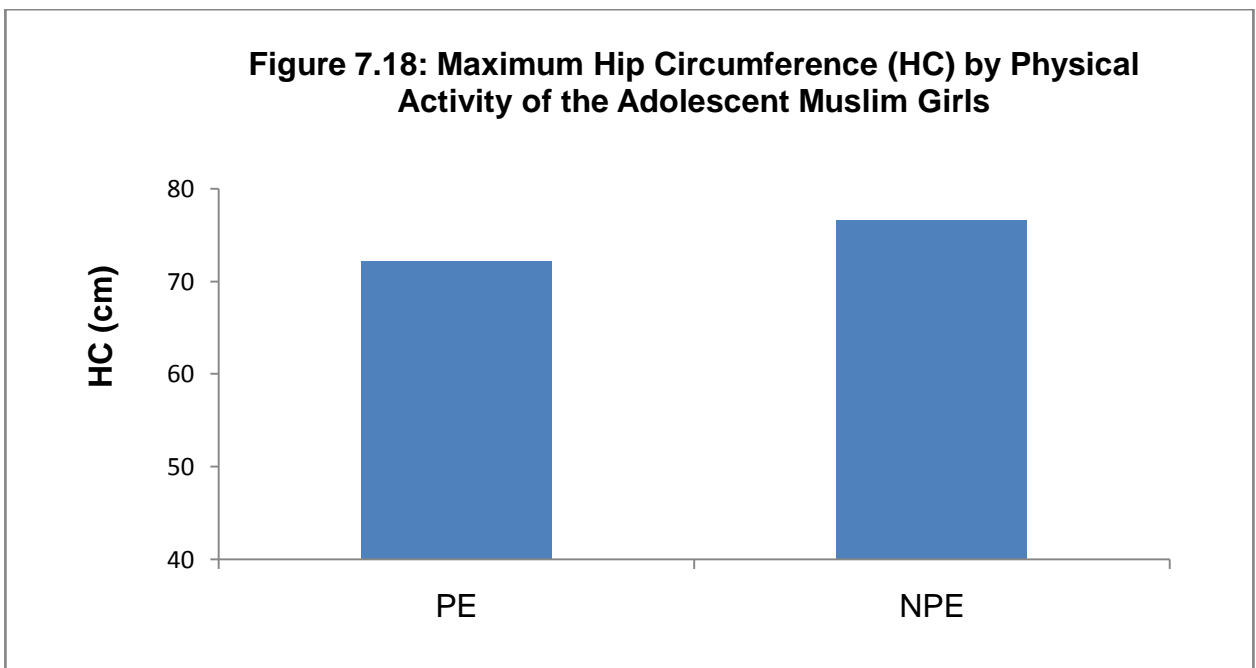
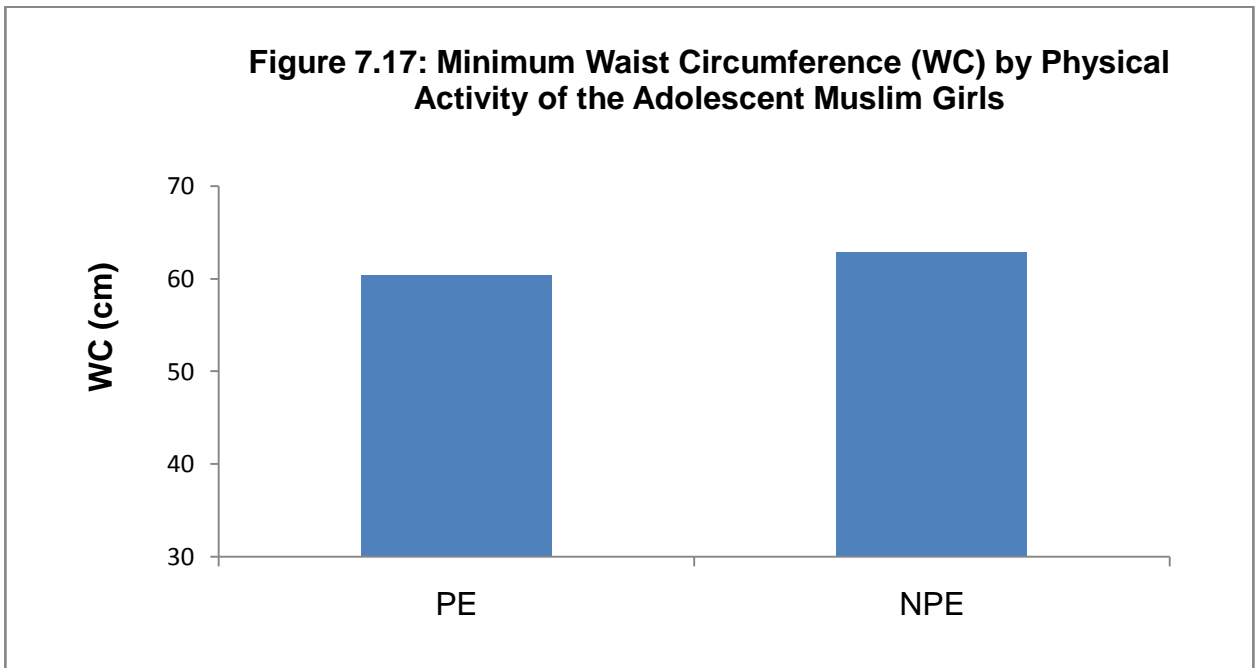


Figure 7.19: Calf Circumference (CFC) by Physical Activity of the Adolescent Muslim Girls

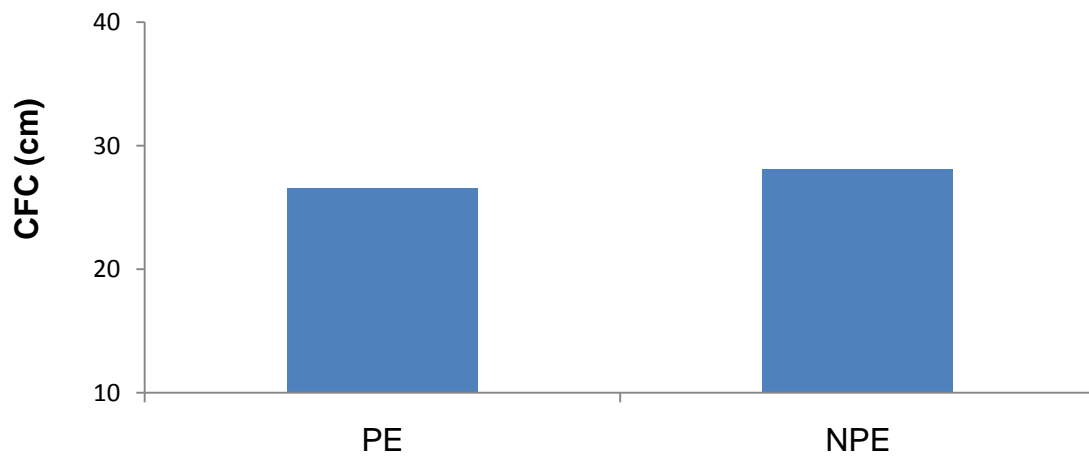
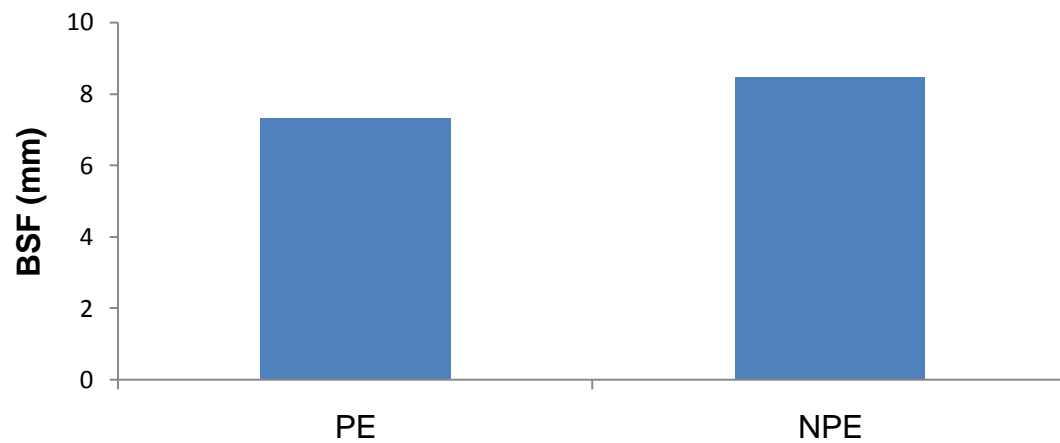
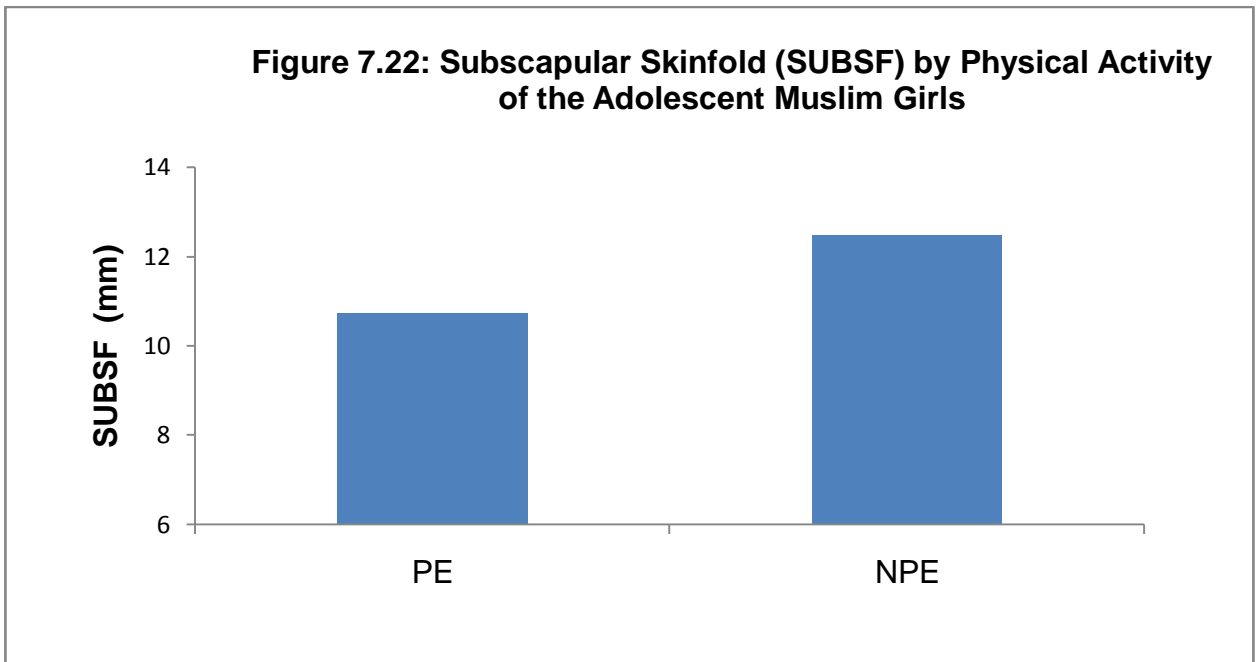
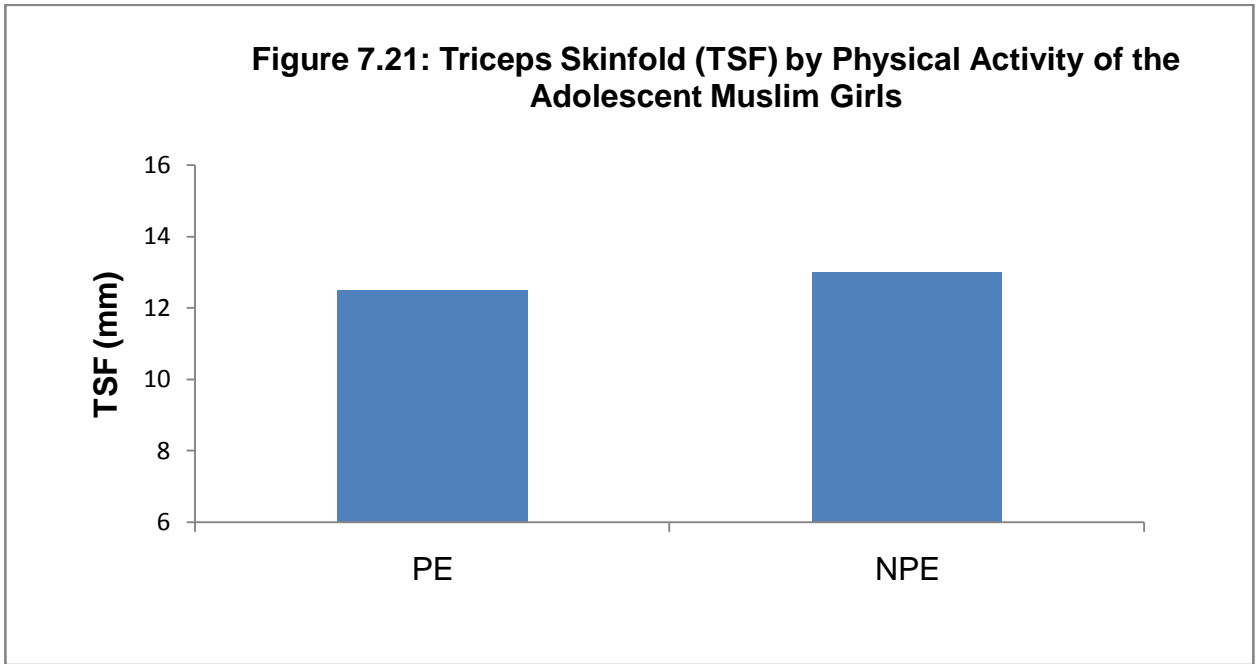


Figure 7.20: Biceps Skinfold (BSF) by Physical Activity of the Adolescent Muslim Girls





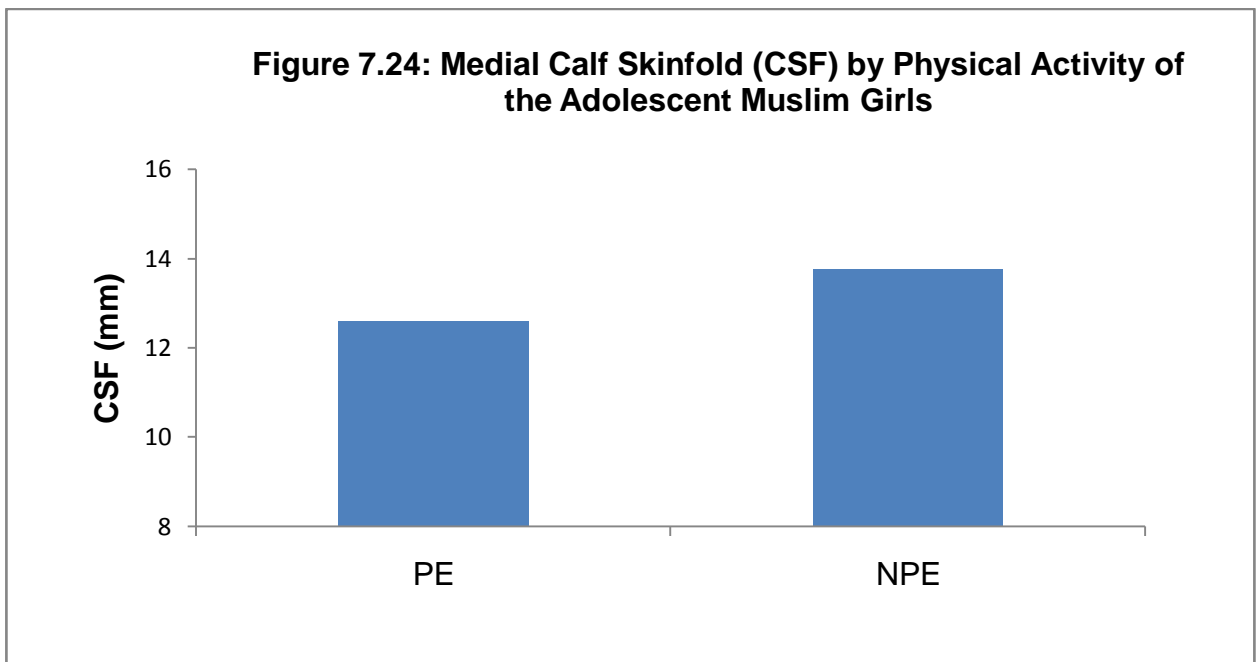
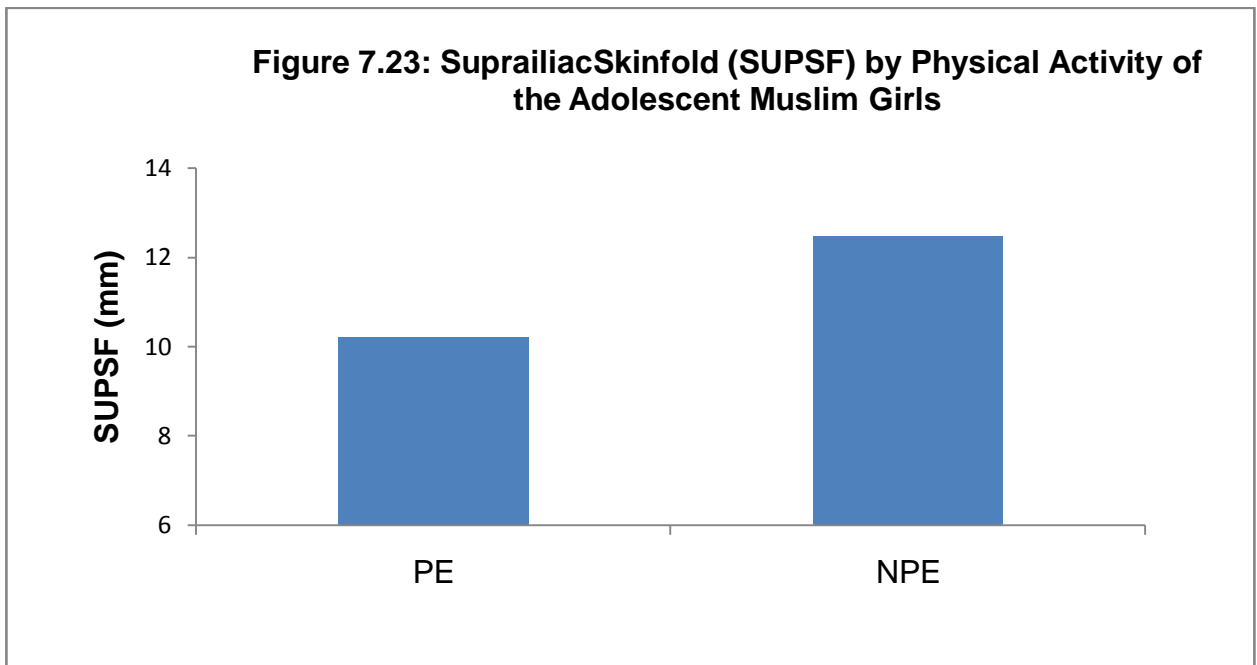


Table 7.5: Mean, SD and Percentiles of Different Measures of Adiposity and Subcutaneous Fat Content of the Adolescent Muslim PE Boys Group (n =282)

Variable	Mean SD	Percentiles		
		5th	50th	95th
Generalised Adiposity				
Body Mass Index (kg/m ²)	16.56 (2.57)	13.50	16.07	22.26
Central Adiposity				
Conicity Index	1.16 (0.07)	1.07	1.16	1.29
Waist-Hip Ratio	0.85 (0.06)	0.76	0.85	0.95
Waist-Height Ratio	0.42 (0.04)	0.37	0.42	0.49
Regional Adiposity				
Subscapular-Triceps Ratio	0.96 (0.36)	0.52	0.87	1.59
Truncal-Extremity Fat Ratio	0.65 (0.19)	0.39	0.62	1.00
Centripetal Fat Ratio	47.38 (8.84)	34.25	46.55	61.30
Subcutaneous Fat Content (mm)				
Sum of 5 Skinfolts (mm)	39.95 (13.14)	26.03	36.40	65.59
Sum of Trunk Skinfolts (mm)	15.76 (7.03)	9.00	14.00	29.77
Sum of Extremity Skinfolts (mm)	24.18 (7.12)	16.03	22.20	40.19

Standard deviations are presented in parentheses

Table 7.6: Mean, SD and Percentiles of Different Measures of Adiposity and Subcutaneous Fat Content of the Adolescent Muslim NPE Boys Group (n =240)

Variable	Mean SD	Percentiles		
		5th	50th	95th
Generalised Adiposity				
Body Mass Index (kg/m ²)	16.23 (3.28)	13.19	15.33	21.98
Central Adiposity				
Conicity Index	1.17 (0.07)	1.07	1.17	1.28
Waist-Hip Ratio	0.87 (0.05)	0.78	0.87	0.95
Waist-Height Ratio	0.43 (0.05)	0.37	0.42	0.51
Regional Adiposity				
Subscapular-Triceps Ratio	0.87 (0.30)	0.53	0.79	1.52
Truncal-Extremity Fat Ratio	0.61 (0.16)	0.40	0.57	0.90
Centripetal Fat Ratio	45.26 (7.71)	34.66	44.06	60.29
Subcutaneous Fat Content (mm)				
Sum of 5 Skinfolts (mm)	41.93 (16.82)	26.03	37.10	84.46
Sum of Trunk Skinfolts (mm)	15.93 (8.18)	9.20	13.00	36.49
Sum of Extremity Skinfolts (mm)	26.00 (9.29)	16.21	23.60	47.80

Standard deviations are presented in parentheses

Figure 7.25: Body Mass Index (kg/m²) by Physical Activity of the Adolescent Muslim Boys

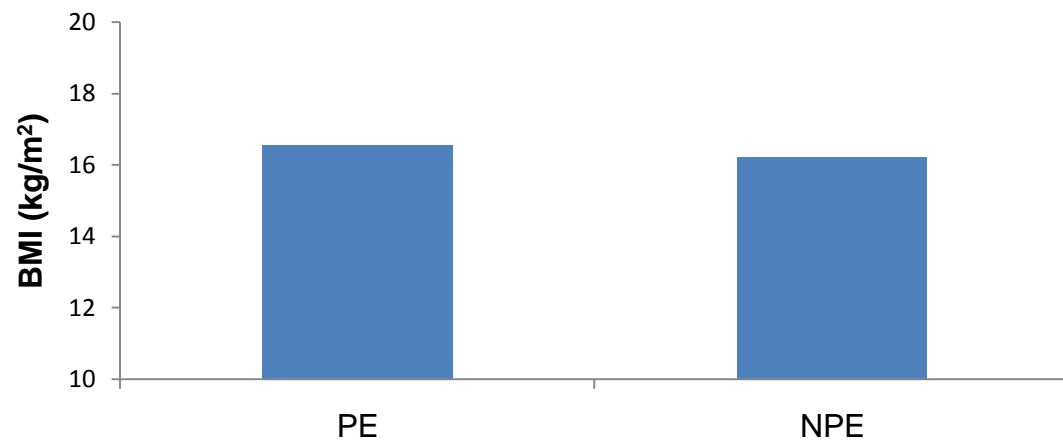
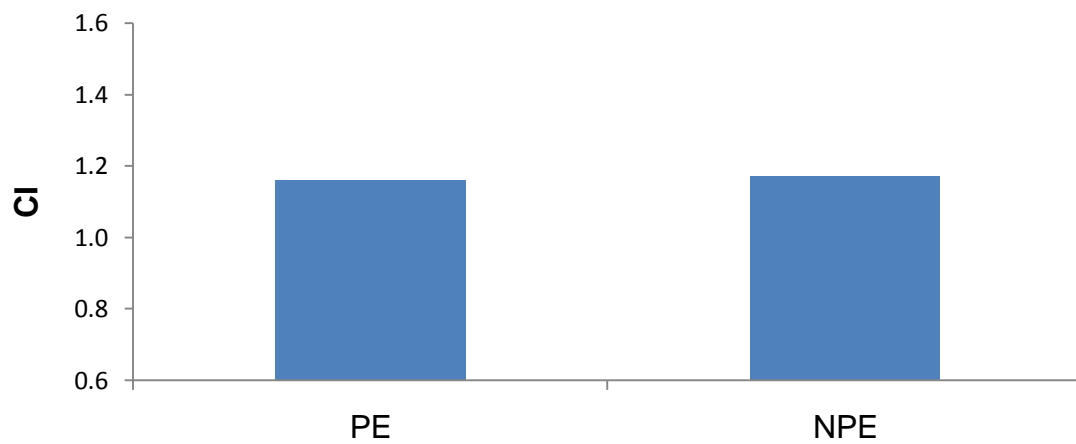
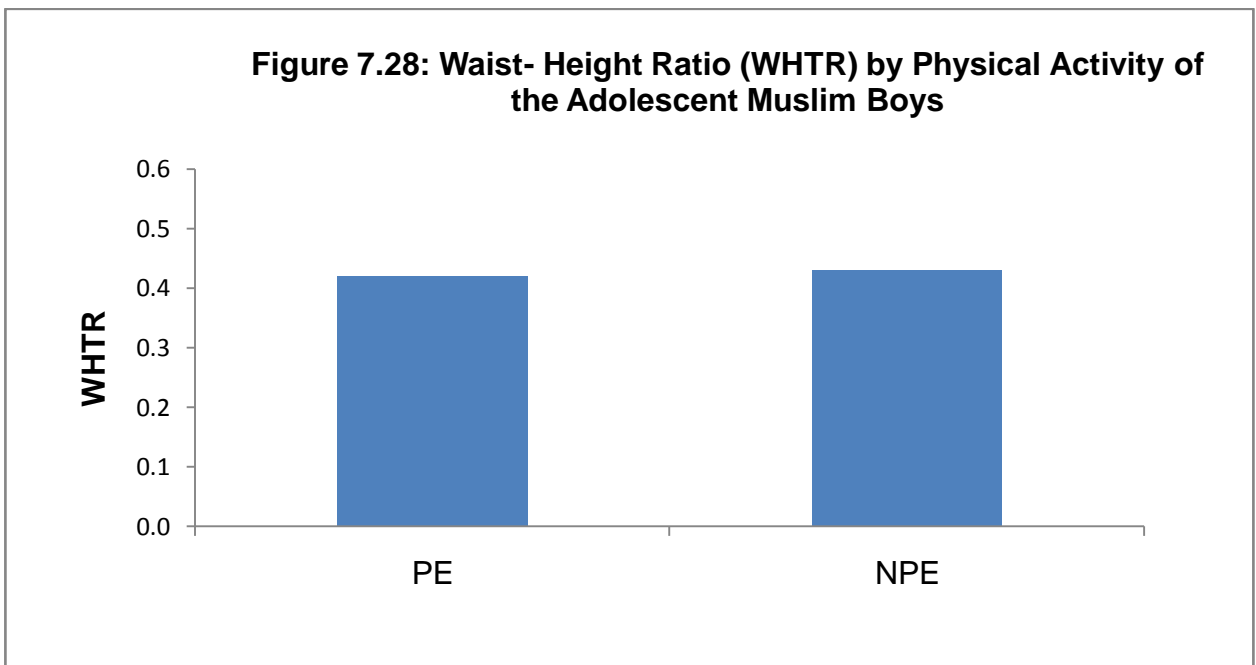
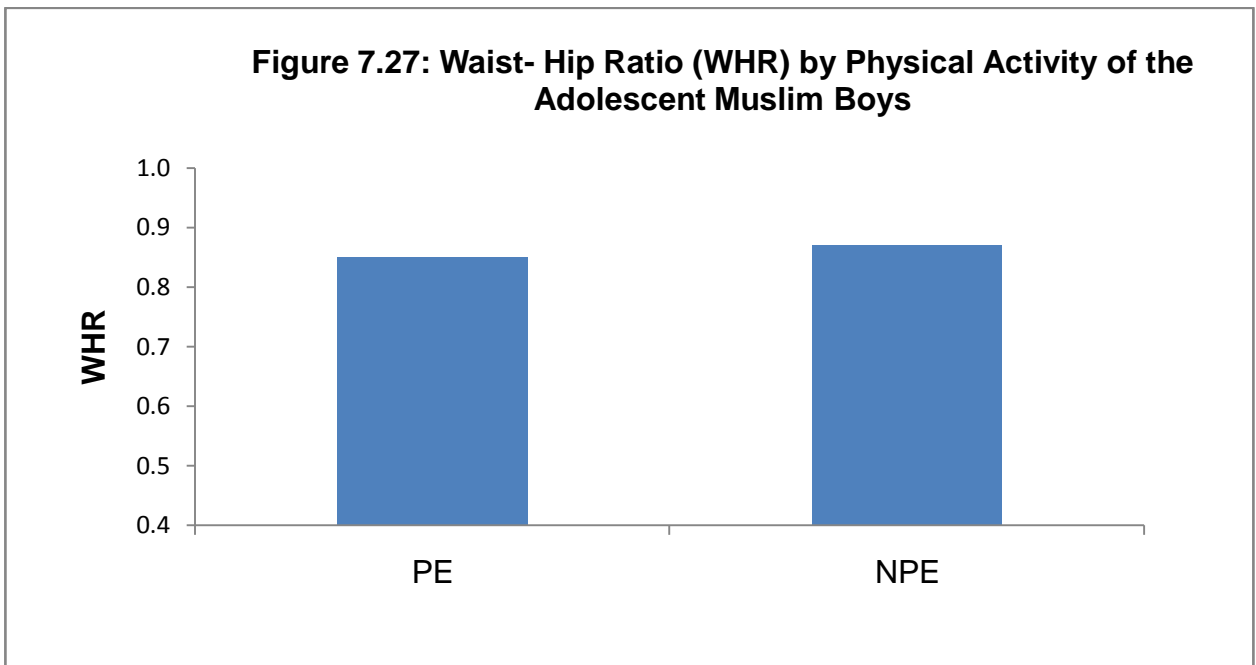


Figure 7.26: Conicity Index (CI) by Physical Activity of the Adolescent Muslim Boys





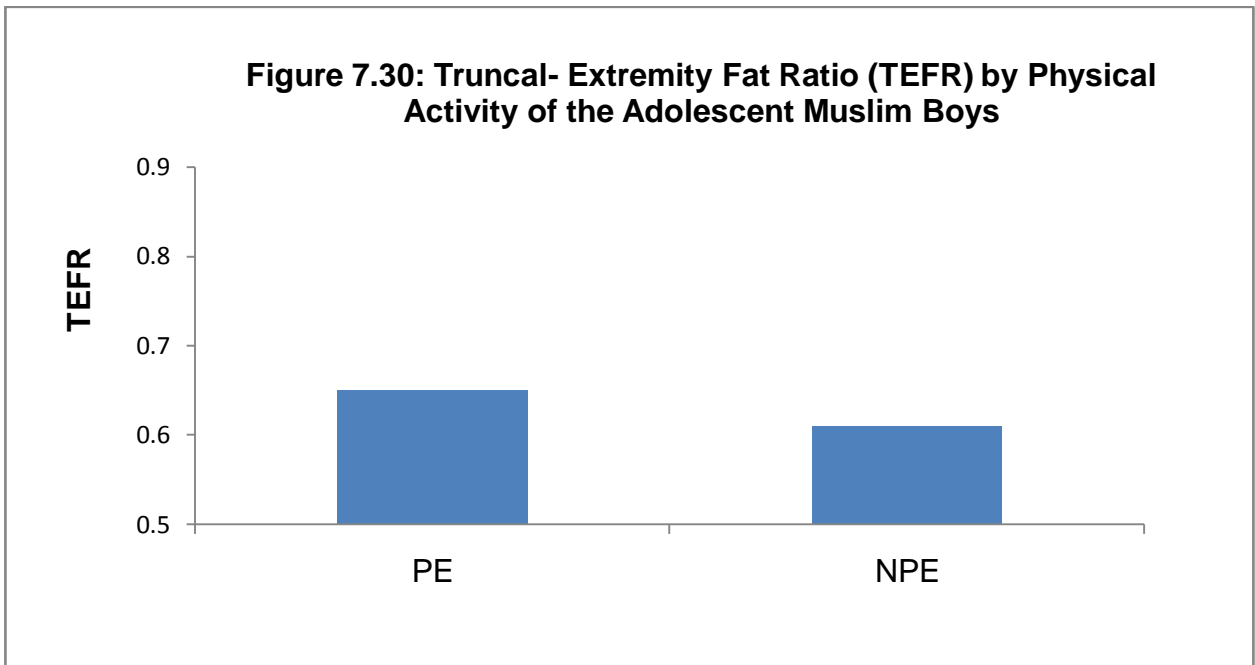
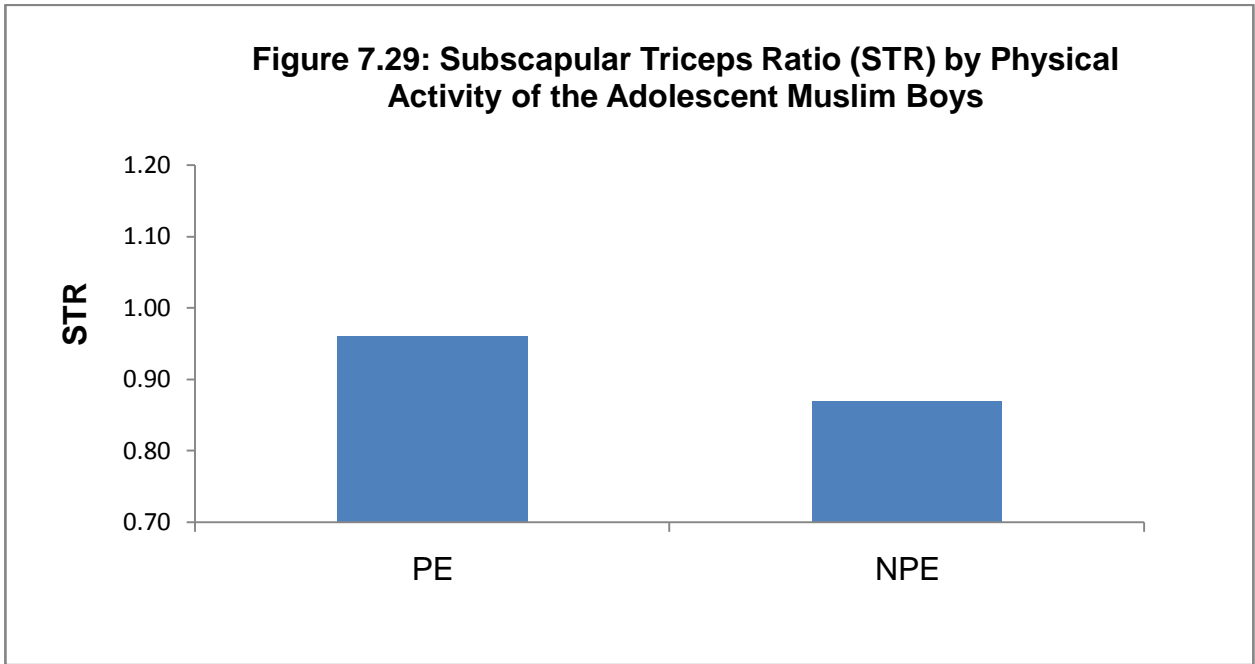


Figure 7.31: Centripetal Fat Ratio (CPFR) by Physical Activity of the Adolescent Muslim Boys

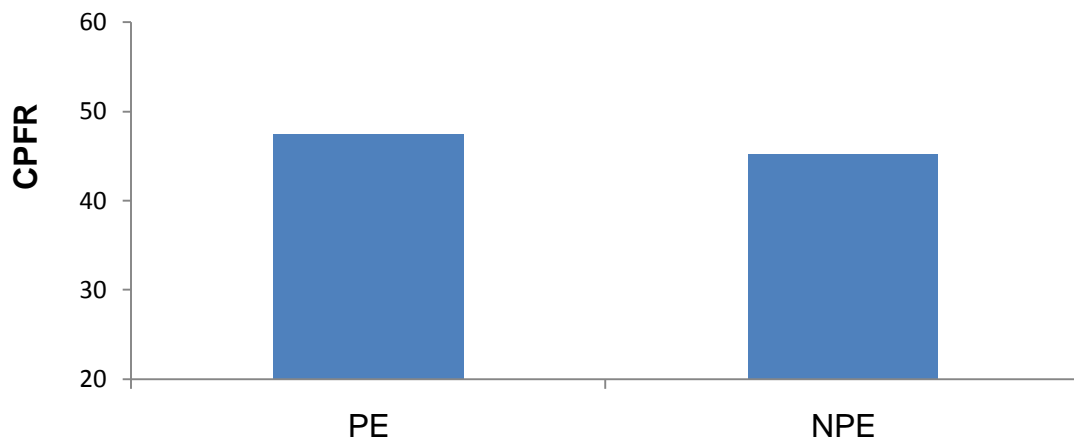
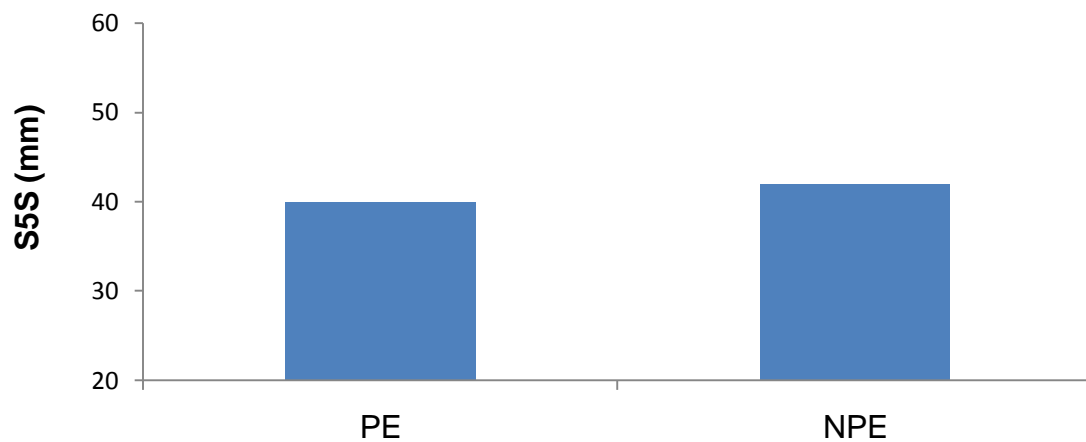


Figure 7.32: Sum of 5 Skinfolts (S5S) by Physical Activity of the Adolescent Muslim Boys



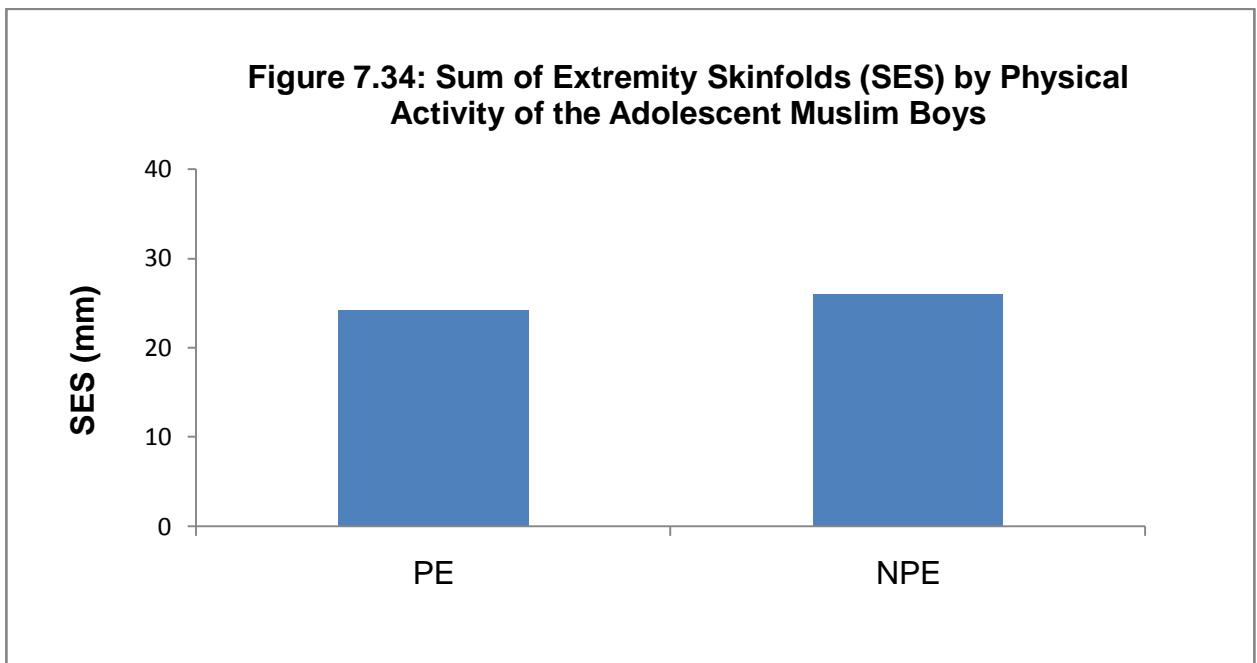
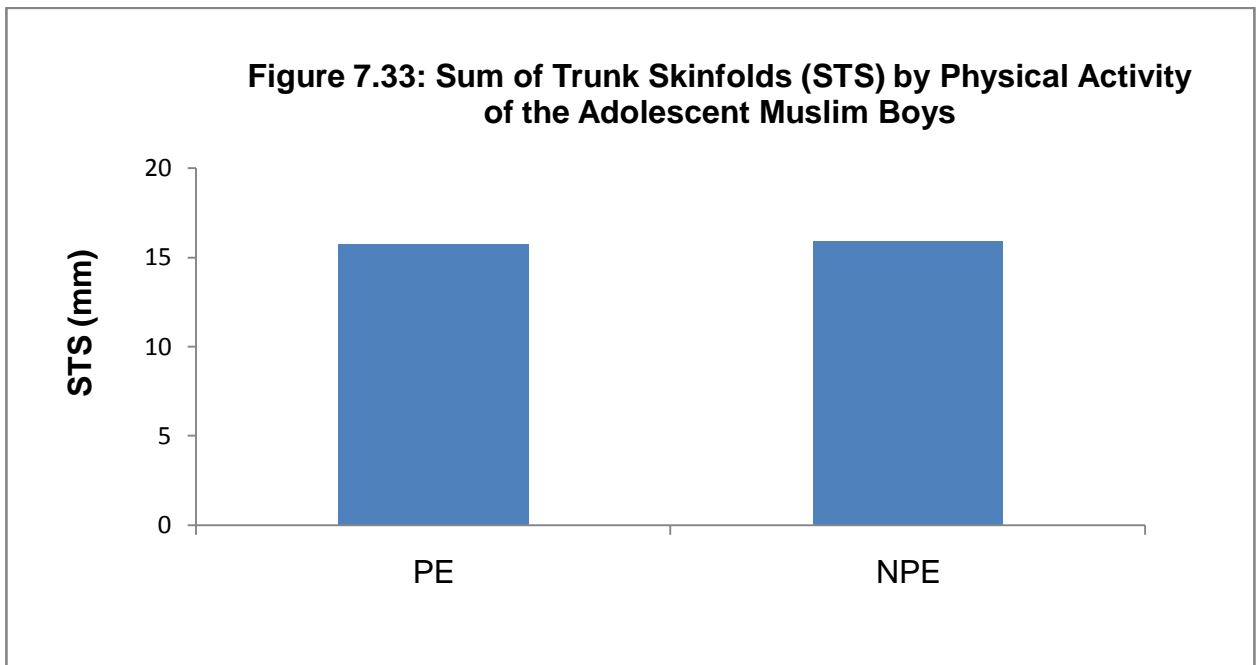


Table 7.7: Mean, SD and Percentiles of Different Measures of Adiposity and Subcutaneous Fat Content of the Adolescent Muslim PE Girls Group (n =304)

Variable	Mean SD	Percentiles		
		5th	50th	95th
Generalised Adiposity				
Body Mass Index (kg/m ²)	16.21 (2.58)	12.76	15.71	20.70
Central Adiposity				
Conicity Index	1.16 (0.08)	1.05	1.16	1.30
Waist-Hip Ratio	0.84 (0.06)	0.75	0.84	0.93
Waist-Height Ratio	0.43 (0.04)	0.37	0.42	0.50
Regional Adiposity				
Subscapular-Triceps Ratio	0.87 (0.31)	0.50	0.81	1.31
Truncal-Extremity Fat Ratio	0.64 (0.16)	0.43	0.61	0.94
Centripetal Fat Ratio	45.29 (7.32)	33.40	44.79	56.71
Subcutaneous Fat Content (mm)				
Sum of 5 Skinfolts (mm)	53.36 (17.01)	31.60	50.60	85.40
Sum of Trunk Skinfolts (mm)	20.94 (8.72)	10.45	18.80	37.95
Sum of Extremity Skinfolts (mm)	32.41 (9.09)	20.45	31.40	46.75

Standard deviations are presented in parentheses

Table 7.8: Mean, SD and Percentiles of Different Measures of Adiposity and Subcutaneous Fat Content of the Adolescent Muslim NPE Girls Group (n =242)

Variable	Mean SD	Percentiles		
		5th	50th	95th
Generalised Adiposity				
Body Mass Index (kg/m ²)	17.61 (2.96)	13.34	17.41	22.95
Central Adiposity				
Conicity Index	1.14 (0.08)	1.02	1.13	1.28
Waist-Hip Ratio	0.82 (0.07)	0.74	0.81	0.94
Waist-Height Ratio	0.43 (0.04)	0.37	0.42	0.51
Regional Adiposity				
Subscapular-Triceps Ratio	0.96 (0.31)	0.63	0.92	1.34
Truncal-Extremity Fat Ratio	0.71 (0.15)	0.49	0.69	0.95
Centripetal Fat Ratio	48.00 (6.51)	39.48	47.78	57.23
Subcutaneous Fat Content (mm)				
Sum of 5 Skinfolts (mm)	60.45 (18.51)	33.40	59.00	98.68
Sum of Trunk Skinfolts (mm)	25.24 (9.65)	11.20	23.80	44.00
Sum of Extremity Skinfolts (mm)	35.21 (9.54)	21.00	33.90	53.97

Standard deviations are presented in parentheses

Figure 7.35: Body Mass Index (kg/m²) by Physical Activity of the Adolescent Muslim Girls

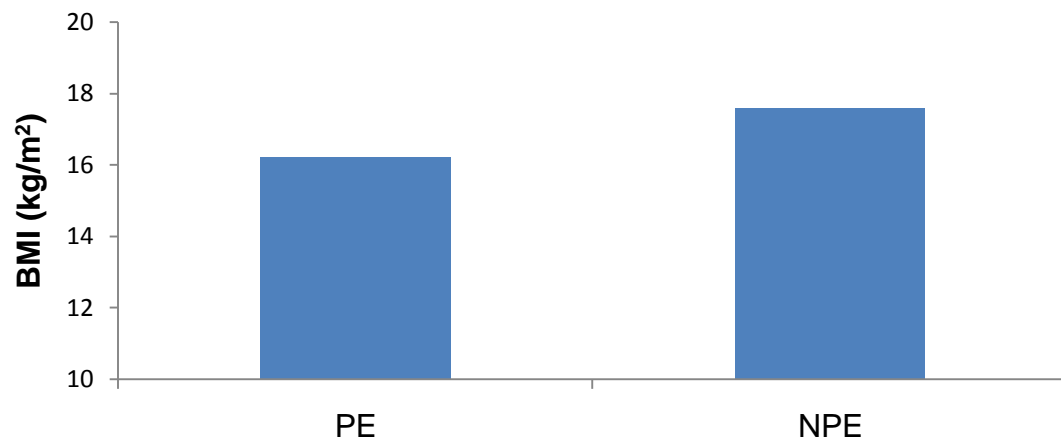
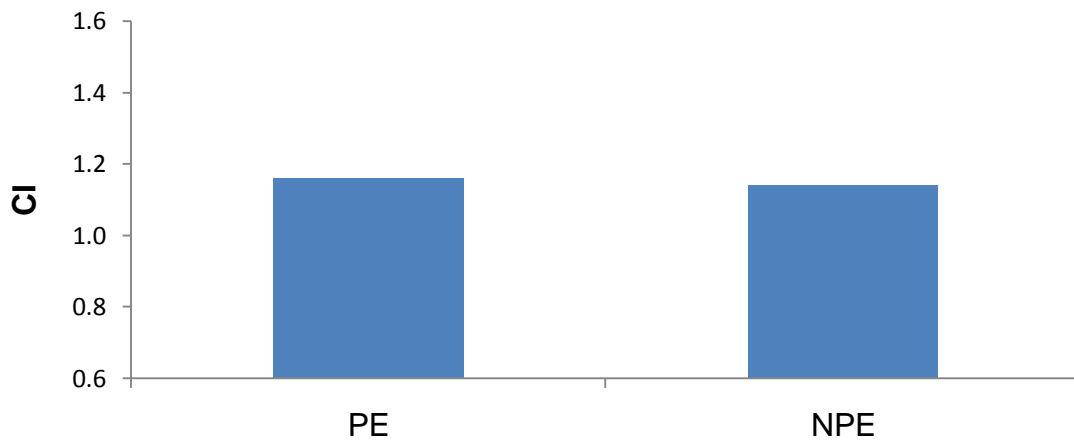
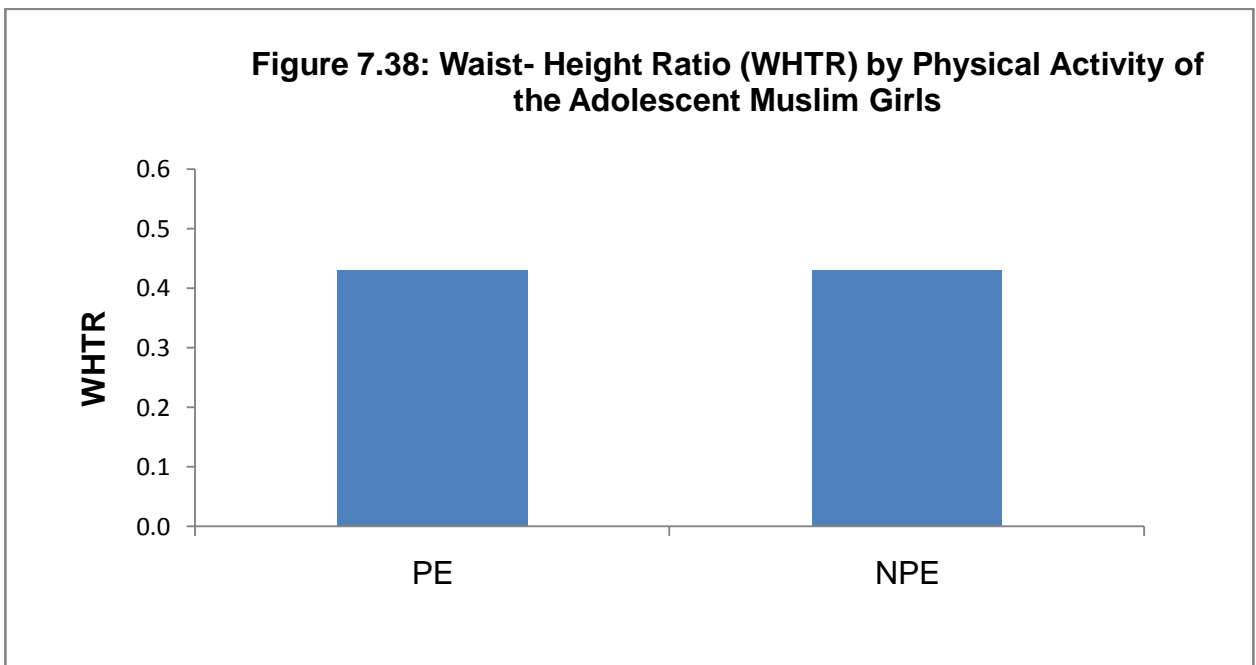
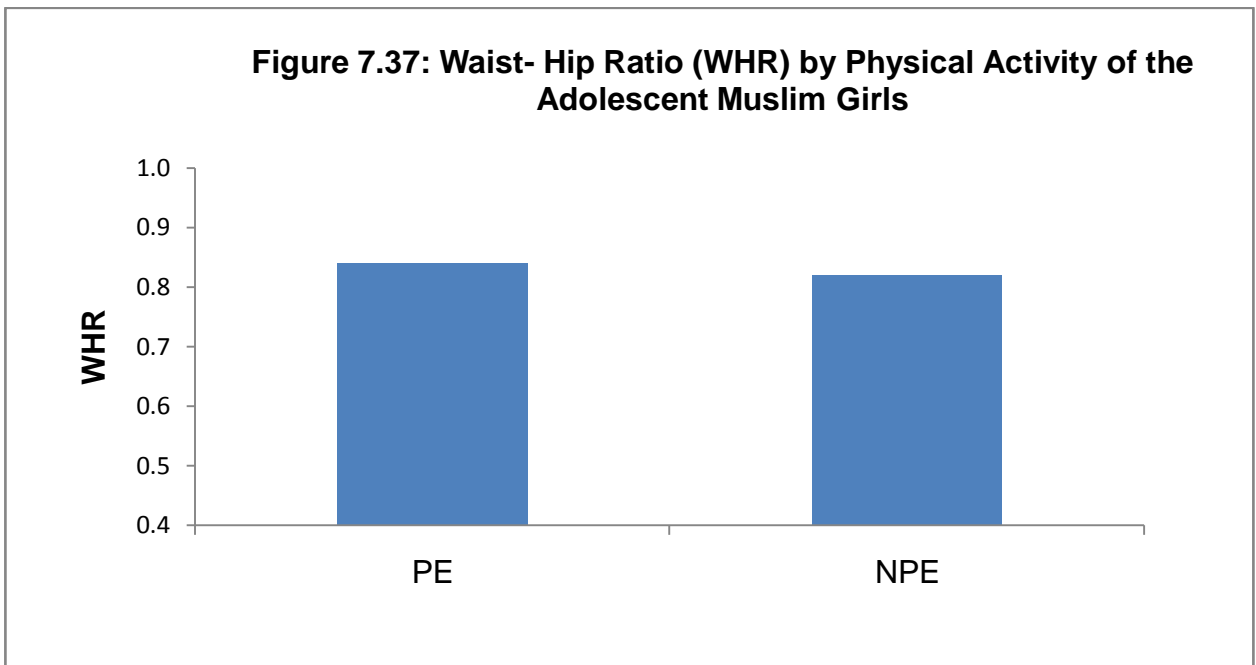
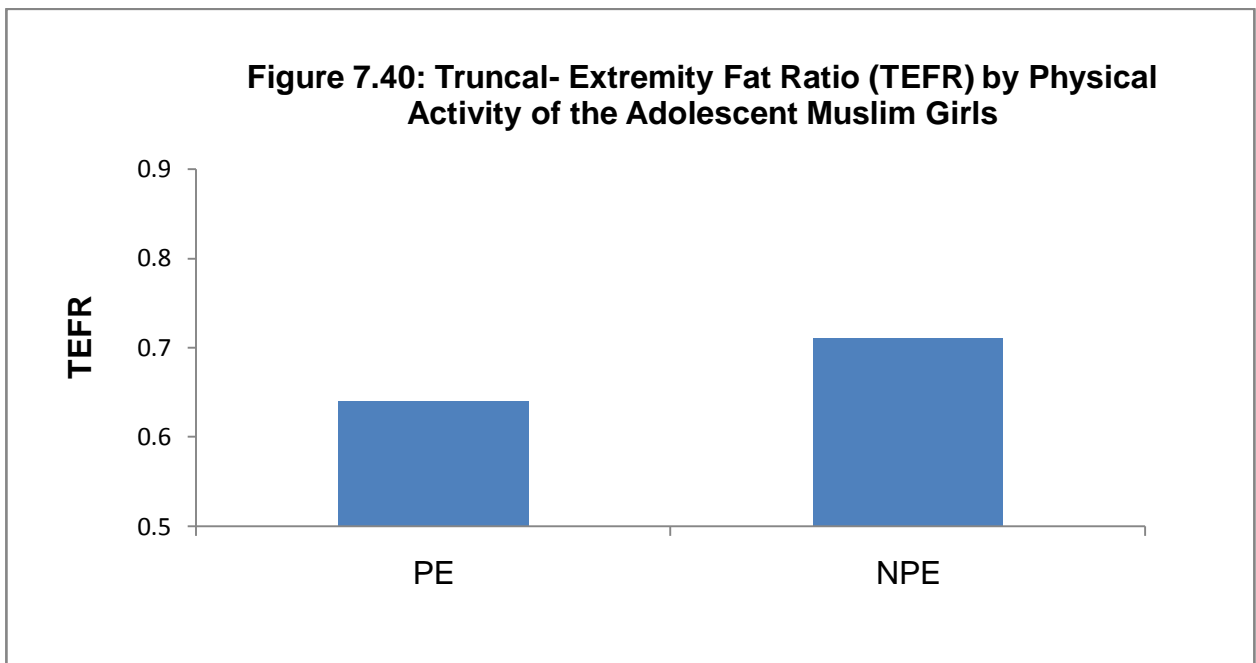
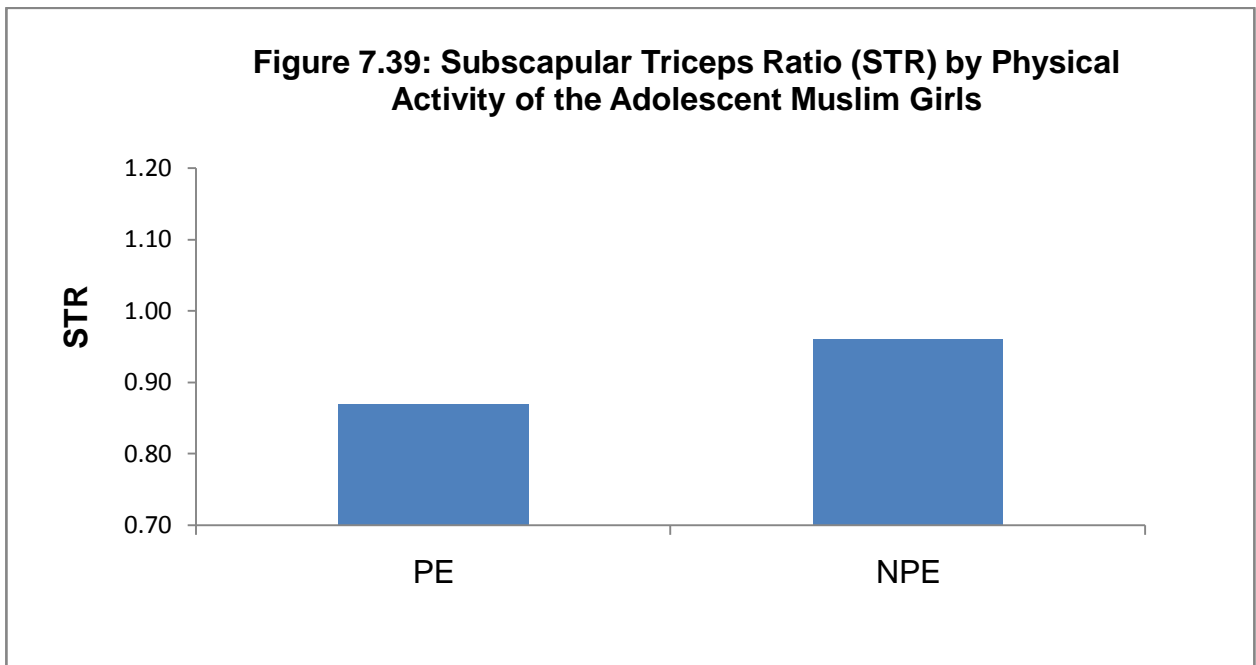
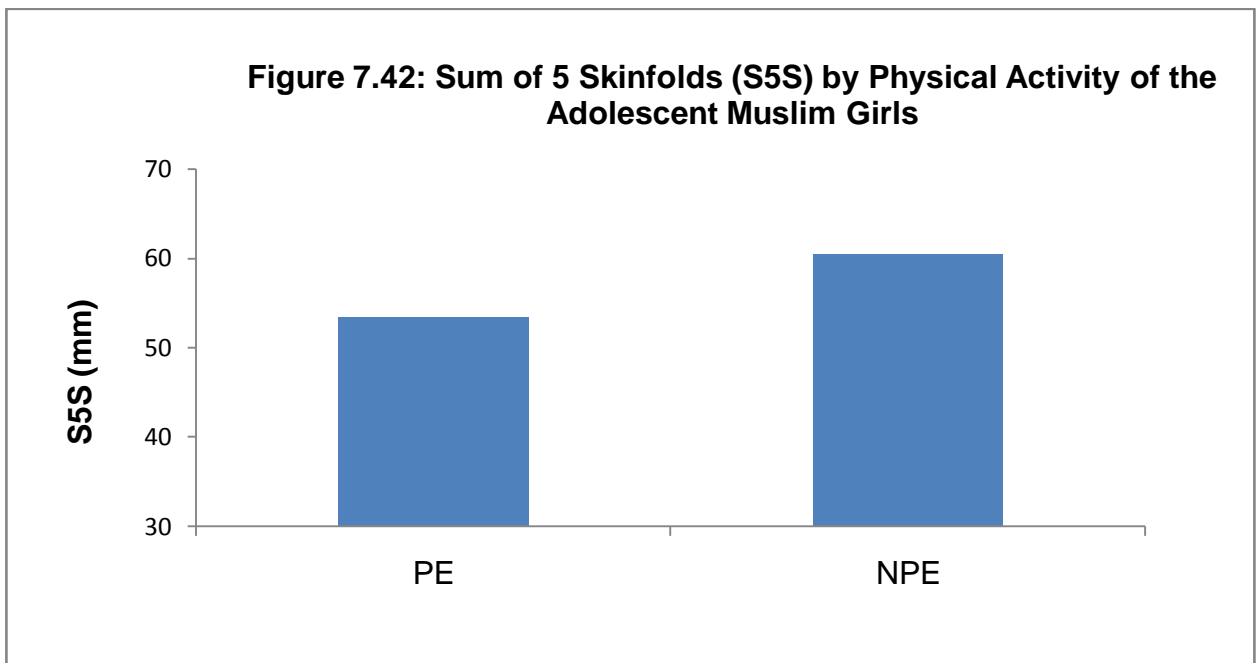
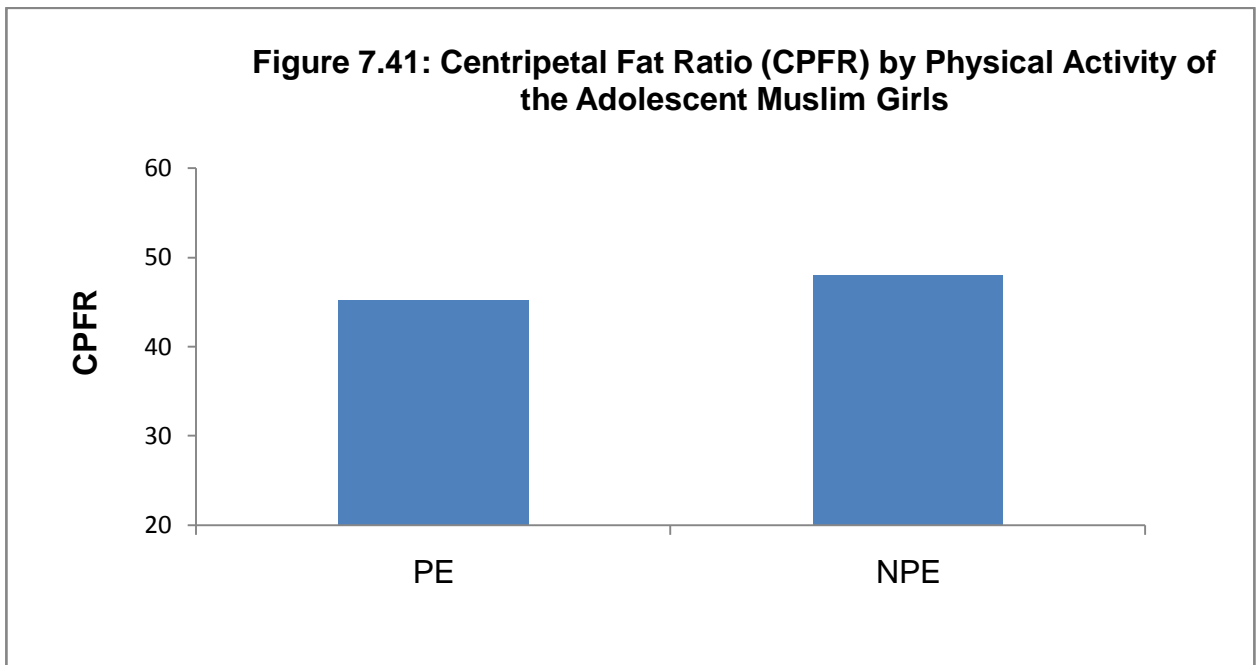


Figure 7.36: Conicity Index (CI) by Physical Activity of the Adolescent Muslim Girls









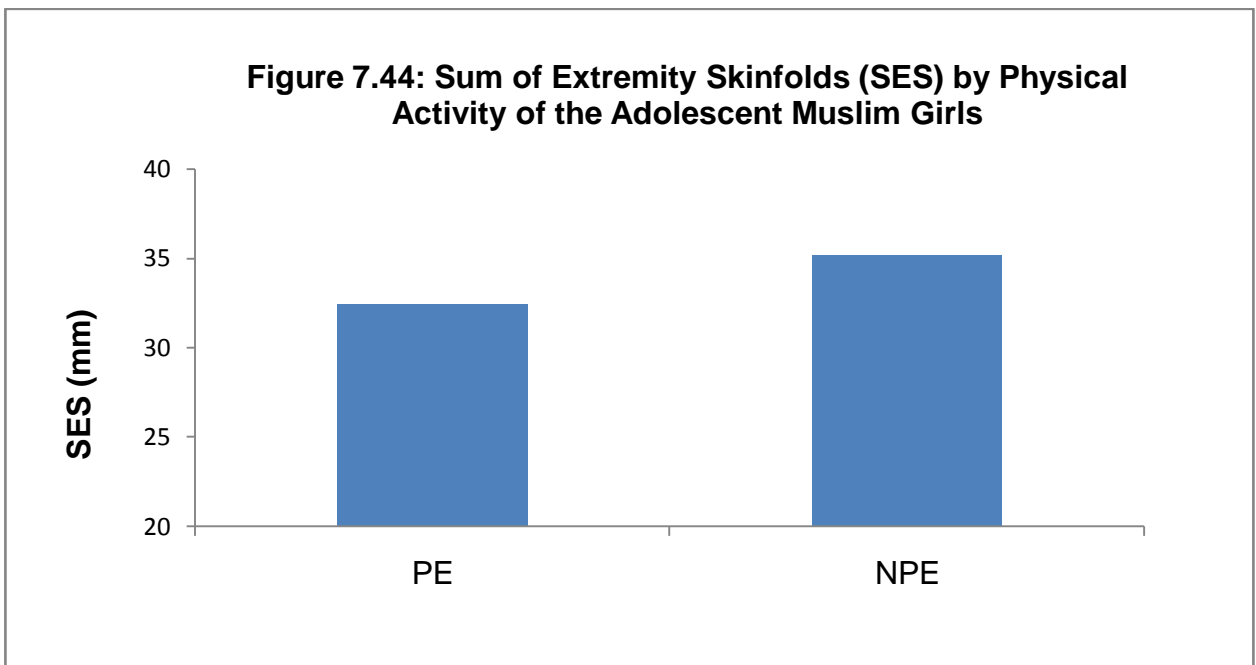
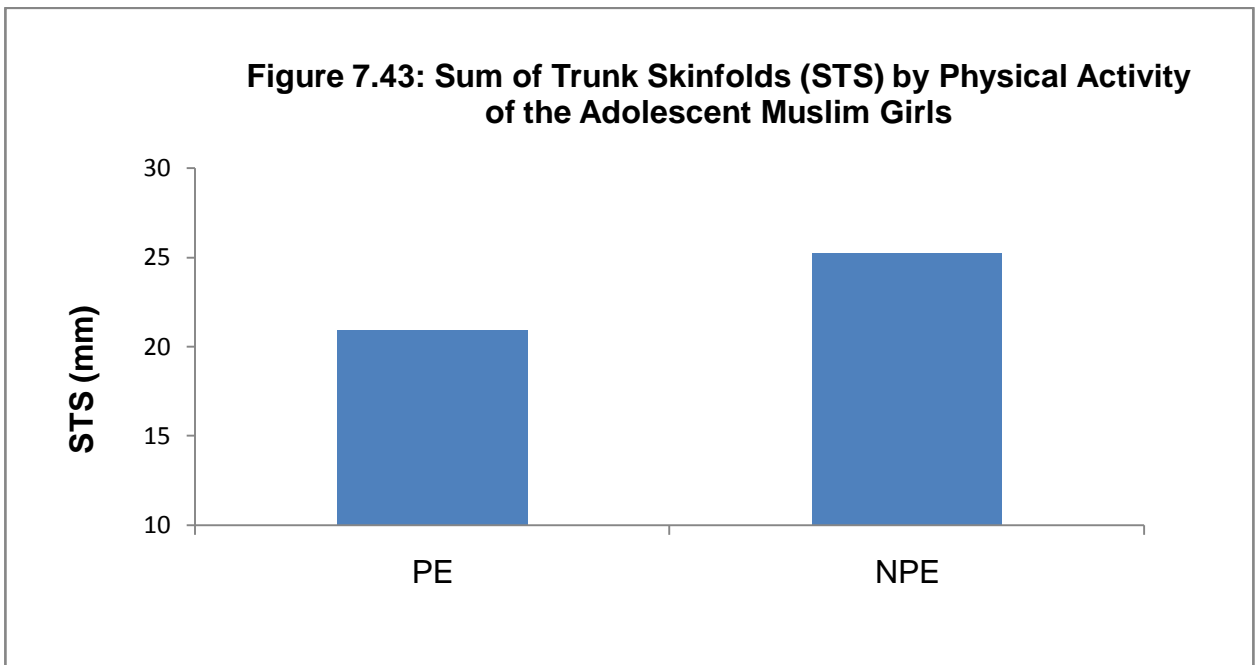


Table 7.9: Mean, SD and Percentiles in Different Measures Body Composition of the Adolescent Muslim PE Boys Group (n=282)

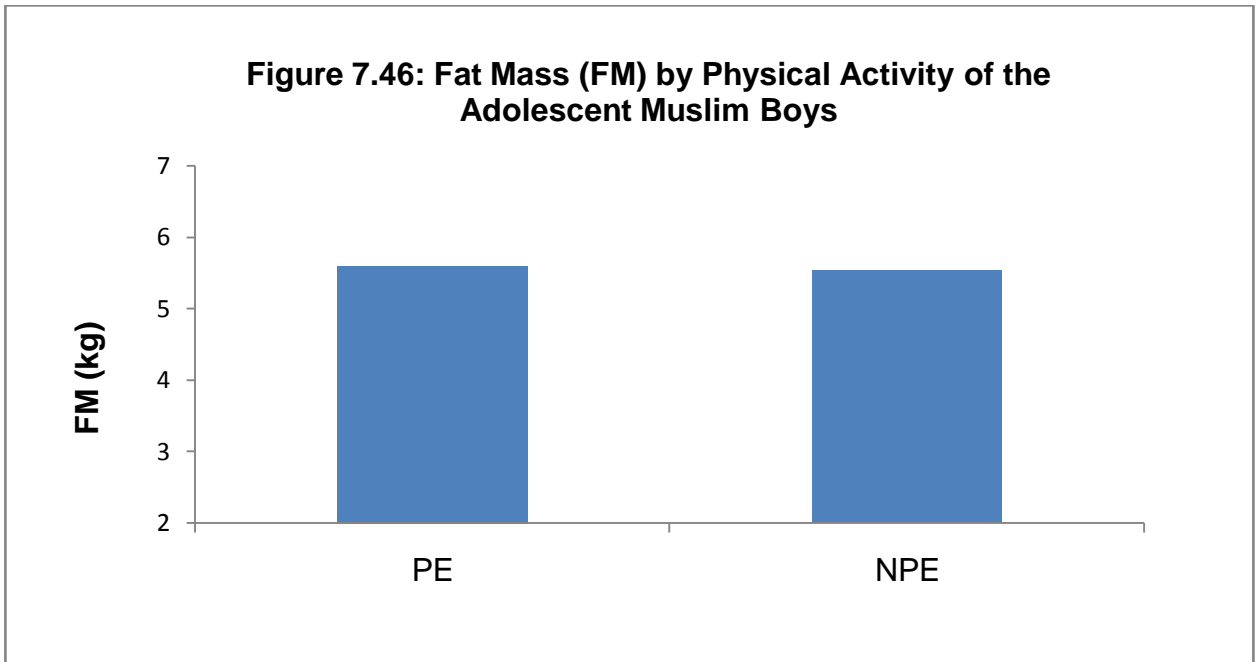
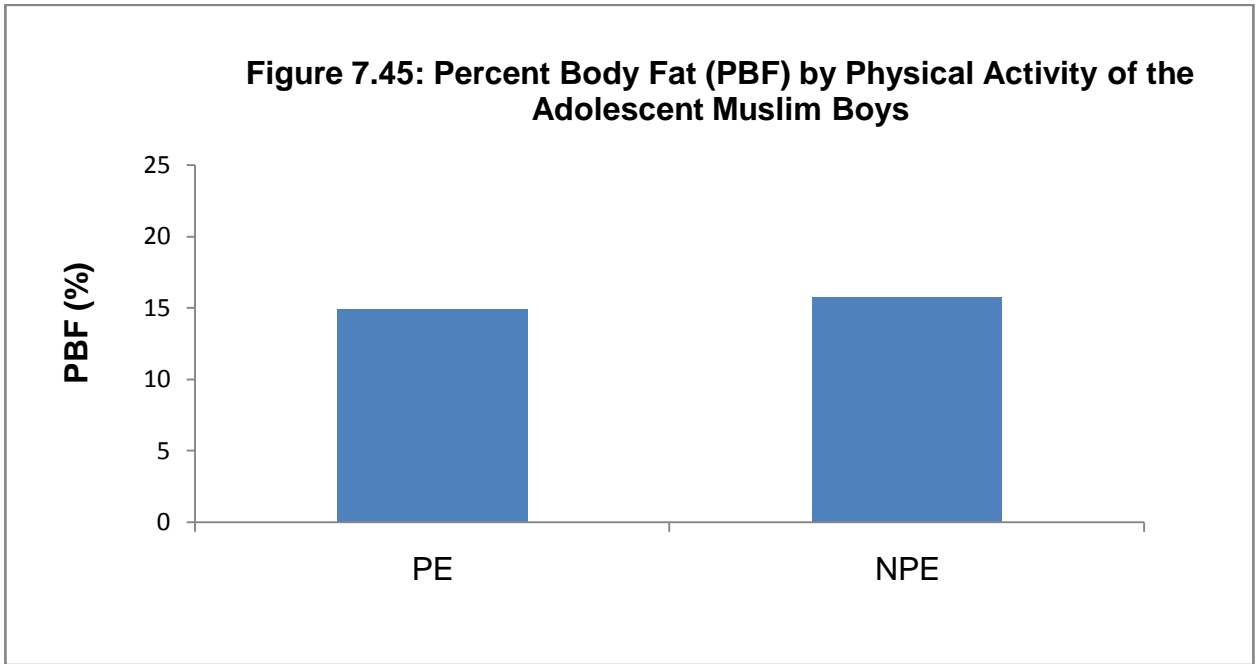
Variable	Mean SD	Percentiles		
		5th	50th	95th
Fat-Non Fat composition				
Percent Body Fat (%)	14.92 (3.93)	9.97	14.08	23.86
Fat Mass (kg)	5.60 (2.72)	2.64	5.00	11.42
Fat Free Mass (kg)	31.60 (10.20)	19.67	29.17	49.07
Fat Mass Index (kg/m ²)	2.51 (0.97)	1.48	2.26	4.68
Fat Free Mass Index (kg/m ²)	14.05 (2.00)	11.46	13.69	17.83
Fat-Muscle Composition				
Arm Muscle Circumference (mm)	173.57 (30.23)	132.71	167.63	228.72
Arm Muscle Area (mm ²)	2468.90 (865.84)	1401.00	2235.20	4161.30
Arm Fat Area (mm ²)	888.69 (396.90)	458.23	784.44	1730.00

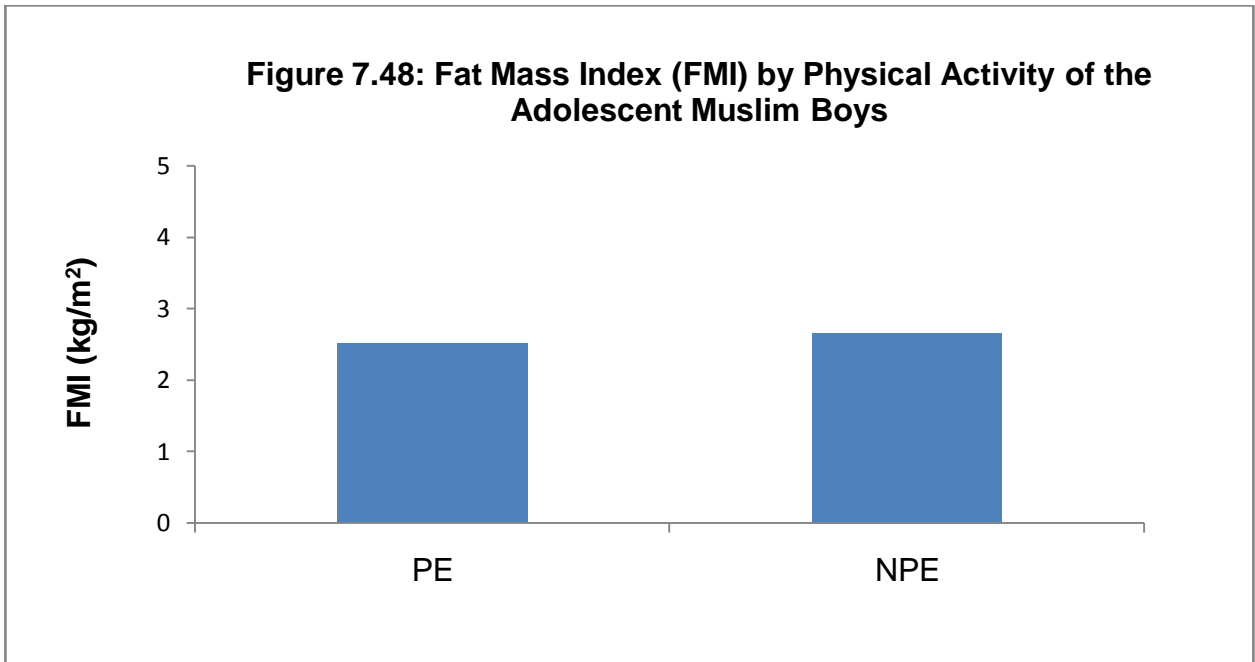
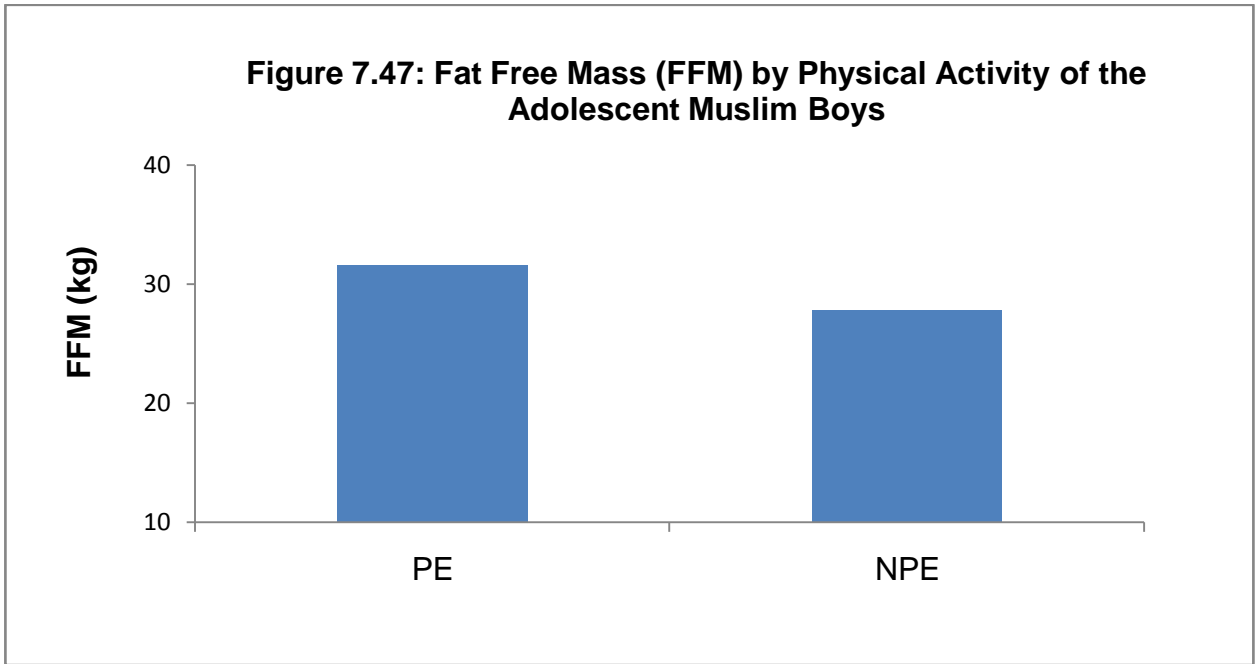
Standard deviations are presented in parentheses

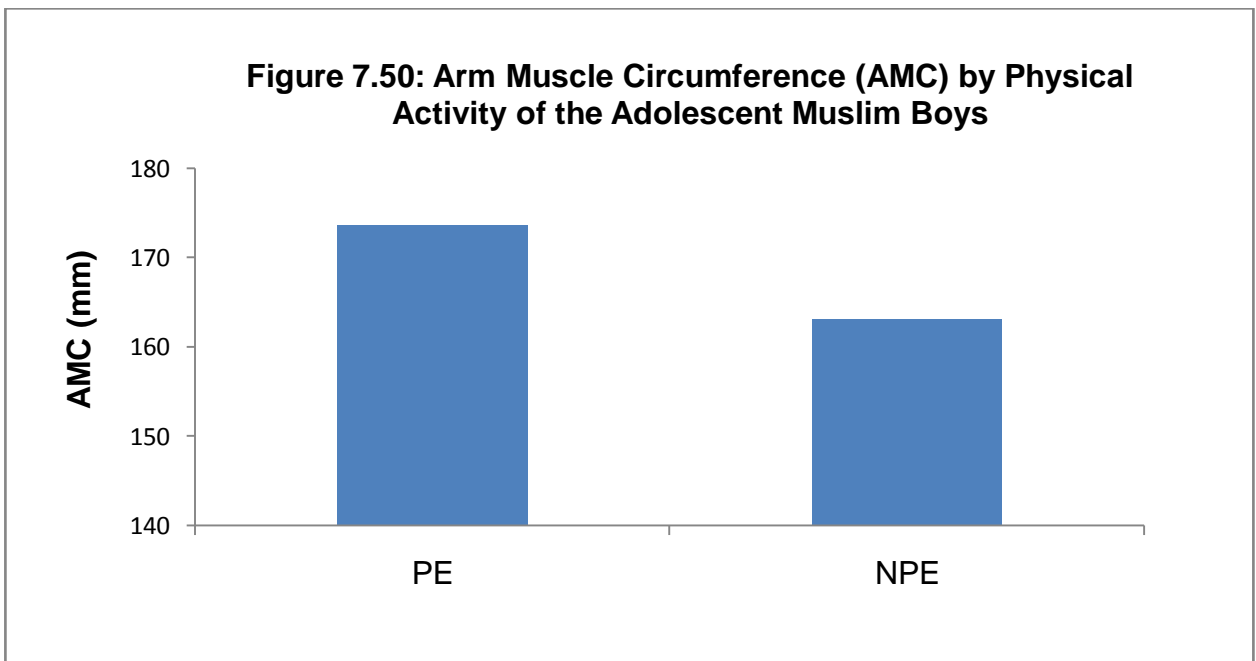
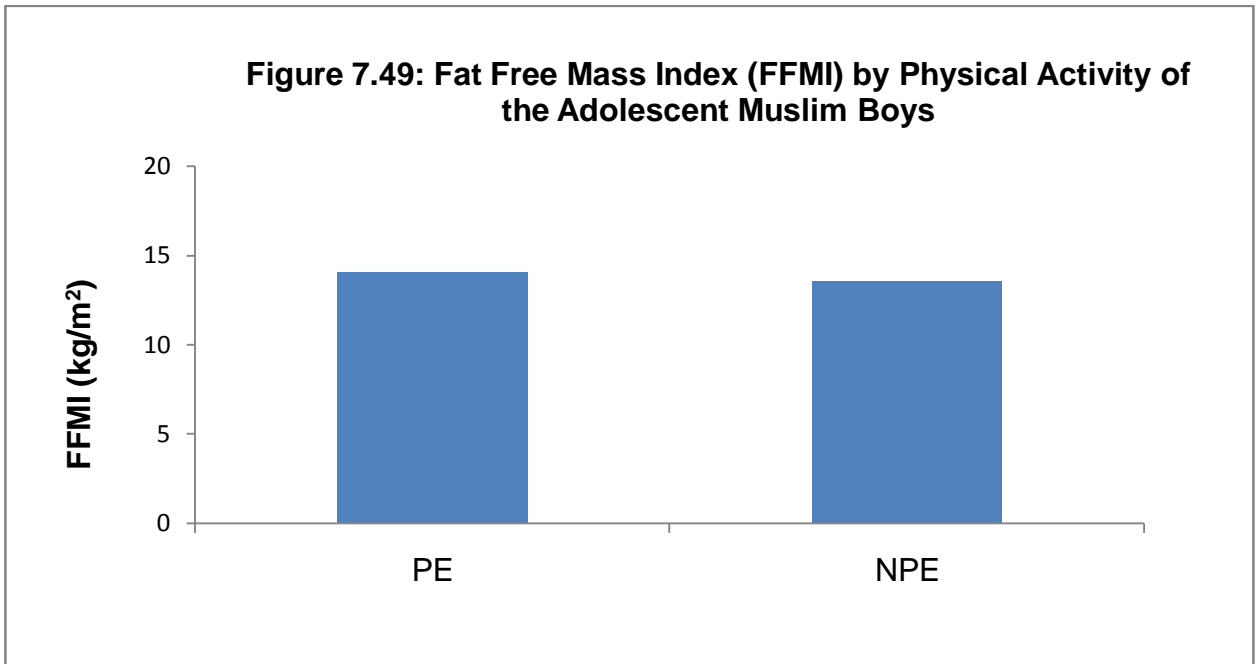
Table 7.10: Mean, SD and Percentiles in Different Measures Body Composition of the Adolescent Muslim NPE Boys Group (n=240)

Variable	Mean SD	Percentiles		
		5th	50th	95th
Fat-Non Fat composition				
Percent Body Fat (%)	15.76 (4.82)	10.41	14.97	27.61
Fat Mass (kg)	5.53 (3.66)	2.49	4.48	11.70
Fat Free Mass (kg)	27.83 (8.65)	18.09	24.15	45.27
Fat Mass Index (kg/m ²)	2.66 (1.49)	1.47	2.27	5.66
Fat Free Mass Index (kg/m ²)	13.57 (2.11)	11.41	12.90	17.37
Fat-Muscle Composition				
Arm Muscle Circumference (mm)	163.03 (26.18)	134.34	153.93	212.80
Arm Muscle Area (mm ²)	2168.50 (735.14)	1435.70	1884.80	3602.00
Arm Fat Area (mm ²)	927.74 (522.55)	441.61	780.96	2028.50

Standard deviations are presented in parentheses







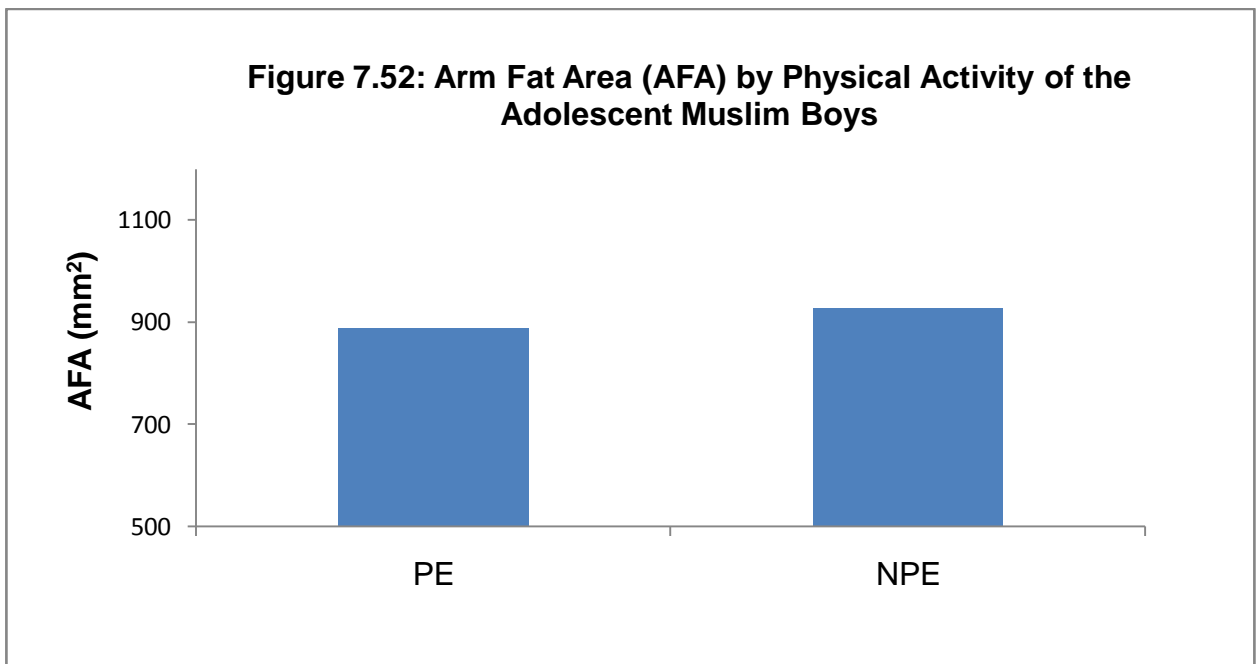
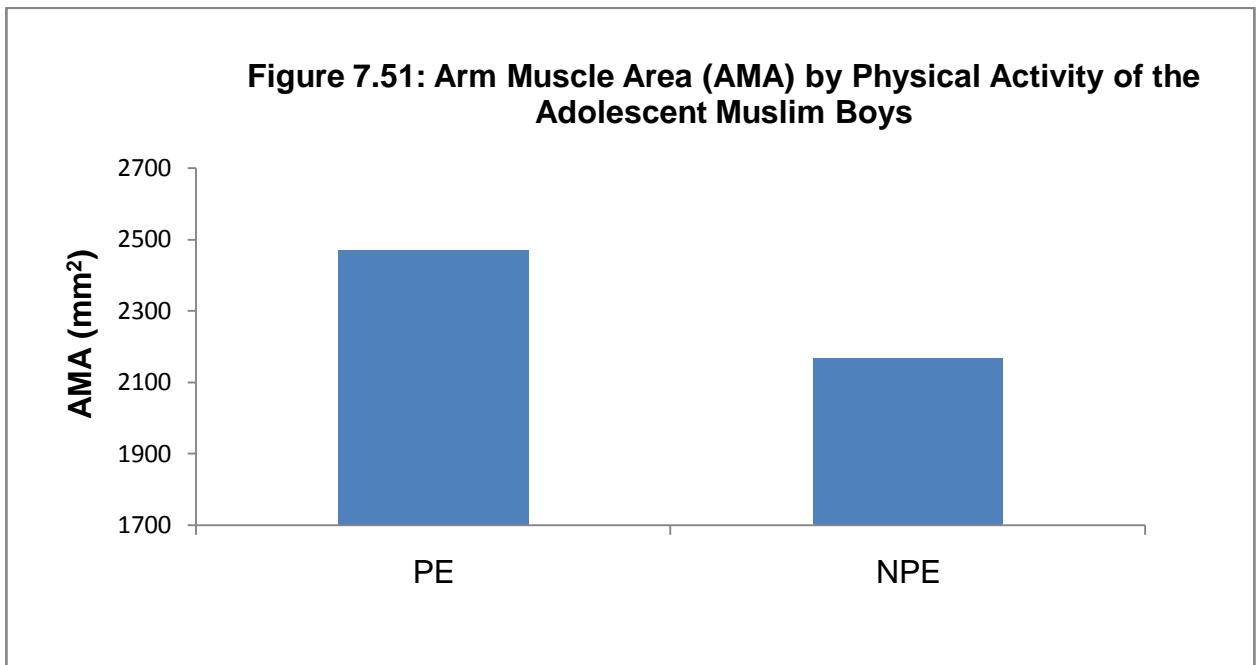


Table 7.11: Mean, SD and Percentiles in Different Measures Body Composition of the Adolescent Muslim PE Girls Group (n=304)

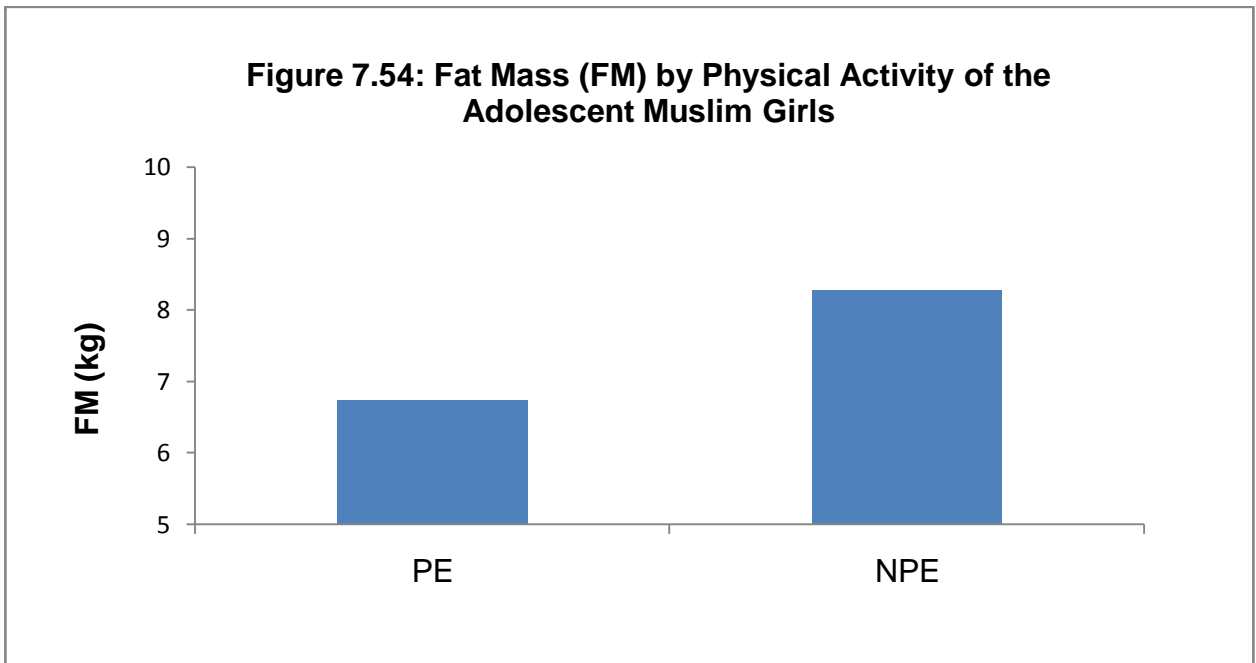
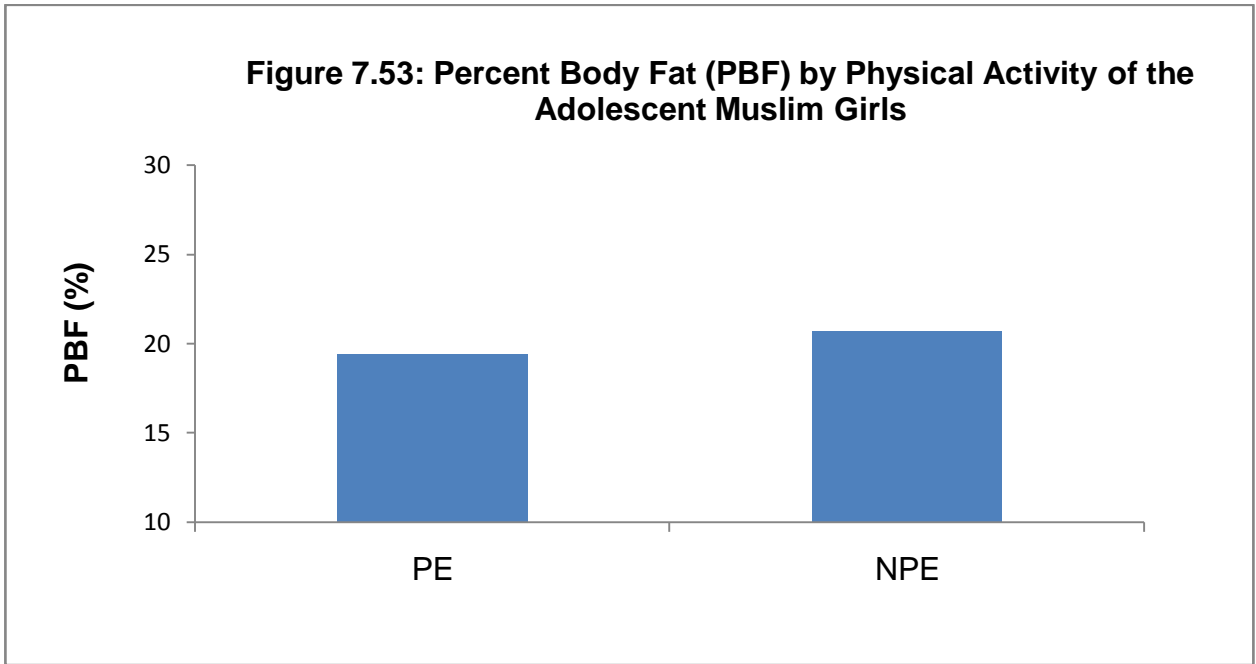
Variable	Mean SD	Percentiles		
		5th	50th	95th
Fat-Non Fat composition				
Percent Body Fat (%)	19.44 (4.85)	12.83	18.64	27.86
Fat Mass (kg)	6.73 (3.45)	3.10	5.92	13.26
Fat Free Mass (kg)	26.35 (6.03)	17.82	25.78	37.12
Fat Mass Index (kg/m ²)	3.25 (1.35)	1.77	3.00	5.60
Fat Free Mass Index (kg/m ²)	12.97 (1.49)	10.85	12.82	15..73
Fat-Muscle Composition				
Arm Muscle Circumference (mm)	157.02 (20.13)	129.54	155.34	190.38
Arm Muscle Area (mm ²)	1993.40 (532.55)	1334.8	1919.5	2883.2
Arm Fat Area (mm ²)	1305.3 (587.63)	633.71	1184.5	2361.6

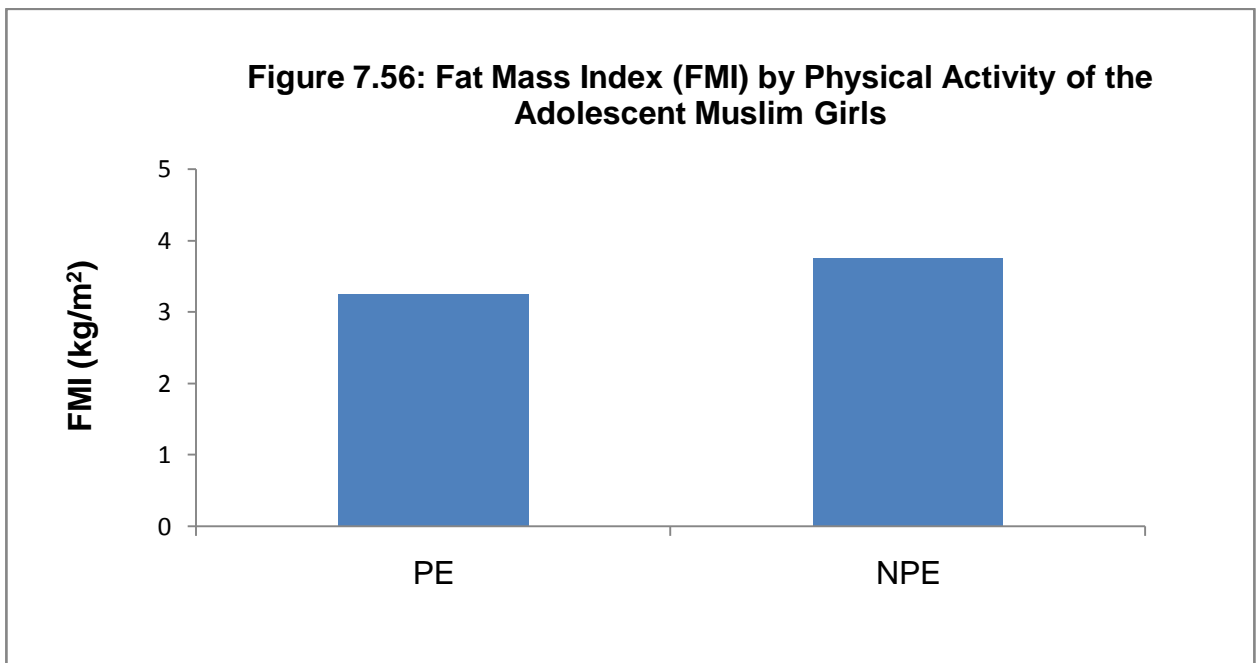
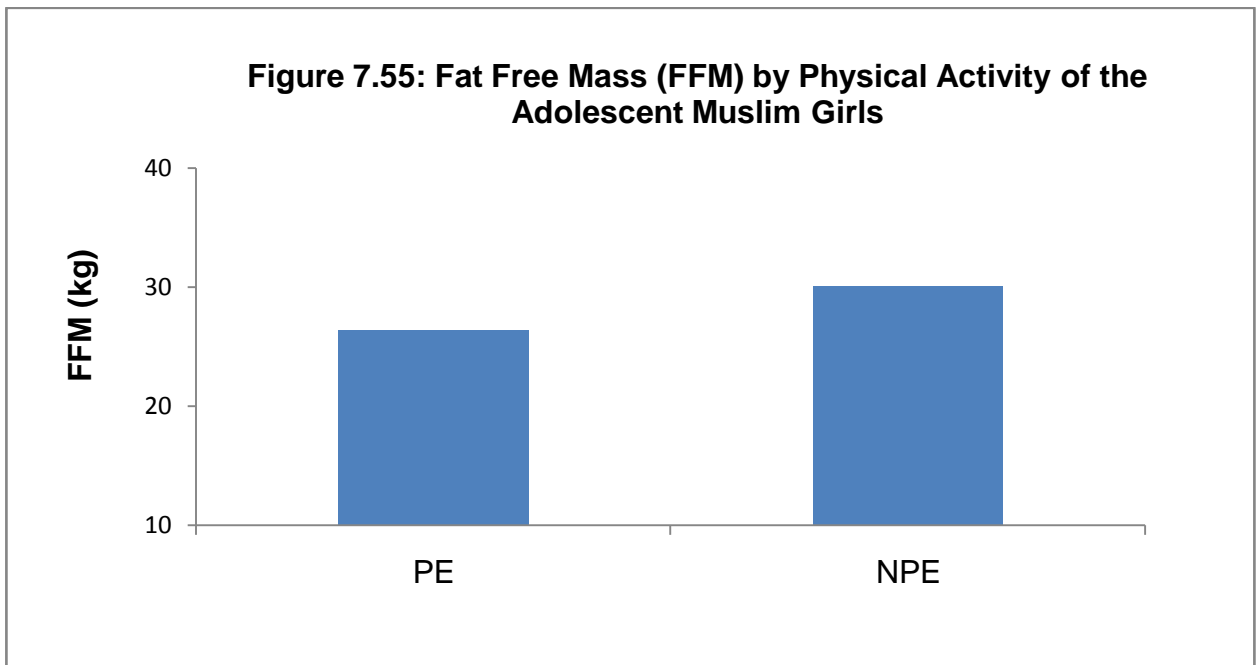
Standard deviations are presented in parentheses

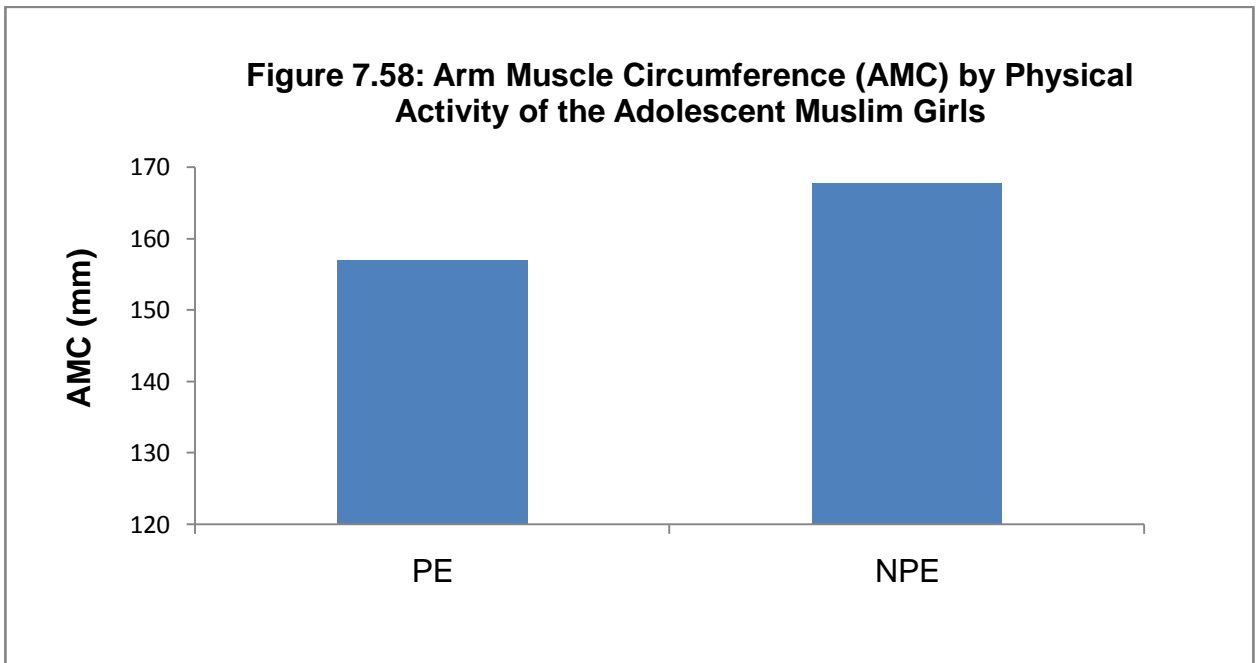
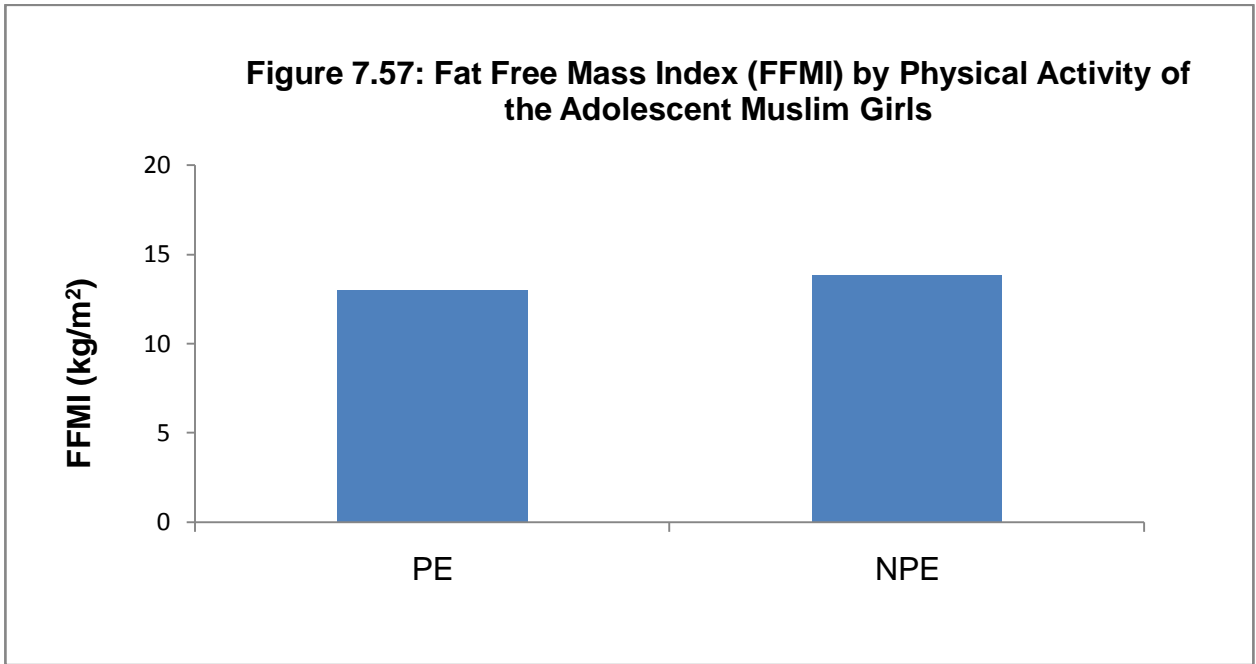
Table 7.12: Mean, SD and Percentiles in Different Measures Body Composition of the Adolescent Muslim NPE Girls Group (n=242)

Variable	Mean SD	Percentiles		
		5th	50th	95th
Fat-Non Fat composition				
Percent Body Fat (%)	20.69 (5.19)	12.66	20.26	29.67
Fat Mass (kg)	8.28 (3.76)	3.17	7.90	14.70
Fat Free Mass (kg)	30.08 (5.83)	18.95	30.93	38.42
Fat Mass Index (kg/m ²)	3.76 (1.53)	1.80	3.50	6.58
Fat Free Mass Index (kg/m ²)	13.85 (1.70)	11.26	13.86	16.85
Fat-Muscle Composition				
Arm Muscle Circumference (mm)	167.65 (20.99)	136.74	167.66	199.27
Arm Muscle Area (mm ²)	2270.8 (614.71)	1487.50	2235.90	3158.70
Arm Fat Area (mm ²)	1443.80 (603.27)	619.21	1346.80	2561.50

Standard deviations are presented in parentheses







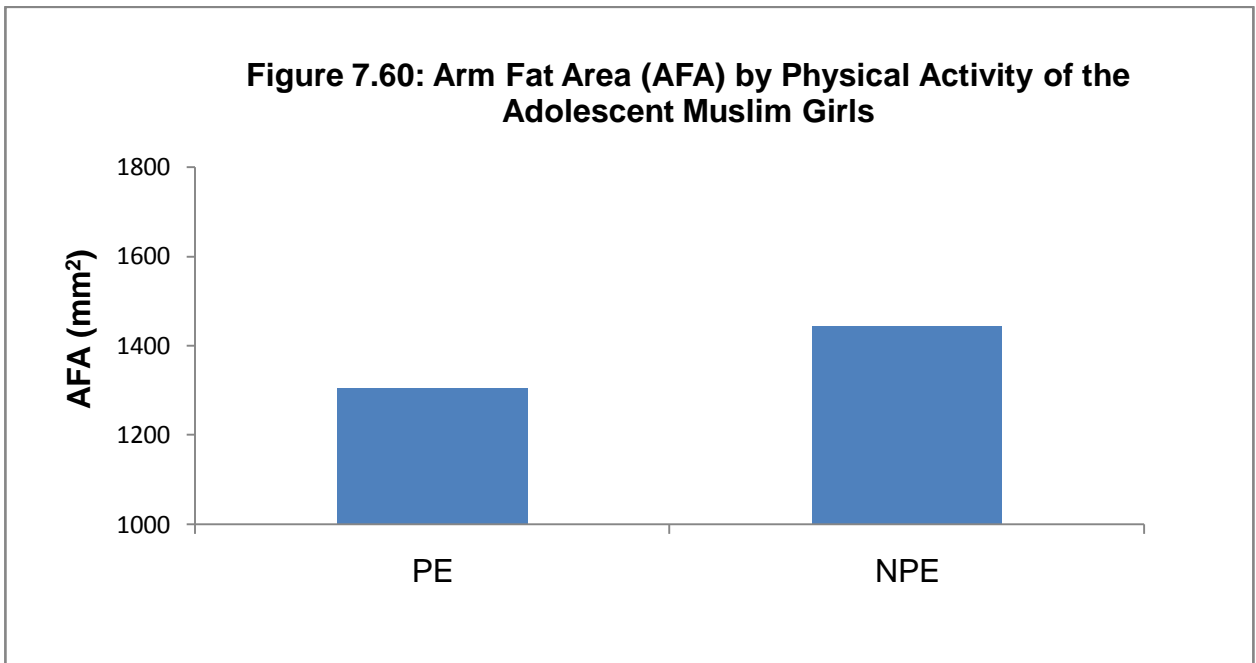
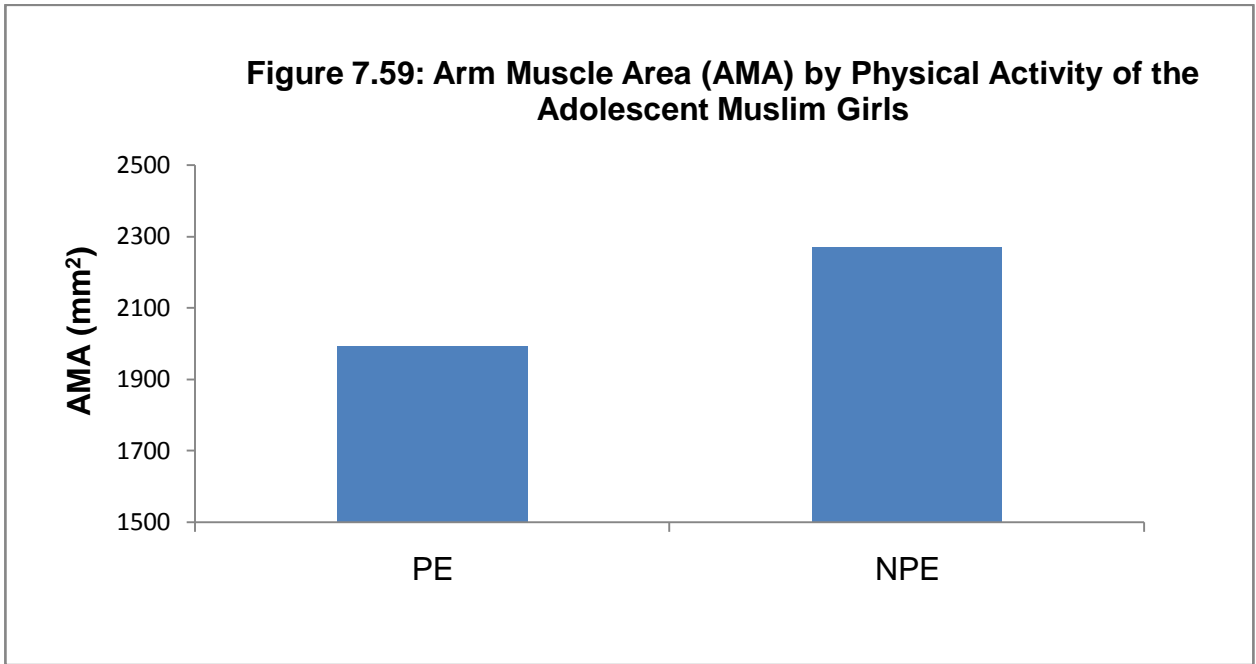


Table 7.13: F-Ratio and T- Value of Different Anthropometric Characteristics of the Muslim Adolescents of PF and NPE Group

Variable	F-Ratio		T-Value	
	Boys	Girls	Boys	Girls
Height (cm)	22.07	36.54	4.74*	6.14*
Weight (kg)	13.72	46.61	3.72*	6.82*
Circumferences (cm)				
Mid-Upper Arm	10.84	26.84	3.29**	5.15*
Chest	18.84	56.24	4.36*	7.51*
Minimum Waist	5.56	18.40	2.33***	4.24*
Maximum Hip	15.02	36.70	3.88*	6.01*
Medial Calf	15.85	34.74	4.04*	5.90*
Skinfolds (mm)				
Biceps	9.15	20.82	2.94****	4.54*
Triceps	3.74	2.47	1.90 ns	1.57 ns
Subscapular	0.25	16.14	0.50 ns	3.98*
Suprailiac	0.75	42.17	0.85 ns	6.42*
Medial Calf	4.87	15.74	2.17*****	3.92*

ns – not significant at 0.05 level

* - significant at the 0.000 level

** - significant at the 0.001 level

** * - significant at the 0.020 level

**** - significant at the 0.003 level

***** - significant at the 0.030 level

Table 7.14: F-Ratio and T-Value of Different Measures of Adiposity and Subcutaneous Fat Content of the Muslim Adolescents of PF and NPE Group

Variable	F-Ratio		T-Value	
	Boys	Girls	Boys	Girls
Generalised Adiposity				
Body Mass Index (kg/m ²)	1.61	34.35	1.24 ns	5.77*
Central Adiposity				
Conicity Index	0.85	8.75	0.92 ns	2.95****
Waist-Hip Ratio	6.73	7.11	2.62*****	2.64*****
Waist-Height Ratio	2.49	0.27	1.55 ns	0.51 ns
Regional Adiposity				
Subscapular-Triceps Ratio	9.74	12.24	3.17***	3.49**
Truncal-Extremity Fat Ratio	9.04	26.68	3.05***	5.20*
Centripetal Fat Ratio	8.35	20.37	2.92*****	4.57*
Subcutaneous Fat Content (mm)				
Sum of 5 Skinfolts (mm)	2.28	21.69	1.48 ns	4.61*
Sum of Trunk Skinfolts (mm)	0.06	29.72	0.25 ns	5.39*
Sum of Extremity Skinfolts (mm)	6.34	12.26	2.46*****	3.48**

ns – not significant at 0.05 level

* - significant at the 0.000 level

** - significant at the 0.001 level

** * - significant at the 0.002 level

**** - significant at the 0.003 level

***** - significant at the 0.009 level

***** - significant at the 0.004 level

***** - significant at the 0.014 level

Table 7.15: F-Ratio and T- Value in Different Measures Body Composition of the Muslim Adolescents of PF and NPE Group

Variable	F-Ratio		T-Value	
	Boys	Girls	Boys	Girls
Fat-Non Fat composition				
Percent Body Fat (%)	4.81	8.37	2.16**	2.87***
Fat Mass (kg)	0.07	25.28	0.26 ns	4.98*
Fat Free Mass (kg)	20.34	53.22	4.57*	7.32*
Fat Mass Index (kg/m ²)	2.02	17.22	1.38 ns	4.09*
Fat Free Mass Index (kg/m ²)	7.10	41.40	2.65*****	6.34*
Fat-Muscle Composition				
Arm Muscle Circumference (mm)	17.81	36.18	4.27*	5.99*
Arm Muscle Area (mm ²)	17.90	31.86	4.29*	5.55*
Arm Fat Area (mm ²)	0.94	7.30	0.95*****	2.69****

ns – not significant at 0.05 level

** - significant at the 0.032 level

**** - significant at the 0.007 level

***** - significant at the 0.344 level

* - significant at the 0.000 level

** * - significant at the 0.004 level

***** - significant at the 0.008 level