

CHAPTER-VI

RESULTS - III

BODY COMPOSITION MEASURES

(WITH 3 TABLES AND 8 FIGURES IN THE TEXT)

VI

Results – III

The overall mean, SD and percentiles (5th, 50th and 95th) of different measures of body composition of the studied samples are presented in Table 6.1 and 6.2. The mean values of PBF, FM and FFM of boys were 15.31 % (\pm 4.37), 5.57 kg (\pm 3.18) and 29.86 kg (\pm 9.69), respectively. The mean values of PBF, FM and FFM of girls were 20.00 % (\pm 5.03), 7.41 kg (\pm 3.67) and 28.00 kg (\pm 6.22), respectively. The overall mean values of AMC, AMA and AFA of boys were 168.72 mm (\pm 28.90), 2330.77 mm² (\pm 821.40) and 906.65 mm² (\pm 458.92), respectively. The overall mean values of AMC, AMA and AFA of girls were 161.73 mm (\pm 21.17), 2116.33 mm² (\pm 586.34) and 1366.68 mm² (\pm 598.04), respectively.

Age variations of different body composition parameters of Muslim adolescents are presented in Table 6.3. PBF, FM, FMI and AFA of boys increased from 10 to 17 years except at 13, 16 and 17 years. PBF, FM and FMI and AFA of girls increased from 10 to 17 years except at 16 and 17 years. FFM of boys increased from 10 to 17 years except a minor decreased at 13 and 17 years. FFM of girls indicated straightforward positive age-wise increment. FFMI of boys increased from 10 to 17 years except a minor decreased at 13 years. FFMI of girls increased from 10 to 17 years except at 11 and 16 years. AMC and AMA of boys revealed age-wise increase from 10 to 17 years which was slight decrease at age 13 years. AMC and AMA of girls revealed age-wise increase from 10 to 17 years which was slight decrease at age 16 years.

Analysis of variance (ANOVA) confirms significant ($p < 0.01$) age variations in all body composition parameters of adolescents but AFA of boys significant at 0.026 level. Age-wise graphical presentation of different body composition parameters are given in Figure 6.1 – 6.8.

Table 6.1: Mean, SD and Percentiles in Different Measures of Body Composition of the Adolescent Boys (n= 522)

Variable	Mean SD	Percentiles		
		5th	50th	95th
Fat-Non Fat composition				
Percent Body Fat (%)	15.31 (4.37)	10.11	14.38	24.37
Fat Mass (kg)	5.57 (3.18)	2.60	4.81	11.46
Fat Free Mass (kg)	29.86 (9.69)	18.83	26.16	47.38
Fat Mass Index (kg/m ²)	2.58 (1.24)	1.47	2.26	5.09
Fat Free Mass Index (kg/m ²)	13.83 (2.06)	11.43	13.33	17.59
Fat-Muscle Composition				
Arm Muscle Circumference (mm)	168.72 (28.90)	133.54	161.73	221.73
Arm Muscle Area (mm ²)	2330.77 (821.40)	1418.60	2080.60	3910.80
Arm Fat Area (mm ²)	906.65 (458.92)	457.12	782.70	1862.50

Standard deviations are presented in parentheses

Table 6.2: Mean, SD and Percentiles in Different Measures of Body Composition of the Adolescent Girls (n= 546)

Variable	Mean SD	Percentiles		
		5th	50th	95th
Fat-Non Fat composition				
Percent Body Fat (%)	20.00 (5.03)	12.81	19.52	29.27
Fat Mass (kg)	7.41 (3.67)	3.15	6.86	14.39
Fat Free Mass (kg)	28.00 (6.22)	18.28	28.77	37.29
Fat Mass Index (kg/m ²)	3.48 (1.45)	1.78	3.20	6.27
Fat Free Mass Index (kg/m ²)	13.36 (1.65)	10.98	13.24	16.17
Fat-Muscle Composition				
Arm Muscle Circumference (mm)	161.73 (21.17)	131.75	160.44	194.78
Arm Muscle Area (mm ²)	2116.33 (586.34)	1380.80	2047.70	3018.00
Arm Fat Area (mm ²)	1366.68 (598.04)	627.77	1266.90	2452.70

Standard deviations are presented in parentheses

Table 6.3: Age Variations in Different Measures of Body Composition of the Adolescent Muslim Adolescents

Variable	Age Groups (years)					
	10.0 – 10.9		11.0-11.9		12.0-12.9	
	Boys	Girls	Boys	Girls	Boys	Girls
	n=(56)	n=(62)	n=(63)	n=(73)	n=(65)	n=(82)
Fat-Non Fat composition						
Percent Body Fat (%)	14.25 (2.91)	16.87 (3.55)	15.42 (4.30)	17.74 (4.72)	16.01 (5.15)	17.96 (4.78)
Fat Mass (kg)	3.41 (0.98)	4.10 (1.32)	4.16 (1.93)	4.80 (2.34)	4.99 (3.86)	5.70 (2.74)
Fat Free Mass (kg)	20.25 (1.81)	19.80 (1.89)	21.85 (2.63)	21.54 (3.25)	23.99 (4.47)	24.84 (3.92)
Fat Mass Index (kg/m ²)	2.08 (0.54)	2.50 (0.72)	2.37 (1.01)	2.68 (1.22)	2.63 (1.75)	2.84 (1.24)
Fat Free Mass Index (kg/m ²)	12.43 (0.73)	12.13 (0.76)	12.60 (1.04)	12.10 (1.48)	12.93 (1.56)	12.46 (1.42)
Fat-Muscle Composition						
Arm Muscle Circumference (mm)	142.89 (9.11)	140.59 (9.73)	146.08 (11.89)	144.73 (14.40)	153.50 (19.19)	152.29 (14.51)
Arm Muscle Area (mm ²)	1630.64 (212.52)	1579.66 (223.71)	1708.60 (285.28)	1682.39 (343.91)	1903.20 (543.19)	1861.38 (360.30)
Arm Fat Area (mm ²)	781.43 (232.81)	998.41 (332.80)	862.50 (384.26)	1062.68 (483.50)	947.34 (617.48)	1144.58 (547.14)

Standard deviations are presented in parentheses

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Table 6.3: Continuation.....

Variable	Age Groups (years)					
	13.0 – 13.9		14.0-14.9		15.0-15.9	
	Boys	Girls	Boys	Girls	Boys	Girls
	n=(77)	n=(79)	n=(84)	n=(78)	n=(71)	n=(70)
Fat-Non Fat composition						
Percent Body Fat (%)	15.72 (3.97)	20.51 (3.97)	15.95 (3.52)	21.13 (4.99)	16.57 (5.98)	22.92 (5.30)
Fat Mass (kg)	4.58 (1.97)	7.78 (2.66)	5.65 (2.14)	8.59 (3.33)	8.02 (4.72)	10.22 (4.13)
Fat Free Mass (kg)	23.70 (3.44)	29.32 (4.58)	29.30 (6.30)	31.00 (3.68)	38.08 (7.23)	33.05 (4.38)
Fat Mass Index (kg/m ²)	2.43 (0.88)	3.57 (1.08)	2.63 (0.87)	3.83 (1.43)	3.23 (1.92)	4.49 (1.70)
Fat Free Mass Index (kg/m ²)	12.75 (1.16)	13.53 (1.31)	13.64 (1.59)	13.85 (1.21)	15.21 (2.59)	14.56 (1.64)
Fat-Muscle Composition						
Arm Muscle Circumference (mm)	150.88 (14.86)	164.90 (18.11)	166.64 (19.86)	172.53 (18.84)	190.27 (22.51)	175.81 (21.48)
Arm Muscle Area (mm ²)	1828.06 (394.91)	2188.87 (526.98)	2240.01 (551.53)	2395.71 (570.26)	2919.37 (684.12)	2494.94 (692.66)
Arm Fat Area (mm ²)	896.05 (376.13)	1396.98 (450.72)	911.44 (366.48)	1526.29 (607.07)	1063.52 (654.64)	1712.83 (685.11)

Standard deviations are presented in parentheses

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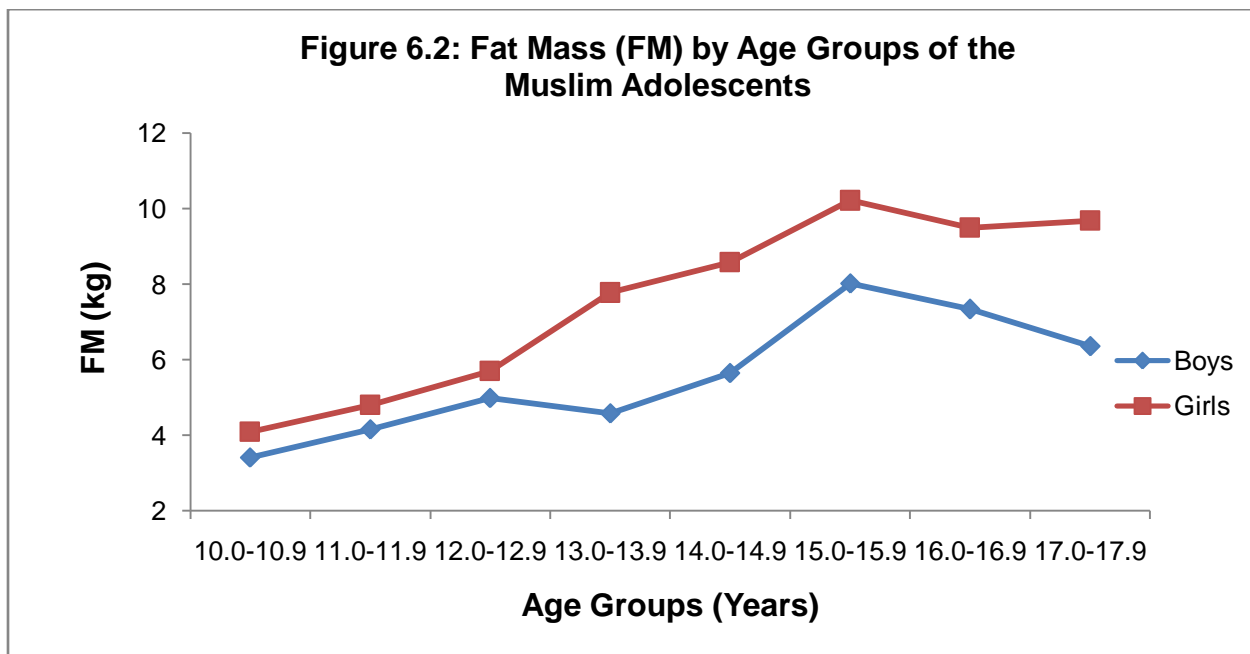
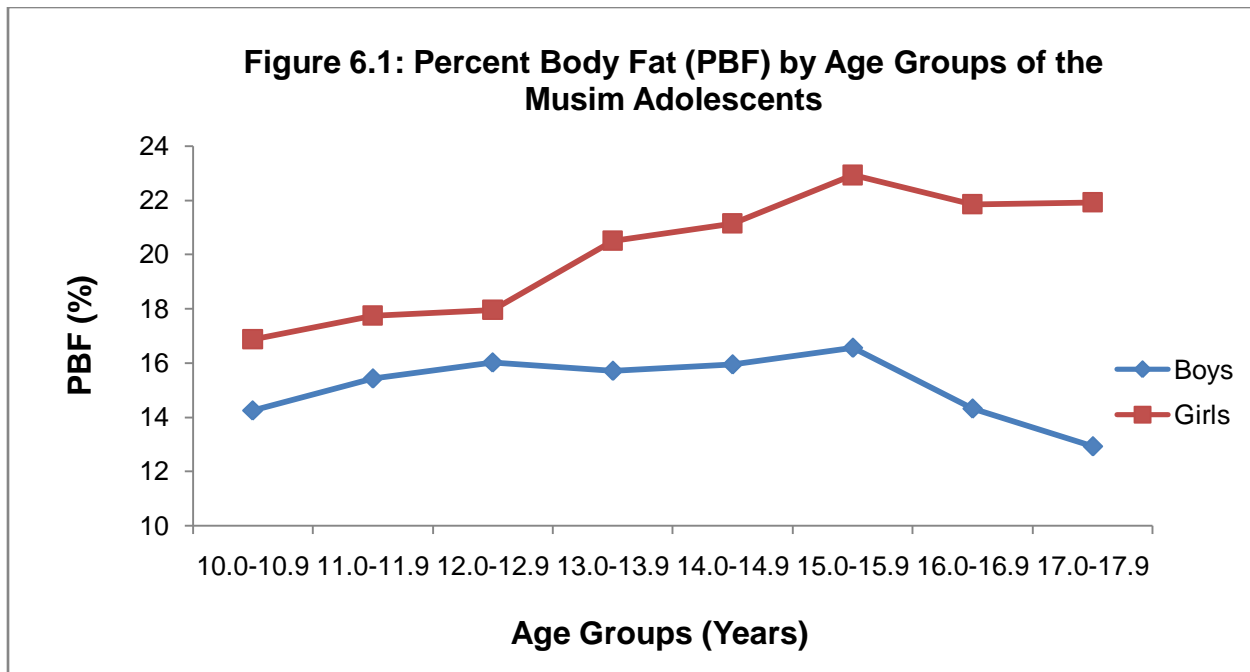
Table 6.3: Continuation.....

Variable	Age Groups (years)				F- ratio	
	16.0 – 16.9		17.0-17.9		Boys	Girls
	Boys	Girls	Boys	Girls		
	n=(60)	n=(55)	n=(46)	n=(47)	n=(522)	n=(546)
Fat-Non Fat composition						
Percent Body Fat (%)	14.32 (4.26)	21.85 (4.59)	12.92 (2.51)	21.91 (4.55)	4.52*	16.16*
Fat Mass (kg)	7.34 (3.14)	9.50 (3.30)	6.36 (1.53)	9.68 (3.27)	19.91*	41.41*
Fat Free Mass (kg)	42.74 (4.97)	33.14 (3.39)	42.70 (4.72)	33.63 (3.68)	221.14*	139.90*
Fat Mass Index (kg/m ²)	2.70 (1.11)	4.06 (1.35)	2.39 (0.60)	4.18 (1.31)	4.99*	22.78*
Fat Free Mass Index (kg/m ²)	15.75 (1.53)	14.21 (1.36)	15.97 (1.62)	14.59 (1.30)	52.17*	40.54*
Fat-Muscle Composition						
Arm Muscle Circumference (mm)	203.76 (16.39)	170.74 (17.17)	207.41 (16.43)	177.77 (14.24)	139.62*	50.17*
Arm Muscle Area (mm ²)	3323.59 (541.37)	2341.86 (497.17)	3443.14 (546.19)	2529.65 (412.60)	129.83*	40.15*
Arm Fat Area (mm ²)	922.50 (511.40)	1601.13 (600.73)	808.23 (237.24)	1606.48 (582.61)	2.30**	17.04*

Standard deviations are presented in parentheses

* - significant at the 0.01 level

** - significant at the 0.026 level



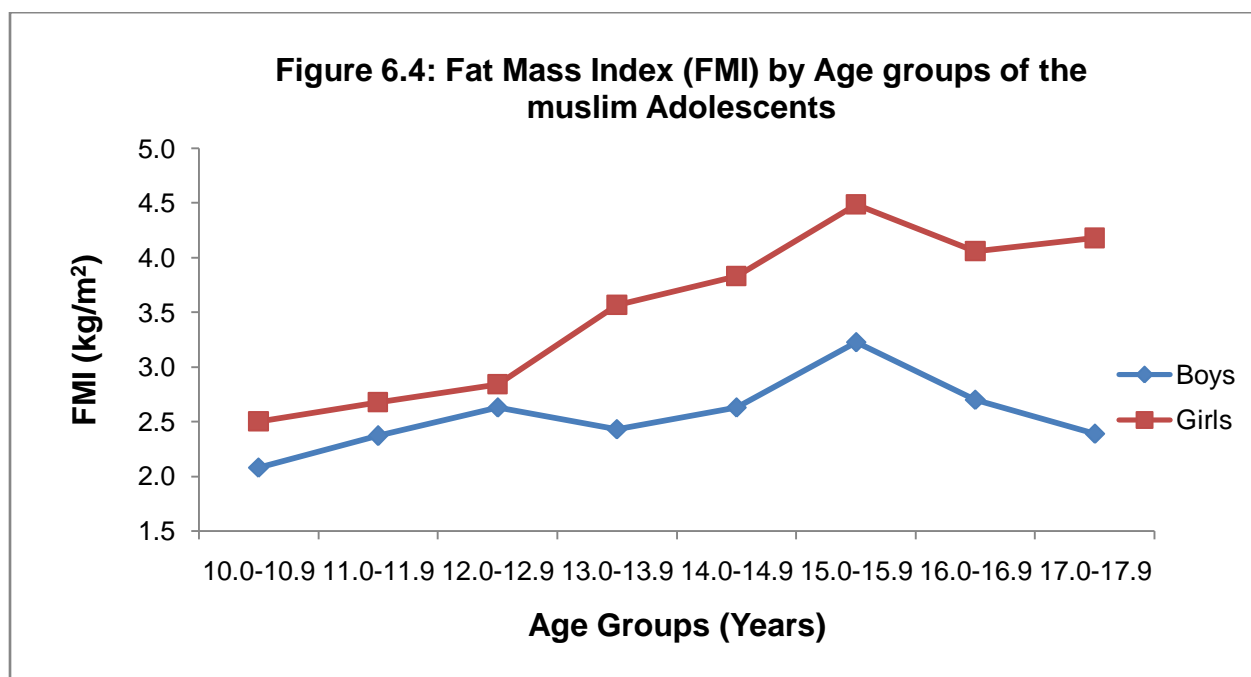
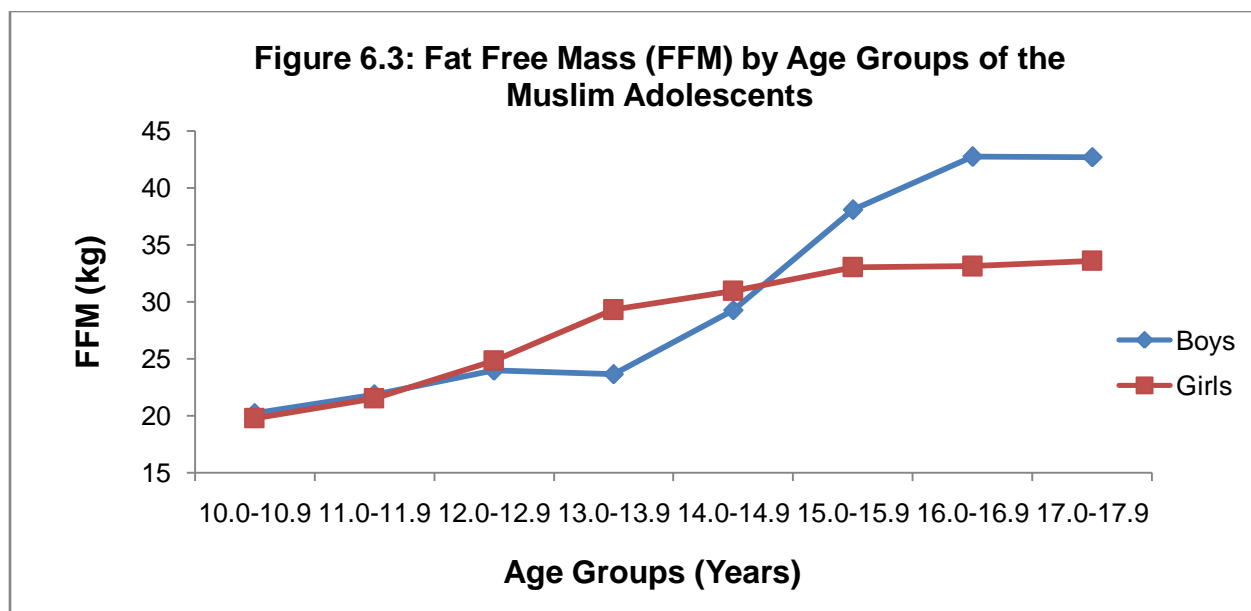


Figure 6.5: Fat Free Mass Index (FFMI) by Age Groups of the Muslim Adolescents

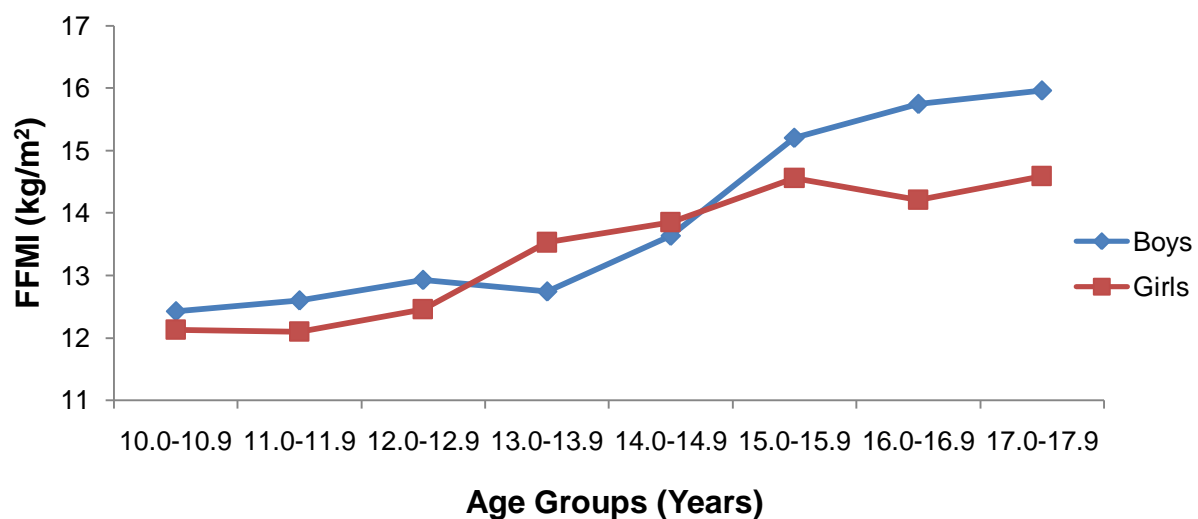


Figure 6.6: Arm Muscle Circumference (AMC) by Age Groups of the Muslim Adolescents

