

CASE STUDY 2

» CALCULATING & DETERMINING BODY COMPOSITION

Directions

Based on the information given, calculate the patient's body composition and interpret the results.

Information

Japanese Native Male, Age 34

Skinfold Measurements: Site 1: 18 | Site 2: 12 | Site 3: 8

1. Calculate Sum of Skinfolts: _____
2. Calculate Body Density, using the appropriate equation: _____
3. Convert Body Density to Percent Body Fat using appropriate equation: _____
4. Determine appropriate norm classification for patient: _____
(See next page.)

Body Density (Db)

Prediction Equations

Females: Three-Site Formula (triceps, suprailiac, thigh)

Body density = $1.099421 - (0.0009929 (\text{Sum of three skinfolts})) + (0.0000023 (\text{sum of three skinfolts})^2) - (0.0001392 (\text{age}))$

Males: Three-Site Formula (chest, abdomen, thigh)

Body density = $1.10938 - (0.0008267 (\text{Sum of three skinfolts})) + (0.0000016 (\text{sum of three skinfolts})^2) - (0.0002574 (\text{age}))$

Population	Age	Gender	% Body Fat*
Race			
American Indian	18-60	Female	(4.81/Db) – 4.34
Black	18-32	Male	(4.37/Db) – 3.93
	24-79	Female	(4.85/Db) – 4.39
Hispanic	20-40	Female	(4.87/Db) – 4.41
Japanese Native	18-48	Male	(4.97/Db) – 4.52
		Female	(4.76/Db) – 4.28
	61-78	Male	(4.87/Db) – 4.41
		Female	(4.95/Db) – 4.50
White	7-12	Male	(5.30/Db) – 4.89
		Female	(5.35/Db) – 4.95
	13-16	Male	(5.07/Db) – 4.64
		Female	(5.10/Db) – 4.66
	17-19	Male	(4.99/Db) – 4.55
		Female	(5.05/Db) – 4.62
	20-80	Male	(4.95/Db) – 4.50
		Female	(5.01/Db) – 4.57
Levels of Body Fatness			
Anorexia	15-30	Female	(5.26/Db) – 4.83
Obesity	17-62	Male	(5.00/Db) – 4.56

* To obtain percent body fat, multiply the value calculated from the equation by 100.

Body Composition Norms

Females

Percentile	Age				
	20-29	30-39	40-49	50-59	60-69
90	14.5	15.5	18.5	21.6	21.1
80	17.1	18.0	21.3	25.0	25.1
70	19.0	20.0	23.5	26.6	27.5
60	20.6	21.6	24.9	28.5	29.3
50	22.1	23.1	26.4	30.1	30.9
40	23.7	24.9	28.1	31.6	32.5
30	25.4	27.0	30.1	33.5	34.3
20	27.7	29.3	32.1	35.6	36.6
10	32.1	32.8	35.0	37.9	39.3

Males

Percentile	Age				
	20-29	30-39	40-49	50-59	60-69
90	7.1	11.3	13.6	15.3	15.3
80	9.4	13.9	16.3	17.9	18.4
70	11.8	15.9	18.1	19.8	20.3
60	14.1	17.5	19.6	21.3	22.0
50	15.9	19.0	21.1	22.7	23.5
40	17.4	20.5	22.5	24.1	25.0
30	19.5	22.3	24.1	25.7	26.7
20	22.4	24.2	26.1	27.5	28.5
10	25.9	27.3	28.9	30.3	31.2

End of Case Study 2