

The Usefulness of Anthropometric Indices to Identify the Risk of Metabolic Syndrome

Table 1. Correlation coefficients between body size and shape.

Index	BMI r (p)	WHtR r (p)	%BF r (p)	ABSI r (p)	BRI r (p)	CUN-BAE r (p)
TOTAL						
Height	-0.037 (<0.001)	-0.055 (<0.001)	-0.382 (<0.001)	0.358 (<0.001)	-0.055 (<0.001)	-0.591 (<0.001)
Weight	0.818 (<0.001)	0.709 (<0.001)	0.303 (<0.001)	0.296 (<0.001)	0.709 (<0.001)	0.192 (<0.001)
WC	0.812 (<0.001)	0.916 (<0.001)	0.329 (<0.001)	0.612 (<0.001)	0.916 (<0.001)	0.228 (<0.001)
BMI	-					
WHtR	0.877 (<0.001)	-				
%BF	0.624 (<0.001)	0.519 (<0.001)	-			
ABSI	0.114 (<0.001)	0.498 (<0.001)	-0.160 (<0.001)	-		
BRI	0.877 (<0.001)	0.999 (<0.001)	0.621 (<0.001)	0.498 (<0.001)	-	
CUN-BAE	0.625 (<0.001)	0.492 (<0.001)	0.873 (<0.001)	-0.294 (<0.001)	0.492 (<0.001)	-
MEN						
Height	-0.066 (<0.001)	-0.225 (<0.001)	-0.087 (<0.001)	-0.002 (0.888)	-0.225 (<0.001)	-0.095 (<0.001)
Weight	0.858 (<0.001)	0.653 (<0.001)	0.673 (<0.001)	-0.002 (0.908)	0.653 (<0.001)	0.834 (<0.001)
WC	0.857 (<0.001)	0.931 (<0.001)	0.752 (<0.001)	0.438 (<0.001)	0.931 (<0.001)	0.856 (<0.001)
BMI	-					
WHtR	0.862 (<0.001)	-				
%BF	0.803 (<0.001)	0.767 (<0.001)	-			
ABSI	0.003 (<0.810)	0.431 (<0.001)	0.767 (<0.001)	-		
BRI	0.862 (<0.001)	0.999 (<0.001)	0.701 (<0.001)	0.431 (<0.001)	-	
CUN-BAE	0.991 (<0.001)	0.872 (<0.001)	0.808 (<0.001)	0.028 (0.075)	0.872 (<0.001)	-
WOMEN						
Height	-0.166 (<0.001)	-0.262 (<0.001)	0.050 (<0.001)	-0.020 (0.068)	-0.262 (<0.001)	-0.188 (<0.001)
Weight	0.905 (<0.001)	0.751 (<0.001)	0.860 (<0.001)	0.105 (<0.001)	0.751 (<0.001)	0.889 (<0.001)

WC	0.872 (<0.001)	0.964 (<0.001)	0.964 (<0.001)	0.534 (<0.001)	0.964 (<0.001)	0.870 (<0.001)
BMI	-					
WHtR	0.883 (<0.001)	-				
%BF	0.851 (<0.001)	0.770 (<0.001)	-			
ABSI	0.115 (<0.001)	0.517 (<0.001)	0.188 (<0.001)	-		
BRI	0.883 (<0.001)	0.999 (<0.001)	0.686 (<0.001)	0.517 (<0.001)	-	
CUN-BAE	0.993 (<0.001)	0.888 (<0.001)	0.851 (<0.001)	0.128 (<0.001)	0.888 (<0.001)	-

r - Spearman's rank correlation coefficients (p - value); BMI - Body Mass Index; WHtR - Waist-to-Height Ratio; %BF - Percent of Body Fat; ABSI - A Body Shape Index; BRI - Body Roundness Index; CUN-BAE - Clínica Universidad de Navarra-Body Adiposity Estimator.

Table 2. Unadjusted odds ratios and 95% confidence intervals for MetS.

Indices	Q	Men				Women			
		MetS classic (3 and more components from 5)		MetS modified (2 and more components from 4, other than WC)		MetS classic (3 and more components from 5)		MetS modified (2 and more components from 4, other than WC)	
		OR (95% CI)	P	OR (95% CI)	P	OR (95% CI)	P	OR (95% CI)	P
BMI	1(ref)	1.0		1.0		1.0		1.0	
	2	3.08 (2.42-3.90)	<0.0 01	1.64 (1.35- 2.00)	<0.00 1	3.04 (2.51- 3.67)	<0.00 1	1.80 (1.53-2.10)	<0.0 01
	3	6.66 (5.26-8.42)	<0.0 01	2.59 (2.12- 3.17)	<0.00 1	5.42 (4.51- 6.52)	<0.00 1	2.76 (2.360- 3.216)	<0.0 01
	4	11.15 (8.77-14.16)	<0.0 01	3.89 (3.17- 4.78)	<0.00 1	8.78 (7.31- 10.54)	<0.00 1	4.18 (3.58-4.87)	<0.0 01
	5	18.01 (14.03- 23.11)	<0.0 01	5.99 (4.83- 7.43)	<0.00 1	14.84 (12.33- 17.85)	<0.00 1	7.06 (6.03-8.26)	<0.0 01
WHtR	1(ref)	1.0		1.0		1.0		1.0	
	2	4.86 (3.76-6.29)	<0.0 01	1.89 (1.55- 2.31)	<0.00 1	5.91 (4.70- 7.45)	<0.00 1	2.112 (1.793- 2.488)	<0.0 01
	3	9.52 (7.375- 12.288)	<0.0 01	2.50 (2.05- 3.05)	<0.00 1	11.37 (9.08- 14.25)	<0.00 1	3.387 (2.886- 3.974)	<0.0 01
	4	14.832 (11.45- 19.22)	<0.0 01	3.62 (2.95- 4.44)	<0.00 1	17.05 (13.61- 21.36)	<0.00 1	5.064 (4.318- 5.939)	<0.0 01

	5	26.04 (19.88-34.10)	<0.0 01	6.32 (5.08-7.85)	<0.00 1	31.54 (25.12-39.60)	<0.00 1	9.37 (7.96-11.02)	<0.0 01
	1(ref)	1.0		1.0		1.0		1.0	
%BF	2	2.58 (2.05-3.25)	<0.0 01	1.64 (1.35-2.00)	<0.00 1	2.74 (2.28-3.30)	<0.00 1	1.90 (1.61-2.23)	<0.0 01
	3	5.41 (4.32-6.79)	<0.0 01	2.67 (2.18-3.26)	<0.00 1	4.80 (4.01-5.74)	<0.00 1	3.35 (2.86-3.92)	<0.0 01
	4	9.08 (7.22-11.43)	<0.0 01	3.82 (3.11-4.68)	<0.00 1	8.18 (6.84-9.78)	<0.00 1	4.82 (4.12-5.64)	<0.0 01
	5	12.63 (9.97-15.99)	<0.0 01	6.56 (5.27-8.16)	<0.00 1	12.22 (10.20-14.63)	<0.00 1	8.08 (6.88-9.48)	<0.0 01
	1(ref)	1.0		1.0		1.0		1.0	
ABSI	2	1.59 (1.31-1.94)	<0.0 01	1.13 (0.93-1.37)	0.235	1.82 (1.55-2.13)	<0.00 1	1.51 (1.31-1.75)	<0.0 01
	3	1.95 (1.60-2.38)	<0.0 01	1.23 (1.01-1.49)	<0.00 1	2.57 (2.20-3.00)	<0.00 1	2.03 (1.751-2.344)	<0.0 01
	4	2.15 (1.77-2.62)	<0.0 01	1.34 (1.098-1.623)	0.004	3.34 (2.87-3.90)	<0.00 1	2.465 (2.13-2.85)	<0.0 01
	5	2.79 (2.29-3.41)	<0.0 01	1.56 (1.28-1.90)	<0.00 1	4.43 (3.80-5.16)	<0.00 1	3.17 (2.74-3.67)	<0.0 01
	1(ref)	1.00		1.0		1.0		1.0	
BRI	2	2.57 (2.06-3.22)	<0.0 01	1.58 (1.30-1.93)	<0.00 1	3.99 (3.25-4.90)	<0.00 1	2.02 (1.71-2.37)	<0.0 01
	3	4.55 (3.651-5.673)	<0.0 01	2.21 (1.81-2.69)	<0.00 1	7.42 (6.07-9.06)	<0.00 1	3.26 (2.78-3.82)	<0.0 01
	4	6.992 (5.59-8.74)	<0.0 01	2.97 (2.43-3.63)	<0.00 1	11.66 (9.55-14.23)	<0.00 1	4.81 (4.11-5.64)	<0.0 01
	5	12.28 (9.72-15.51)	<0.0 01	4.84 (3.92-5.99)	<0.00 1	21.30 (17.40-26.06)	<0.00 1	8.77 (7.46-10.31)	<0.0 01
	1(ref)	1.0		1.0		1.0		1.0	
CUN-BAE	2	2.91 (2.30-3.70)	<0.0 01	1.73 (1.42-2.11)	<0.00 1	3.25 (2.66-3.96)	<0.00 1	1.85 (1.58-2.17)	<0.0 01
	3	6.52 (5.16-8.23)	<0.0 01	2.72	<0.00 1	6.84	<0.00 1	2.71 (2.32-3.17)	<0.0 01

			(2.22- 3.32)		(5.65- 8.29)			
4	10.62 (8.37-13.48)	<0.0 01	3.89 (3.17- 4.78)	<0.00 1	10.49 (8.66- 12.70)	<0.00 1	4.32 (3.70-5.05)	<0.0 01
5	19.04 (14.82- 24.47)	<0.0 01	5.39 (4.36- 6.67)	<0.00 1	17.62 (14.52- 21.38)	<0.00 1	6.41 (5.48-7.49)	<0.0 01

OR – odds ratio; CI – confidence interval; Q – quintile; WC – waist circumference; ref. – reference level; BMI - Body Mass Index; WHtR - Waist-to-Height Ratio; %BF - Percent of Body Fat; ABSI - A Body Shape Index; BRI - Body Roundness Index; CUN-BAE - Clínica Universidad de Navarra-Body Adiposity Estimator.