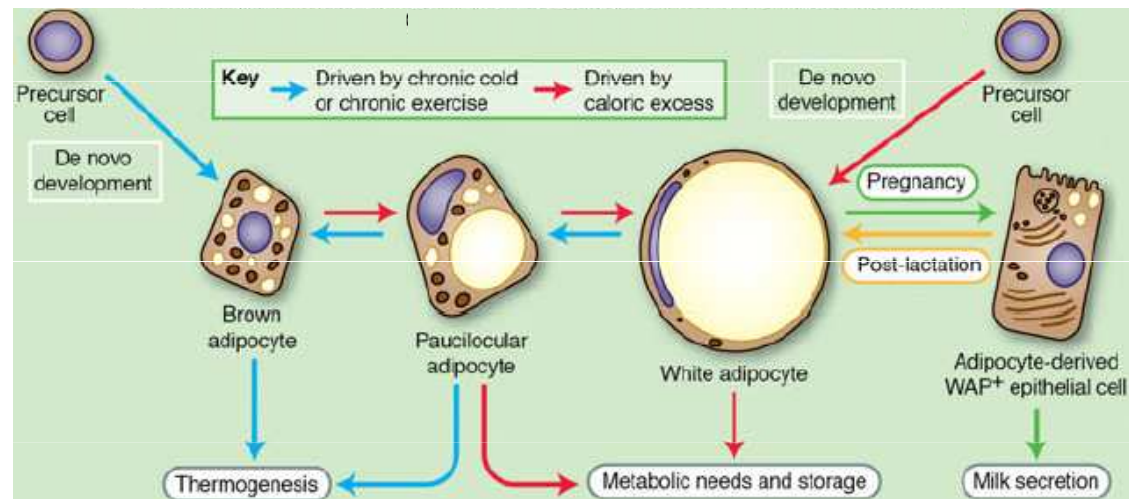
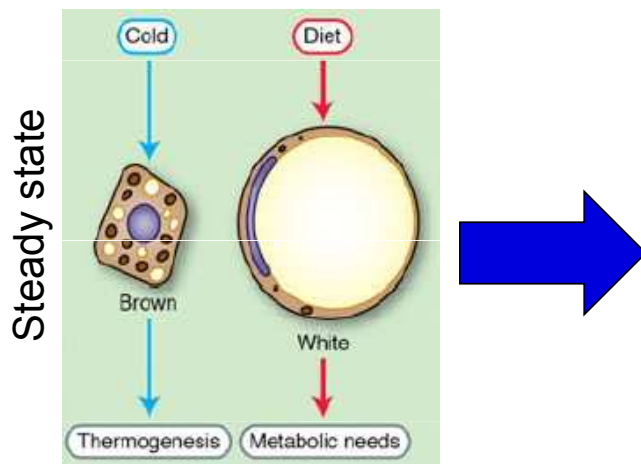


**M U N I
M E D**

Evaluation of the nutrition state

Adipose tissue

- White (for storing dietary energy as TAGs)
- Brown (for ability to convert chemical energy into heat)
- Beige = harbored



Fat tissue functions

- Thermogenesis
- Lactation
- Immune responses
- Fuel for metabolism

Structure of adipose tissue

- Adipocytes
- Non-fat cells:
 - inflammatory cells (macrophages)
 - immune cells
 - preadipocytes
 - fibroblasts
- Connective tissue matrix
- Vascular tissue
- Neural tissue

Abdominal fat

The abdominal fat is present in two main depots:

- Subcutaneous (80% of all body fat)
- Intra-abdominal (10–20% of total fat in men and 5–8% in women)

Adipocytes

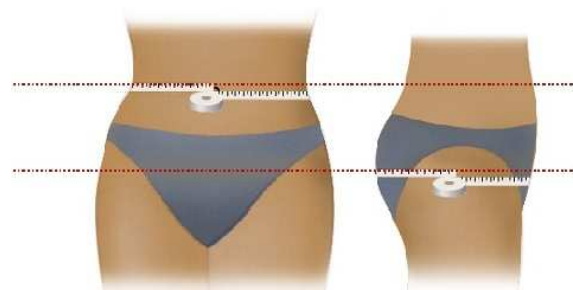
- New smaller adipocytes act as a buffers. They are more insulin-sensitive and have high avidity for FFAs and TGs uptake, preventing their deposition in non-adipose tissue (SCAT)
- Large adipocytes are insulinresistant, hyperlipolytic and resistant to anti-lipolytic effect of insulin (VAT)

Clinical and prognostic differences

- Metabolic risks
- Metabolic syndrome
- Vascular risk and cardiovascular events
- Prediction of mortality

Anthropometric indexes of abdominal adipose tissue mass

- WHR
- Waist circumference
- Abdominal sagittal diameter*



Waist circumference (cm)		
Category	Men	Women
Normal value	≤ 94	≤ 80
Necessity to decrease body mass	95–102	81–90
Medical assistance with decreasing of body mass necessary	> 102	> 90

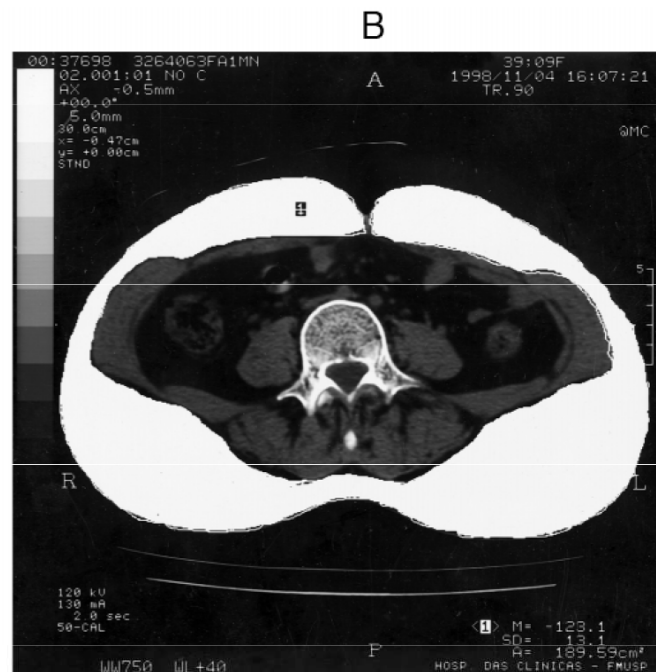
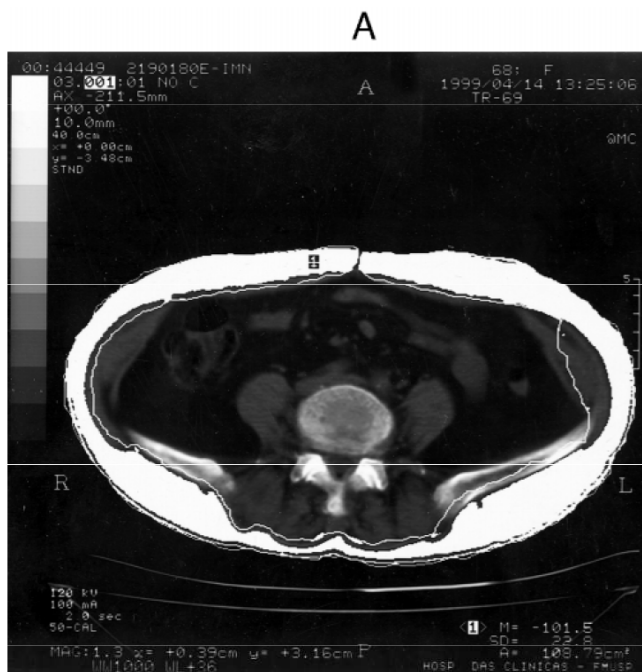
WHR: for women < 0.80
for men < 1.00

Imaging techniques

- Computed tomography (CT)
- Magnetic resonance imaging (MRI)
- Ultrasound (US)*

Imaging techniques

– Computed tomography (CT)



- L4 – L5 region
- V/S ratio
- $V/S \geq 0.4$ (V group)
- $V/S < 0.4$ (SC group)

Computed tomography showing cross-sectional abdominal areas at umbilicus level in two patients demonstrating variation in fat distribution. A, Visceral type (49-yr-old female, 23.1 of BMI, visceral fat area: 146 cm²; subcutaneous fat area, 115 cm²; V/S ratio, 1.27). B, Subcutaneous type (40-yr-old female, 24.0 of BMI, visceral fat area: 60 cm²; subcutaneous fat area, 190 cm²; V/S ratio, 0.31).

*Abdominal sagittal diameter**

Bioimpedance measuring

- Bioimpedance spectroscopy (BIS)
- Bioelectrical impedance analysis (BIA)



InBody [InBody270]

ID: Jane Doe | Height: 156.9cm | Age: 51 | Gender: Female | Test Date & Time: 2015.05.04. 09:46

TEL:02-501-3939 FAX:02-501-2716

Body Composition Analysis

Total amount of water in body	Total Body Water (L)	27.2 (27.0 - 33.0)
For building muscles	Protein (kg)	7.1 (7.2 - 8.8)
For strengthening bones	Minerals (kg)	2.74 (2.49 - 3.05)
For storing excess energy	Body Fat Mass (kg)	22.1 (10.6 - 16.9)
Sum of the above	Weight (kg)	59.1 (45.0 - 60.8)

Muscle-Fat Analysis

	Under	Normal	Over
Weight (kg)	65	70-115	120-205
SMM (kg)	20	25-110	120-170
Body Fat Mass (kg)	40	45-160	170-520

Obesity Analysis

	Under	Normal	Over
BMI (kg/m ²)	16.0	18.5-25.0	26.0-56.0
PBF (%)	8.0	10.0-35.0	36.0-56.0

Segmental Lean Analysis

Side	Lean Mass (kg)	%	Normal/Over
Left	1.81	90.2%	Normal
Right	1.89	94.1%	Normal

Segmental Fat Analysis

Side	Fat Mass (kg)	%	Normal/Over
Left	1.7	190.0%	Over
Right	1.7	185.9%	Over

Body Composition History

Weight (kg)	SMM (kg)	PBF (%)
63.3	20.1	41.3
63.9	20.0	40.7
62.4	19.7	39.2
61.8	19.7	39.0
62.3	19.8	39.4
60.9	19.7	38.6
60.5	19.8	37.8
59.1	19.3	37.5

InBody Score

66 / 100 Points

• Total score that reflects the evaluation of body composition. A muscular person may score over 100 points.

Weight Control

Target Weight: 52.9 kg
 Weight Control: -6.2 kg
 Fat Control: -10.0 kg
 Muscle Control: +3.8 kg

Obesity Evaluation

BMI: Normal Under Slightly Over Over

PBF: Normal Slightly Over Over

Waist-Hip Ratio

0.98 (Low: 0.75, High: 0.85)

Visceral Fat Level

13 (Low: 10, High: 10)

Research Parameters

Fat Free Mass: 37.0 kg
 Basal Metabolic Rate: 1168 kcal
 Obesity Degree: 112% (90-110)
 Recommended calorie intake per day: 1397 kcal

Calorie Expenditure of Exercise

Activity	Calories
Golf	104
Walking	118
Badminton	134
Tennis	177
Boxing	177
Mountain Climbing	193
Aerobics	207
Soccer	207
Japanese Fencing	295
Squash	295
Gateball	112
Table Tennis	134
Bicycling	177
Racketball	177
Jumping Rope	207
Jogging	207
Swimming	207
Racketball	295
Table Tennis	295

Results Interpretation QR Code

Scan the QR Code to see results interpretation in more detail.

Impedance

	RA	LA	TR	RL	LL
Z(0) 20µs	345.0	358.5	23.4	286.6	296.0
100µs	322.0	335.5	21.2	273.2	282.6

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Indexes calculated from anthropometric parameters

– Broca's index (ideal body mass):

- ♂: height in cm - 100 or (height in m)² × 23
- ♀: (height in cm - 100) - 10 % or (height in m)² × 21

Obesity degree	% ideal body mass
mild	115–129
moderate	130–149
severe	150–199
morbid	> 200

– Quetelet's index or body mass index (BMI):

$$- \text{BMI} = \frac{\text{body weight (kg)}}{\text{height (m)}^2}$$

BMI (kg.m ⁻²)		
Category	Men	Women
Underweight	< 20	< 19
Healthy	20–24,9	19–23,9
Overweight	25–29,9	24–28,9
Obesity	30–39,9	29–38,9
Morbid obesity	> 40	> 39