

Health Implication of Altered Body Weight

By: Joshua Schreiner

Overview

- Health implication of altered body weight
- Metabolic syndrome
- Insulin resistance
- Weight loss methods

Health Implication of Altered Body Weight

- Currently 79 million Americans are considered obese, projections predict an increase up to 144 million by 2030.
- Obese category those who have gained excess body fat.
- Obesity increases your risk for mortality due to hypertension, stroke, type 2 diabetes, certain cancers any many more.
- preventable risk factors arise from altered body weight.

Metabolic Syndrome

Associated with an increase risk for CVD

Two fold increase in risk of Heart attack, Stroke, and CVD-Related mortality

Overall 5 components

Someone needs 3 of the 5 to have metabolic syndrome

Elevated waist circumference

Elevated triglycerides

Low HDL

Elevated blood pressure

Elevated fasting glucose.

Table 8.7 Criteria for Clinical Diagnosis of Metabolic Syndrome

Measure	Categorical Cut Points
Elevated waist circumference*	≥ 102 cm (40 in) for men ≥ 88 cm (35 in) for women
Elevated triacylglycerols	≥ 150 mg/dL (1.7 mmol/L)
Reduced HDL-C	< 40 mg/dL (1.0 mmol/L) in men < 50 mg/dL (1.3 mmol/L) in women
Elevated blood pressure	Systolic ≥ 130 and/or diastolic ≥ 85 mm Hg
Elevated fasting glucose	≥ 100 mg/dL

Source: Modified from Alberti KGMN, Eckel RH, Grundy SM, et al. Harmonizing the metabolic syndrome: a joint interim statement of the International Diabetes Federation Task Force on Epidemiology and Prevention; National Heart, Lung, and Blood Institute; American Heart Association; World Heart Federation; International Atherosclerosis Society; and International Association for the Study of Obesity. *Circulation*. 2009;120:1640–45.

* Current recommended thresholds for the U.S. adult population. Thresholds vary among countries.

Insulin Resistance

- Defined as the inability of target tissues to respond to insulin
- This causes elevated blood glucose (hyperglycemia)
- Pancreas will release more insulin to create a normal range for blood glucose
- No clear causes of type 2 diabetes
- Strong connection between type 2 diabetes and excess body fat
 - About 90% of type 2 diabetics fall in the range of overweight or obese.
- Evidence demonstrates that weight lost improves insulin sensitivity

Weight loss method

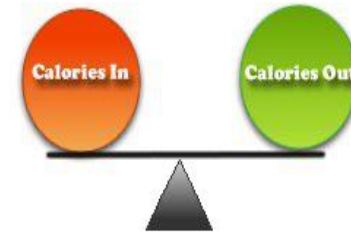
Losing body fat requires a negative energy balance.

6 month weight loss program achieving 5-10 Kg reduction in weight can happen with diet alone.

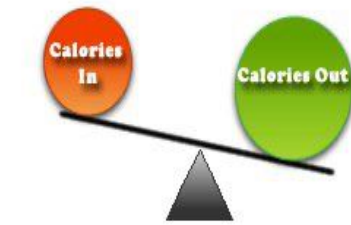
Pairing exercise with a diet program created biggest results.

Back and forth data on what is the “best” macronutrient combination.

Diet and behavioral modification is the biggest key for success.



Weight Maintained
Isocaloric Balance
Energy In = Energy Out



Weight Loss
Negative Caloric Balance
Energy In < Energy Out



Weight Gain
Positive Caloric Balance
Energy In > Energy Out

Review Questions

- There are 5 components of metabolic syndrome, what is the minimum amount of component to be considered for this diagnosis?
- What are the 5 components of metabolic syndrome?

Thank You!

● Resources

- https://www.google.com/search?sca_esv=587611622&rlz=1C9BKJA_enUS921US921&hl=en-US&sxsrf=AM9HkKnuM28jgKliRLLkTESMnc_mN4ybrA:1701684092282&q=weight+loss+see+saw&tbm=isch&source=lnms&prmd=isvnmibtz&sa=X&ved=2ahUKewiJdyew_WCAxUVLzQIHZNCL8QopQJegQIChAB&biw=1366&bih=905&dpr=2#imgrc=2Kl22Tlj5rlwqM
- Gropper, S. S., Carr, T. P., & Smith, J. L. (2022a). *Advanced nutrition and human metabolism*. Cengage.