

# Knowing About BMI and Body Fat Percentage

Overweight and obesity correlate with increased risk for developing various chronic diseases, such as diabetes, hypertension, cardiovascular diseases, cancer, sleep apnoea, or even deaths. Body Mass Index (BMI) and body fat percentage are commonly used to measure individual's weight status and body composition.



## Body Mass Index (BMI)

BMI is an indicator of relative weight to height. It is a predictor of health risk:

$$\text{BMI} = \frac{\text{Weight (kg)}}{\text{Height (m)}^2}$$

Individuals with higher BMI have an increased risk of obesity related health conditions. Please see below the reference range for the adult population:

BMI	Asian, Caribbean, African	Caucasian
Underweight	<18.5	<18.5
Normal	18.5 - 22.9	18.5 - 24.9
Overweight	23.0 - 24.9	25.0 - 29.9
Obese	≥25.0	≥30.0

*\* References from Hong Kong Dietitians Association and Department of Health*

People who are not within the normal BMI category, and would like to know their ideal body weight may simply use the formula below:

Ideal body weight = Height (m)<sup>2</sup> x 18.5 to 22.9 (for Asians) or 18.5 to 24.9 (for Caucasians)

For example: Peter is British and is 1.78m tall. His BMI is 32, so he is categorised as obese and the ideal body weight for Peter will be:

$$\text{Lower limit of ideal body weight} = 1.78^2 \times 18.5 = 58.6\text{kg}$$

$$\text{Upper limit of ideal body weight} = 1.78^2 \times 24.9 = 78.9\text{kg}$$

It is ideal that Peter should weight between 58.6kg and 78.9kg.

### Advice:

- If the BMI is above normal, a weight loss programme is recommended to reduce the risk of comorbidities associated with obesity.
- If the BMI is below normal, one is recommended to increase weight or, if the condition is not too severe, to prevent further weight loss.
- People with low body weight tend to be more susceptible to infection as they may have weaker immune systems. Low body weight can also cause other health complications, such as amenorrhoea in women or osteoporosis.
- In addition, being severely underweight can also indicate other underlying diseases, which, if not treated early, can become life-threatening.





## Body Fat Percentage

There is a limitation of BMI as it does not distinguish between body fat and lean tissues. Body fat can be measured by taking a Bioelectrical Impedance Analysis (BIA). It is a reliable, and quick measurement of body components (total body water, body fat mass, muscle mass and mineral mass). Measurement of body compartments are obtained through a small alternating current applied to the body to detect the level of water and level of electric resistance.

Below is the glossary of the measurements:

- BMI** Body mass index.
- Basal Metabolic Rate** This is the basic energy requirement to carry out basic body functions. It does not take into account the energy needed for daily activity.
- Body Fat Mass** The total body fat weight.
- Percent Body Fat (PBF)** When fat mass is divided by the total body weight, the fat percentage is obtained. Usually the percentage of fat in women is higher than that in men. Below are the reference ranges of body fat percentage recommended for men and women in different age groups:

Age	Men	Women
18 - 29 years	14 - 20%	17 - 24%
>30 years	17 - 23%	20 - 27%

- Total Body Water** Total body water. It is the amount of water in the body.
- Visceral Fat Level** It is the rating of central obesity, that is, the fat stored within the abdominal cavity that wraps around the vital internal organs. A high visceral fat level is associated with a higher risk for heart disease, diabetes, stroke, high cholesterol, fatty liver and certain cancers.

**Important note: BIA should not be done during pregnancy or on people with pacemakers.**

### Advice:

- If the body fat percentage is within the reference range of a specific age group, congratulations! Maintain this with a healthy, balanced diet and regular physical activities.
- If the body fat percentage is above the reference range of a specific age group, the person is suggested to attain a healthy weight through weight management and increase the activity level to enhance muscle mass and burn off the extra fat.
- Certain level of body fat is needed to maintain our body functions. Fat is a storage form of energy. It is needed to produce hormones and digestive enzymes and acts as a medium for absorption of fat-soluble vitamins. It protects the vital organs and keeps us insulated and maintains our body temperature. Therefore, extremely low body fat percentage does not necessarily mean healthy. Nonetheless, elite sportsman or people who are physically-active may have higher muscle mass and relatively lower body fat percentage.
- Waist – Hip Ratio indicates if a person has central obesity or excessive abdominal fat, which is a health risk indicator. The risks include diabetes and cardiovascular disease, among others. This is used in conjunction with BMI and Body Fat Percentage to assess an individual's health risk. Please ask the health care worker for the leaflet on "Waist Measurement for Central Obesity" to learn more.

**To book an appointment with our dietitian, please contact the Outpatient Department at Matilda International Hospital, at 2849 1500, or [opd@matilda.org](mailto:opd@matilda.org).**

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#### References:

UpToDate health information source

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# 認識體重指標和脂肪百分比

過重及肥胖會增加患上慢性疾病如糖尿病、高血壓、心血管疾病或睡眠窒息症的風險，甚至會致命。體重指標及脂肪百分比常用於量度個別人士的體重及身體的組成比例。



## 體重指標 (Body Mass Index, BMI)

BMI是體重相比身高的指標，用以預測潛在的健康風險。

BMI = 體重 (公斤) / 身高 (米)<sup>2</sup>

BMI 較高的人士患上肥胖相關健康問題的風險會增加。請參閱以下成年人口的參考指標：

體重指標	亞洲人、加勒比海人、非洲人	白種人
過輕	<18.5	<18.5
標準	18.5 - 22.9	18.5 - 24.9
過重	23.0 - 24.9	25.0 - 29.9
肥胖	≥25.0	≥30.0

資料參考：香港營養師協會及衛生署

如報告顯示 BMI 偏離標準，您可用以下的方程式計算理想的體重：

理想體重 = 身高 (米)<sup>2</sup> x 18.5 至 22.9 (亞洲人) 或 18.5 至 24.9 (白種人)

例子：Peter 是英國人，身高 1.78 米，BMI 指數是 32，因此屬於肥胖。他的理想體重可運用下列程式計算出來：

理想體重下限:  $1.78^2 \times 18.5 = 58.6$  公斤

理想體重上限:  $1.78^2 \times 24.9 = 78.9$  公斤

如 Peter 要達到 BMI 的標準水平，他的體重應介乎 58.6 公斤至 78.9 公斤之間。

### 建議：

- BMI 高於標準時，建議控制體重，以減低由肥胖引起的並存病症風險。
- BMI 低於標準時，建議增加體重。若情況未算嚴重，則避免進一步減磅。
- 體重過輕人士的免疫系統或會較弱，較易受到細菌感染；體重過輕亦會引致一些健康問題，如女士過早閉經或骨質疏鬆症。
- 此外，體重嚴重過輕可能顯示其他潛在疾病的徵兆，如未能及早發現潛在原因，或會嚴重影響健康。





## 脂肪百分比

體重指標不能區分脂肪重量和非脂肪重量。脂肪的百分比可從生物電阻法 Bioelectrical Impedance Analysis (BIA) 量度出來。這是一種簡單可靠的測試，能驗測到身體的成分(身體水份總重量、脂肪重量、肌肉量和礦物質)。原理是讓微電流在身體通過，以驗測身體各個部分的水份總重量和電阻率的水平。

報告中會列出以下各項：

**BMI** 體重指標。

**「基礎新陳代謝量」** (BMR) 是每天維持生命最基本的能量所需，不包括每天的活動量。

**Body Fat Mass** 身體脂肪重量。

**「脂肪百分比」** (PBF) 將脂肪重量除以體重。女士的脂肪百分比一般較男士高，以下是因應性別和年齡而訂出的脂肪百分比建議：

年齡	男士	女士
18 - 29 歲	14 - 20%	17 - 24%
>30歲	17 - 23%	20 - 27%

**Total Body Water** 身體水份總重量。

**內臟脂肪** 中央肥胖的指標，即儲存在腹腔內、包裹著重要內臟的脂肪。內臟脂肪含量的高低與心臟病、糖尿病、中風、高膽固醇、脂肪肝和某些癌症的風險增加有關。

**重要提示：懷孕婦女或配戴心臟起搏器的人士不宜進行此項測試。**

**建議：**

- 如得出的脂肪百分比於建議範圍內，恭喜！請以均衡飲食和運動保持健康。
- 如脂肪百分比高於建議範圍，建議透過體重管理和運動來燃燒多餘的脂肪和增加肌肉量，以達至健康的體重。
- 身體機能需要一定的脂肪水平來維持。脂肪能夠儲存能量，以及產生荷爾蒙和消化酶，並以之來吸收脂溶性維他命。脂肪亦能保護器官及有保暖等用途。因此，極低脂肪百分比不一定代表健康，然而運動員或經常運動人士或鍛鍊出較多肌肉，所以脂肪百分比會相對較低。
- 腰臀比例顯示是否患有中央肥胖或腹部有過多脂肪的一個健康風險指標，當中包括糖尿病、心血管疾病風險等。醫生會以腰臀比例、體重指標和脂肪百分比一同評估個人的健康風險。如欲知詳情，請參閱另一病人資訊 - 「腰圍及中央肥胖」。

**如欲約見營養師，請與明德門診部聯絡，電話2849 1500或電郵 [opd@matilda.org](mailto:opd@matilda.org)。**



### 核對：

明德國際醫院註冊營養師鍾錦鈴

### 參考資料：

UpToDate 網站

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