

Health Monitor GMON

„INDICATE Health Risks – RATE professionally – REACT prophylactically”

Explanation to Register Body Measures / BMI



BMI (Body Mass Index) is calculated by dividing a person's body weight [in kg] by the square of their height [in m]:

$$\text{BMI [kg/m}^2\text{]} = (\text{weight in kg}) / (\text{height in m})^2$$

BMI has become an international indicator of overweight as it is easy to calculate and is currently one of the best indirect methods for calculating fat mass.



Carrying excess weight is not an illness in itself, but it has been proven that being overweight results in a clear risk of developing accompanying and secondary diseases. If overweight exceeds a certain level it is known as obesity, which is classified as a disease.



BMI as the sole criterion indicating overweight and obesity is only informative up to a certain point!

Changes in BMI are assigned with signal colours in the [graphic depiction](#) to display the qualitative changes in health risks.



- (A) Classification referred to [WHO](#) [WHO 2000].
- (B) Classification according to age [Mensink 2005, Stevens 1998].
- (C) Asian classification referred to [JASSO](#) and [AOASO](#) [Nishida 2004].
- (D) Classification for China/Taiwan referred to Bureau of Health Promotion [BHP 2004].
- (E) Classification for children and young people referred to Health Promotion Administration, Ministry of Health and Welfare, Taiwan.
- (F) Guidelines values for children and young people [Kromeyer 2011].



[BHP 2004] Bureau of Health Promotion. Health and Fitness: A Guidebook. March 2004 (2nd print).

[Kromeyer 2011] Kromeyer-Hauschild K et al. Perzentile für den Body Mass Index für das Kinder- und Jugendalter unter Heranziehung verschiedener deutscher Stichproben. Kinderheilkunde 149 (2001), 807-818.

[Mensink 2005] Mensink GBM, Lampert T, Bergmann E. Übergewicht und Adipositas in Deutschland 1984 - 2003. Bundesgesundheitsblatt 48 (2005) 1348-1356.

[Nishida 2004] Nishida C. Appropriate body-mass index for Asian populations and its implication for policy and intervention strategies. The Lancet; 363; 157-163.

[Stevens 1998] Stevens J et al. The effect of age on the association between body-mass index and mortality. New Engl J Med, Vol 338 (1998) 1-7.

[WHO 2000] Obesity: preventing and managing the global epidemic. WHO Technical Report Series 894, WHO, Genf 2000.



Adiposity: <lat. 'adipo-' 'fat', or 'pertaining to fat', 'obesity'> Obesity is characterized by excess weight and a BMI > 30.

AOASO: Asia-Oceania Association for the Study of Obesity

JASSO: Japan Society for the Study of Obesity

WHO: World Health Organisation



[Overview about GMON modules](#)

general operation instruction, using goals values, other relevant parameters for health

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(A) Classification referred to WHO

| Classification | Traffic light colour | BMI in kg/m ² |
|----------------|----------------------|--------------------------|
| Underweight | Yellow | up to 18.5 |
| Normal weight | Green | from 18.5 to 25.0 |
| Overweight | Yellow | from 25.0 to 30.0 |
| Obese | Red | over 30.0 |

(B) Classification according to age [in kg/m²]

| Classification | Traffic light colour | 19 - 24 years | 25 - 34 years | 35 - 44 years | 45 - 54 years | 44 - 65 years | > 65 years |
|----------------|----------------------|---------------|---------------|---------------|---------------|---------------|------------|
| Underweight | Yellow | < 19.0 | < 20.0 | < 21.0 | < 22.0 | < 23.0 | < 24.0 |
| Normal weight | Green | 19.0-24.0 | 20.0-25.0 | 21.0-26.0 | 22.0-27.0 | 23.0-28.0 | 24.0-29.0 |
| Overweight | Yellow | 24.0-30.0 | 25.0-30.5 | 26.0-31.0 | 27.0-31.5 | 28.0-32.0 | 29.0-32.5 |
| Obese | Red | > 30.0 | > 30.5 | > 31.0 | > 31.5 | > 32.0 | > 32.5 |

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(C) Asian classification referred to JASSO and AOASO

| Classification (JASSO) | Traffic light colour | BMI in kg/m ² | Classification (AOASO) | Traffic light colour | BMI in kg/m ² |
|------------------------|----------------------|--------------------------|------------------------|----------------------|--------------------------|
| Underweight | yellow | up to 18.5 | Underweight | yellow | up to 18.5 |
| Normal weight | green | 18.5 to 24.9 | Normal weight | green | 18,5 to 22.9 |
| Obese I | yellow | 25.0 to 29.9 | Obese I | yellow | 23.0 to 26.9 |
| Obese II - IV | red | 30.0 and more | Obese II - IV | red | 27.0 and more |

(D) Classification referred to the Bureau of Health Promotion (China/Taiwan)

| Classification | Traffic light colour | BMI in kg/m ² |
|----------------|----------------------|--------------------------|
| Underweight | Yellow | up to 18.5 |
| Normal weight | Green | 18.5 to 23.9 |
| Overweight | Yellow | 24.0 to 26.9 |
| Obese | Red | 27.0 and more |

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Explanation to Register Body Measures / BMI

(E) Classification for children and young people referred to Health Promotion Administration, Ministry of Health and Welfare, Taiwan. [in kg/m²]

| Age (years) | Boys | | | | Girls | | | |
|-----------------------------|--------------|---------------|-------------|-------|--------------|---------------|-------------|-------|
| | Under-weight | Normal weight | Over-weight | Obese | Under-weight | Normal weight | Over-weight | Obese |
| Traffic light colour | yellow | green | yellow | red | yellow | green | yellow | red |
| 0.0 – 0.5 | <11.5 | 11.5-14.8 | 14.8-15.8 | >15.8 | <11.5 | 11.5-14.7 | 14.7-15.5 | >15.5 |
| 0.5 – 1.0 | <15.2 | 15.2-18.9 | 18.9-19.9 | >19.9 | <14.6 | 14.6-18.6 | 18.6-19.6 | >19.6 |
| 1.0 – 1.5 | <14.8 | 18.8-18.3 | 18.3-19.2 | >19.2 | <14.2 | 14.2-17.9 | 17.9-19.0 | >19.0 |
| 1.5 – 2.0 | <14.2 | 14.2-17.5 | 17.5-18.5 | >18.5 | <13.7 | 13.7-17.2 | 17.2-18.2 | >18.2 |
| 2.0 – 2.5 | <14.2 | 14.2-17.4 | 17.4-18.3 | >18.3 | <13.7 | 13.7-17.2 | 17.2-18.1 | >18.1 |
| 2.5 – 3.0 | <13.9 | 13.9-17.2 | 17.2-18.0 | >18.0 | <13.6 | 13.6-17.0 | 17.0-17.9 | >17.9 |
| 3.0 – 3.5 | <13.7 | 13.7-17.0 | 17.0-17.8 | >17.8 | <13.5 | 13.5-16.9 | 16.9-17.8 | >17.8 |
| 3.5 – 4.0 | <13.6 | 13.6-16.8 | 16.8-17.7 | >17.7 | <13.3 | 13.3-16.8 | 16.8-17.8 | >17.8 |
| 4.0 – 4.5 | <13.4 | 13.4-16.7 | 16.7-17.6 | >17.6 | <13.2 | 13.2-16.8 | 16.8-17.9 | >17.9 |
| 4.5 – 5.0 | <13.3 | 13.3-16.7 | 16.7-17.6 | >17.6 | <13.1 | 13.1-16.9 | 16.9-18.0 | >18.0 |
| 5.0 – 5.5 | <13.3 | 13.3-16.7 | 16.7-17.7 | >17.7 | <13.1 | 13.1-17.0 | 17.0-18.1 | >18.1 |
| 5.5 – 6.0 | <13.4 | 13.4-16.7 | 16.7-18.0 | >18.0 | <13.1 | 13.1-17.0 | 17.0-18.3 | >18.3 |
| 6.0 – 6.5 | <13.5 | 13.5-16.9 | 16.9-18.8 | >18.5 | <13.1 | 13.1-17.2 | 17.2-18.8 | >18.8 |
| 6.5 – 7.0 | <13.6 | 13.6-17.3 | 17.3-19.2 | >19.2 | <13.2 | 13.2-17.5 | 17.5-19.2 | >19.2 |
| 7.0 – 7.5 | <13.8 | 13.8-17.9 | 17.9-20.3 | >20.3 | <13.4 | 13.4-17.7 | 17.7-19.6 | >19.6 |
| 7.5 – 8.0 | <14.0 | 14.0-18.6 | 18.6-21.2 | >21.2 | <13.7 | 13.7-18.0 | 18.0-20.3 | >20.3 |
| 8.0 – 8.5 | <14.1 | 14.1-19.0 | 19.0-21.6 | >21.6 | <13.8 | 13.8-18.4 | 18.4-20.7 | >20.7 |
| 8.5 – 9.0 | < 14.2 | 14.2-19.3 | 19.3-22.0 | >22.0 | <13.9 | 13.9-18.8 | 18.8-21.0 | >21.0 |
| 9.0 – 9.5 | <14.3 | 14.3-19.5 | 19.5-22.3 | >22.3 | <14.0 | 14.0-19.1 | 19.1-21.3 | >21.3 |
| 9.5 – 10.0 | <14.4 | 14.4-19.7 | 19.7-22.5 | >22.5 | <14.1 | 14.1-19.3 | 19.3-21.6 | >21.6 |
| 10.0 – 10.5 | <14.5 | 14.5-20.0 | 20.0-22.7 | >22.7 | <14.3 | 14.3-19.7 | 19.7-22.0 | >22.0 |
| 10.5 – 11.0 | <14.6 | 14.6-20.3 | 20.3-22.9 | >22.9 | <14.4 | 14.4-20.1 | 20.1-22.3 | >22.3 |
| 11.0 – 11.5 | <14.8 | 14.8-20.7 | 20.7-23.2 | >23.2 | <14.7 | 14.7-20.5 | 20.5-22.7 | >22.7 |
| 11.5 – 12.0 | <15.0 | 15.0-21.0 | 21.0-23.5 | >23.5 | <14.9 | 14.9-20.9 | 20.9-23.1 | >23.1 |
| 12.0 – 12.5 | <15.2 | 15.2-21.3 | 21.3-23.9 | >23.9 | <15.2 | 15.2-21.3 | 21.3-23.5 | >23.5 |
| 12.5 – 13.0 | <15.4 | 15.4-21.5 | 21.5-24.2 | >24.2 | <15.4 | 15.4-21.6 | 21.6-23.9 | >23.9 |
| 13.0 – 13.5 | <15.7 | 15.7-21.9 | 21.9-24.5 | >24.5 | <15.7 | 15.7-21.9 | 21.9-24.3 | >24.3 |
| 13.5 – 14.0 | <16.0 | 16.0-22.2 | 22.2-24.8 | >24.8 | <16.0 | 16.0-22.2 | 22.2-24.6 | >24.6 |
| 14.0 – 14.5 | <16.3 | 16.3-22.5 | 22.5-25.0 | >25.0 | <16.3 | 16.3-22.5 | 22.5-24.9 | >24.9 |
| 14.5 – 15.0 | <16.6 | 16.6-22.7 | 22.7-25.2 | >25.2 | <16.5 | 16.5-22.7 | 22.7-25.1 | >25.1 |
| 15.0 – 15.5 | <16.9 | 16.9-22.9 | 22.9-25.4 | >25.4 | <16.7 | 16.7-22.7 | 22.7-25.2 | >25.2 |
| 15.5 – 16.0 | <17.2 | 17.2-23.1 | 23.1-25.5 | >25.5 | <16.9 | 16.9-22.7 | 22.7-25.3 | >25.3 |
| 16.0 – 16.5 | <17.4 | 17.4-23.3 | 23.3-25.6 | >25.6 | <17.1 | 17.1-22.7 | 22.7-25.3 | >25.3 |
| 16.5 – 17.0 | <17.6 | 17.6-23.4 | 23.4-25.6 | >25.6 | <17.2 | 17.2-22.7 | 22.7-25.3 | >25.3 |
| 17.0 – 17.5 | <17.8 | 17.8-23.5 | 23.5-25.6 | >25.6 | <17.3 | 17.3-22.7 | 22.7-25.3 | >25.3 |
| 17.5 – 18.0 | <18.0 | 18.0-23.6 | 23.6-25.6 | >25.6 | <17.3 | 17.3-22.7 | 22.7-25.3 | >25.3 |

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Explanation to Register Body Measures / BMI

(F) Guideline values for children and young people [in kg/m²]

| Classification (girls) | Traffic light colour | 7 – 8 years | 9 – 10 years | 11 – 12 years | 13 – 14 years | 15 – 16 years | 17 – 18 years |
|------------------------|----------------------|-------------|--------------|---------------|---------------|---------------|---------------|
| Underweight | yellow | < 13.8 | < 14.3 | < 15.1 | < 16.4 | < 17.5 | < 18.2 |
| Normal weight | green | 13.8-18.9 | 14.3-20.4 | 15.1-22.0 | 16.4-23.7 | 17.5-24.8 | 18.2-24.0 |
| Overweight | yellow | 18.9-20.9 | 20.4-23.0 | 22.0-25.0 | 23.7-26.7 | 24.8-27.6 | 24.0-27.8 |
| Obese | red | > 20.9 | > 23.0 | > 25.0 | > 26.7 | > 27.6 | > 27.8 |

| Classification (boys) | Traffic light colour | 7 – 8 years | 9 – 10 years | 11 – 12 years | 13 – 14 years | 15 – 16 years | 17 – 18 years |
|-----------------------|----------------------|-------------|--------------|---------------|---------------|---------------|---------------|
| Underweight | yellow | < 14.0 | < 14.4 | < 15.2 | < 16.2 | < 17.3 | < 18.4 |
| Normal weight | green | 14.0-18.6 | 14.4-20.2 | 15.2-21.8 | 16.2-23.4 | 17.3-24.0 | 18.4-24.0 |
| Overweight | yellow | 18.6-20.6 | 20.2-22.8 | 21.8-25.0 | 23.4-26.6 | 24.0-27.8 | 24.0-28.6 |
| Obese | red | > 20.6 | > 22.8 | > 25.0 | > 26.6 | > 27.8 | > 28.6 |

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