**Lean Body Mass**

Lean body mass (LBM) is a part of body composition that is defined as the difference between total body weight and body fat weight. This means that it counts the mass of all organs except body fat, including bones, muscles, blood, skin, and everything else. While the percentage of LBM is usually not computed, it on average ranges between 60-90% of total body weight. Generally, men have a higher proportion of LBM than women do. The dosages of some anesthetic agents, particularly water-soluble drugs, are routinely based on the LBM. Some medical exams also use the LBM values. For body fitness and routine daily life, people normally care more about body fat percentage than LBM. To compute body fat, consider using our [body fat calculator](https://www.calculator.net/body-fat-calculator.html) or [ideal weight calculator](https://www.calculator.net/ideal-weight-calculator.html).

Multiple formulas have been developed for calculating estimated LBM (eLBM) and the calculator above provides the results for all of them.

**Lean Body Mass Formula for Adults**

**The Boer Formula:**1

|  |
| --- |
| *For males:* |
| eLBM = 0.407W + 0.267H - 19.2 |
| *For females:* |
| eLBM = 0.252W + 0.473H - 48.3 |

**The James Formula:**2

|  |
| --- |
| *For males:* |
| |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | eLBM = 1.1W - 128( | |  | | --- | | W | |  | | H | | ) | 2 | |
| *For females:* |
| |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | eLBM = 1.07W - 148( | |  | | --- | | W | |  | | H | | ) | 2 | |

**The Hume Formula:**3

|  |
| --- |
| *For males:* |
| eLBM = 0.32810W + 0.33929H - 29.5336 |
| *For females:* |
| eLBM = 0.29569W + 0.41813H - 43.2933 |

In the formulas above, W is the body weight in kilogram and H is the body height in centimeter.

1. Boer P. "Estimated lean body mass as an index for normalization of body fluid volumes in man." *Am J Physiol* 1984; 247: F632-5
2. James, W. "Research on obesity: a report of the DHSS/MRC group" *HM Stationery Office* 1976
3. Hume, R "Prediction of lean body mass from height and weight.". *J Clin Pathol.* 1966 Jul; 19(4):389-91.
4. A. M. Peters, H. L. R. Snelling, D. M. Glass, N. J. Bird "Estimation of lean body mass in children". *British Journal of Anaesthesia1* 06(5): 719-23 (2011).