

Understanding the DOTS Formula in Powerlifting

What is the DOTS Formula?

The DOTS formula is a tool used in powerlifting to evaluate an athlete's performance relative to their body weight. It allows fair comparisons across athletes of different sizes by normalizing their scores using a mathematical model.

The Formula

The DOTS score is calculated using the following formula:

$$\text{DOTS Score} = (\text{Total Weight Lifted} \times 500) / (a + b \times x + c \times x^2 + d \times x^3 + e \times x^4)$$

Where:

- Total Weight Lifted: The sum of the athlete's best squat, bench press, and deadlift attempts (in kilograms).
- x: The athlete's body weight in kilograms.
- a, b, c, d, e: Coefficients that differ based on gender.

Coefficients for the DOTS Formula

Below are the coefficients used in the DOTS formula:

For Men:

- a = -307.75076
- b = 24.0900756
- c = -0.1918759221
- d = 0.0007391293
- e = -0.000001093

For Women:

$$- a = -57.96288$$

$$- b = 13.6175032$$

$$- c = -0.1126655495$$

$$- d = 0.0005158568$$

$$- e = -0.0000010706$$

Example Calculation

Consider a male powerlifter weighing 80 kg with a total lift of 600 kg:

Using the coefficients for men, the denominator is calculated as:

$$\text{Denominator} = a + (b \times x) + (c \times x^2) + (d \times x^3) + (e \times x^4)$$

$$= -307.75076 + (24.0900756 \times 80) + (-0.1918759221 \times 80^2) + (0.0007391293 \times 80^3) + (-0.000001093 \times 80^4)$$

$$\text{DOTS Score} = (600 \times 500) / \text{Denominator}$$

$$\text{Approx } 415.18$$

This result represents the athlete's performance relative to their body weight.

Why Use DOTS?

The DOTS formula is widely adopted in modern powerlifting due to its fairness and accuracy. It replaces outdated formulas like Wilks, offering a more precise reflection of relative strength.