

Weight and Age Coefficients

Weight Coefficients

In many situations, it is necessary to compare the performances of lifters with different bodyweights. Many mathematically-derived formulas have been developed for this purpose. The Wilks formula (created by Robert Wilks of Australia) has been adopted by USA Powerlifting. First, the “coefficient” must be determined and this is simply based on body weight. Published tables exist that allow for the determination of a coefficient based on the individual’s body weight at weigh-in. It should be noted that there are different coefficients for men and women. Once the final total has been achieved in a powerlifting contest (or a bench-only contest), that total is multiplied by the corresponding coefficient for that lifter. For award purposes, placings in a division are based on a rank order following the application of the coefficient to the total. The competitor with the highest number takes first place, the lifter with the second highest number takes second place and so on through the group.

Example:

Lifter A weighs 74.5kg (Wilks coefficient = 0.7159) and achieves a powerlifting total of 550kg

Lifter B weighs 99.1kg (Wilks coefficient = 0.6108) and achieves a powerlifting total of 975kg

Lifter C weighs 151.7kg (Wilks coefficient = 0.5524) and achieves a powerlifting total of 1000kg

Lifter A: $550\text{kg} \times 0.7159 = 393.745$

Lifter B: $900\text{kg} \times 0.6108 = 549.720$

Lifter C: $975\text{kg} \times 0.5524 = 538.590$

First Place: Lifter B

Second Place: Lifter C

Third Place: Lifter A

Note: in a bench-only contest, the best bench presses of each lifter would replace the powerlifting total used in the example above and the same mathematical procedure would be applied.

Age Coefficients

In many situations, it is necessary to compare the performances of lifters with different ages. Many mathematically-derived formulas have been developed for this purpose. Two different formulas are used by USA Powerlifting that are based on the underlying assumption that the potential for maximal strength in humans peaks between the ages of 23 and 40 and declines with decreasing age under 23 years old and with increasing age over 40 years old. The Foster coefficients are applied to the performances of younger competitors (aged 14-23) and the McCulloch coefficients are applied to the performances of older competitors (aged 40 and older). First, the "coefficient" must be determined and this is simply based on age. Published tables exist that allow for the determination of a coefficient based on the individual's age on the day of the contest. It should be noted that the coefficients for men and women are the same. Once the final total has been achieved in a powerlifting contest (or a bench-only contest), that total is multiplied by the corresponding coefficient for that lifter. For award purposes, placings in a division are based on a rank order following the application of the coefficient to the total. The competitor with the highest number takes first place, the lifter with the second highest number takes second place and so on through the group.

Example:

Lifter A weighs 75kg and is 75 years old (McCulloch coefficient = 1.835) and achieves a total of 450kg

Lifter B weighs 75kg and is 60 years old (McCulloch coefficient = 1.340) and achieves a total of 500kg

Lifter C weighs 75kg and is 42 years old (McCulloch coefficient = 1.020) and achieves a total of 600kg

Lifter A: $450\text{kg} \times 1.835 = 825.750$

Lifter B: $500\text{kg} \times 1.340 = 670.000$

Lifter C: $600\text{kg} \times 1.020 = 612.000$

First Place: Lifter A

Second Place: Lifter B

Third Place: Lifter C

Note: in a bench-only contest, the best bench presses of each lifter would replace the powerlifting total used in the example above and the same mathematical procedure would be applied.