

# Professor discovers new way to calculate body's 'Maximum Weight Limit'

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Most of us are familiar with the term, Body Mass Index, or BMI, as an index to determine healthy body weight. But, calculating BMI involves a complex formula: weight in pounds is multiplied by 703, and then divided by height in inches squared. Charts or online calculators are then used to show a "healthy weight range" given an individual's height that corresponds to the "healthy range BMI." For example, a BMI chart indicates that a healthy range BMI of 19 to 24 translates to a "healthy weight range" of 120 to 150 pounds for a 5-foot, 6-inch individual.

If this sounds way too complicated to you, you're not alone. George Fernandez, a professor of applied statistics and director of the Center for Research Design and Analysis at the University of Nevada, Reno, set out to give people a simpler way of calculating their healthy weight, and one that wouldn't require charts or online calculators. In addition, he doesn't think the "range" approach sticks in individuals' minds.

"We need a "Maximum Weight Limit, or MWL," he said, "one number that we know we can't go over, just like a speed limit."

So, using SAS software and statistical procedures, he discovered a much simpler way of calculating a Maximum Weight Limit, which closely corresponds to weight recommendations listed on [BMI](#) charts. But, you don't need to calculate or know your BMI, nor do you need a chart or online calculator to figure out your Maximum Weight Limit. Fernandez will present his Maximum Weight Limit calculation at the Nevada Public Health Association Conference on Sept. 22 at the University of

Nevada, Reno's Joe Crowley Student Union.

"It's a very simple calculation that most of us can do in our heads," he explained. For men and women, there is a baseline height and weight. For men, the baseline is 5-feet, 9-inches tall and a Maximum Weight Limit of 175 pounds, meaning that a 5-foot, 9-inch tall man should weigh no more than 175 pounds. For women, the baseline is 5-feet tall and a Maximum Weight Limit of 125 pounds.

"These are nice round numbers that people can easily remember: 5-feet, 9-inches tall, 175 pounds for man; and 5-feet tall, 125 pounds for a woman," explained Fernandez.

From that starting point, you simply calculate how much taller or shorter you are, in inches. Then, if you are man, you add or subtract 5 pounds for every inch you are taller or shorter than 5 feet, 9 inches. So, if you are 5-feet, 11-inches tall, you are 2 inches taller than the baseline of 5 feet, 9 inches. You add 5 pounds for each of those 2 inches, 10 pounds, to the baseline Maximum Weight Limit of 175. So, your Maximum Weight Limit is 185 (175 pounds plus 10 pounds). Women add or subtract 4.5 pounds for each inch they differ from the baseline height of 5-feet tall.

These Maximum Weight Limits correspond very closely to BMIs of 25.5 for men and 24.5 for women. A BMI of 18.5 to 25 BMI is diagnosed as the "healthy range." Fernandez used a slightly lower BMI base for women and a slightly higher one for men because, on average, women have less muscle mass than men. Although some have debated using BMI as a means for calculating healthy weight because it does not take into account factors such as muscle mass, for example, it has been shown to work as a basis for calculating a healthy weight for more than 90 percent of the population and is the most universally used index in weight management programs.

"Now people can calculate their own Maximum Weight Limit, based on the BMI index, but without any calculators or charts," Fernandez said.

"And, all they have to remember is that one number, 185 pounds for example, which is easier for most people than retaining a weight range, such as 155 to 185 pounds."

Fernandez also noted that this simple formula could be very useful in medically underserved areas of the world, and for individuals without access to technology and charts.

"Anyone, anywhere can calculate their Maximum Weight Limit if they know their height and this simple formula," he said. "People can calculate this in their heads and remember this."

Source: University of Nevada, Reno

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