



# FITNESS HOMEWORK:

## Push Up Strength

### How Much are you Lifting When You Perform Push-ups?

The push-up is the original bench press and is a common exercise in many fitness routines. It's particularly useful in large physical education classes where weight-training equipment isn't available. However, once students do use weight training equipment, they're often reluctant to go back to the old classic push-up. Why? Because they don't know how much weight they're lifting in a pushup and can't compare it to their weight training routines. So here's a simple way to calculate how much your students are lifting when they perform push-ups. It's a great way to combine math and fitness in your curriculum.

#### Method

Studies have been conducted in which push-ups were performed on force plates. They indicated the following: 1. Women performing traditional push-ups lift the equivalent of 71% of their body weight. For example, a 120 pound woman lifts about 85 pounds. 2. Men performing traditional push-ups lift the equivalent of 77% of their body weight. Thus, a 150 pound man lifts about 115 pounds. 3. Modified push-ups, performed with the knees on the ground rather than the feet, reduce the amount of weight lifted. Women lift the equivalent of 55% of their body weight, while men lift about 56%. So a 120 pound woman lifts about 66 pounds and a 150 pound man lifts about 84 pounds.

#### Why the Difference?

These percentages are only averages, but there is a reason for the difference between males and females. Men usually lift more of their total body weight during push-ups than women because they tend to have more bulk in their chest and shoulders. As a result, more of their weight lies directly over the arms when performing pushups. In contrast, women tend to have a lower center of gravity, with their weight centered around the hips and thighs. Since this weight is located below the position of the arms, less force is required to lift from a pushup position. However, this varies widely, depending upon the individual. Large-chested women will lift percentages of body weight similar to that of men. And men whose body weight is centered in their hips and stomach will lift percentages of body weight similar to that lifted by women.

#### How to Test Yourself - A Math Exercise

You can use a bathroom scale and some math calculations to determine the percentage of body weight each student actually does lift when performing pushups. It's a great way to combine your physical education and math curricula. With the scale resting on a hard surface, have your students assume a pushup position with their hands resting on the scale. Record that weight; then their weight from a modified pushup a position; and finally, their full weight as measured from a standing position. Then have them calculate the percentage of their body weight they'll lift when performing push-ups. They do this by dividing the weight recorded while in the push-up position by their full body weight. For example 150 pound student whose push-up weight was 110 pounds will be lifting 73% of their body weight when performing push-ups. ( $110/150 = .73$ )