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AF Q & A

BY MATT BRZYCKI

Is there any research to support the notion that the knees shouldn't move forward of the toes when doing a squat or lunge?

For many years, fitness professionals have cautioned exercisers to keep their knees behind their toes—or their knees over their ankles—when performing a squat, lunge or other multiple-joint movements for the hips and legs. Perhaps more than anywhere else, this advice is given to participants in group-exercise classes. But is there any scientific evidence that justifies these words of warning?

In one study, researchers looked at the patellofemoral force and stress in the knee joint. (In this study, “patellofemoral force” was a function of the patellar tendon force and quadriceps tendon force.) The 18 subjects performed the one-leg squat and two variations of the wall squat (one in which the feet were farther from the wall and one in which the feet were closer.)

Squatting with the feet closer to the wall—which caused the knees to move forward of the toes—produced significantly higher patellofemoral force and stress than squatting with the feet further from the wall, but only at a 90-degree angle during the squat ascent (rising). These results must be interpreted carefully, however, since the patellofemoral force wasn't measured directly; it was estimated from a biomechanical model of the knee.

It seems prudent to caution participants to keep their knees from moving past their ankles when doing multiple-joint movements for the hips and legs.

Does calcium promote weight loss?

Overweight/obesity continues to be a global health concern. Seemingly every day, another product or supplement is touted as an effective means to combat the problem. One of the latest supplements to garner attention is calcium.

In a long-term study, 340 overweight/obese subjects were randomly assigned to two groups: One group received 1,500 milligrams of calcium carbonate per day and the other group received a placebo (unspecified) that was identical in appearance. The assigned treatment was administered in capsules with meals.

After two years, calcium didn't produce significantly better results than the placebo in any measure, including changes in body weight, body mass index or body fat mass. Nor were there any significant differences in abdominal circumference, hip circumference or triceps skin fold thickness.



Does eating fruit in different forms affect appetite in different ways?

A few studies have shown that solid foods have a greater impact on satiety (fullness) than beverages. Obviously, this would be helpful to those who are interested in managing their weight.

In a study that was conducted at Penn State, 58 subjects went to an eating lab once a week for five weeks. On each occasion, the subjects consumed a “preload” of whole apples or apples in a different form that had the same number of calories: applesauce, apple juice with fiber and apple

juice without fiber. On a fifth occasion, the subjects received no preload (the “control intake”). The subjects were then given lunch (cheese tortellini and tomato sauce) and told to “eat and drink as much or as little” of the meal and water as desired.

When the subjects ate an apple as a solid food prior to lunch, they consumed significantly fewer calories in comparison to when they ate the apple in other forms. The researchers concluded that eating solid fruit at the start of a meal can reduce the intake of calories.

Bottom line: Calcium is an important mineral that's essential in blood clotting, muscle contraction, nerve transmission and the formation of bones and teeth. But there's no evidence that it promotes weight loss.

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