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Taking it to the Core

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Despite the current core-training craze, people have trained their cores (essentially, their mid-sections) for years. Nowadays, one of the most popular items to use for core training is the stability ball.

Researchers randomly assigned 10 subjects to perform the bench press in two conditions: stable (on a bench) and unstable (on a Swiss ball). The study found that the force exerted during the unstable condition was *59.6% less* than during the stable condition. In other words, when exercising in an unstable condition, the subjects couldn't produce as much force. This is consistent with other studies that showed decreased force output with decreased stability. In this particular study, there were no significant differences in muscle activation between the stable and unstable conditions. However, a number of other studies have shown that exercising in an unstable condition results in much less muscle activation. Needless to say, producing less force and generating less muscle activity aren't desirable when it comes to strength training.

On a related note, the use of stability balls has been shown to improve performance in arbitrary tests of core stability but not athletic performance. A study that involved collegiate swimmers found that training on a stability ball improved performance in tests of core stability but not performance in swimming; a study that involved high-school athletes found that training on a stability ball improved performance in tests of core stability but not maximum oxygen intake, running economy or running posture. (Core stability, in itself, is an ambiguous term that's subject to different interpretations.) According to Dr. Jeffrey Willardson, an assistant professor in the Physical Education Department at Eastern Illinois University, ". . . research has failed to demonstrate a significant relationship or improvement in sports performance consequent to performing exercises on unstable surfaces."

And to date, there's no scientific evidence to support the contention that instability training – on balls or other unstable objects (such as balance discs and wobble boards) – improves neuromuscular coordination or balance in another activity that requires some degree of balance. What about certain practices such as squatting while balancing on a stability ball or jumping from one stability ball to another? To quote the researchers in one study: "Whether some of these circus-type maneuvers provide specific crossover training adaptations to sport is still under debate and demands further investigation."

Not to be ignored is the potential for injury when exercising on a stability ball while holding weights. In September 2005, Peter Royal broke both wrists and one forearm and injured both shoulders when an "anti-burst" stability ball burst as he was about to do the bench press with a pair of 75-pound dumbbells. He incurred five surgeries and more than $100,000 in medical bills. About two years after the accident, he and his wife filed a lawsuit, contending that the gym, a YMCA, failed to maintain safe conditions. In 2009, Francisco Garcia, a guard-forward for the Sacramento Kings, broke his right forearm when a "burst resistant" stability ball burst while he was doing the bench press with a pair of 90-pound dumbbells. He missed 57 games that year and 24 the next. Garcia and the Kings filed lawsuits against the manufacturer of the stability ball. These aren't isolated cases; the Federal Trade Commission's Bureau of Consumer Protection estimates that more than 870 individuals have been injured using stability balls since 2004. Remember, anything that's inflatable has the potential to burst.

Bottom line: Done safely, exercising on a stability ball can provide variety to workouts but when outlandish claims are made or unsafe activities are advocated, the use of stability balls is getting just a bit unstable.

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