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# E-3 News

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## The Battle of Sets and Reps for Strength Building

For the past 50 years, the science of strength training has struggled to find the perfect formula of sets and repetitions (reps). While several meta-analyses (combined results from select-quality studies) have shown that 1-set is as effective as multi-sets, others more recently have demonstrated that 3-4 sets is superior to 1 or 2 sets. This study set out to compare not just sets but rate of contraction by evaluating biceps development from 1 set slow, 1 set fast, 3 sets slow, and 3 sets fast. The study period was 6 weeks, 3 workouts a week.

The results showed that 1 set slow fared worse than all the other methods. Fast training with either 1 or 3 sets yielded similar results, whereas 3 sets slow was superior to all methods. The authors were quick to point out that, for the sake of compliance and adherence to training, 1 set still improved strength by 25%, though 3 sets improved strength twice that much. As far as girth is concerned, there were no differences between 1 and 3 sets or fast and slow contractions.

The take home message is, for novices and those pressed for time, 1 set of 8-12 reps will suffice to build strength, and that speed of lift hardly matters, except where safety is an issue. For those with higher goals, 3 sets at any speed works very well, though a study last year said 4 sets is best.

J. Munn et al., Resistance training for strength: effect of number of sets and contraction speed. *Medicine and Science in Sports and Exercise* 37(9): 1622, 2005

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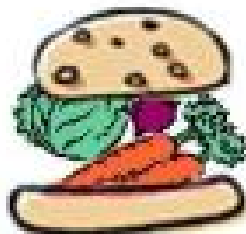
Pearls of Wisdom Throughout



### RECIPE OF THE MONTH

Submitted by Gwen Shockley

#### VEGGIE BURGERS



1 Cup Oatmeal  
1 Cup Cotage Cheese  
1 Cup Seasoned Bread Crumbs  
1 Cup Chopped Onions  
½ Cup Chopped Pecans or Walnuts  
4 Eggs  
1 TBSP Soy Sauce  
1 TBSP Worcestershire Sauce

Mix all ingredients together. Form into patties and brown in olive oil over medium heat until slightly crispy.

A study reported in the *International Journal of Cardiology* reports that **resistance training for 8 weeks safely improved the heart's ability to pump blood in patients with heart failure.** Training increased the stroke volume how much blood is pumped per beat without any deleterious affect on the left ventricle.

The New England Journal of Medicine's newsletter, *HealthNews*, reported on a study done at **Vanderbilt** that showed **soy foods, taken daily, reduce risk of fractures in postmenopausal women**.

The February issue of the Harvard Health Letter reported on the **latest benefits of coffee!** There is evidence that it may protect against diabetes, gallstones, some cancers, and may confer protection for men against Parkinson's disease. Assuming, of course, the muffins and coffee cake are not on the menu.

## **Flexibility gains not improved during resistance training activity**

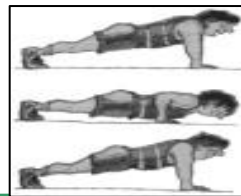
Adequate levels of flexibility and muscle strength are necessary for activities of daily living (ADL) and optimal performance in sports. The purpose of this study was to determine if strength training, done by itself, can improve flexibility, and vice versa. The researchers sought to determine if separate training programs necessary to develop muscle strength and flexibility.

Subjects were 43 healthy, young adults; they were assigned either to a flexibility training only, a resistance-training group, a mixed training group (resistance and flexibility training,) or a control group.

The researchers found that muscle strength increased with resistance training alone, and when strength training was combined with flexibility training, but did not increase in the flexibility only group. The flexibility increased when only flexibility training was done, and when flexibility was done in combination with resistance training. Flexibility did not increase for the group that did resistance training only. The control group experienced no gains in strength or flexibility.

The results of this study indicate that in young, healthy subjects, while resistance training, by itself, does not increase flexibility, it also does not interfere with increases in range of motion when combined with flexibility training. These results indicate that separate training protocols need to be employed when working with young healthy adults in order to increase muscle strength and flexibility. It would be interesting to have this study repeated using older adults whose flexibility is often compromised to see if the results are different.

*Nobrega, Antonio, C. L. et al. Interaction between resistance training and flexibility training in healthy young adults. Journal of Strength & Conditioning Research. 2005, 19(4).842- 846.*



## **EXERCISE OF THE MONTH** From Scott Kinney

### **Exercise of the Month: The Portable Push-up**

The push-up is so ubiquitous that it seemingly doesn't deserve mention. It is so old, in fact, that it conjures up images of "Phys Ed" class, in which dorky white boys in hi-top Keds and shorts that would make Madonna blush, ran around performing something called "calisthenics". But the push-up is here to stay. Best of all, you can take the basic push-up with you wherever you go (note to drivers: pull over first).

Think you've done it all already? Try some of these variations:

- 1) Close grip: hands are placed as close as possible to the body; elbows in.
- 2) Unstable decline push-up: feet on Swiss ball, hands on floor.
- 3) Medicine ball push-up: one hand on ball; after each rep, roll ball to other hand and repeat.
- 4) Power push-up on Smith machine: set bar high enough that your hands can leave the bar after pushing off. Be careful to land with hands back on the bar! Repeat.
- 5) One-arm push-up (yes, you can): Using the Smith machine again, set the bar high enough that you can perform a one-arm version with no strain. Go out and brag to your friends!