



# MINIMUM EFFECTIVE DOSE

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People want specifics. We tell our patients to get out there and exercise but do not tell them how or when. One method is the 30 minutes of walking, either once a day or four days a week. We hope our patients who sit at desks, or in the driver seat of a truck all day, will get out and move their legs at least once a day. We might not, however, counsel our marathon runner patients on the inflammatory effect of hours of daily exercise with minimal time for recovery. Most of us pride ourselves on evidence-based medicine, including prescribing of medications. And many of us understand that lifestyle changes usually have more of an impact on health than medications. So should we spend more time researching and advising our patients on how exactly to exercise?

Dr. Doug McGuff, an emergency physician in South Carolina, does. Though he is a shift-working Emergency Physician, he finds the time to run an exercise center with a very specific, albeit a one size fits all, regimen. Dr. McGuff has combed the exercise literature in Pubmed and elsewhere (a vast supply when you go looking) to synthesize a method of resistance exercise meeting important criteria: time-efficient, safe, simple, engaging, scientific and sustainable.

His book is called *Body by Science* and was published in 2009. The included in-

formation on nutrition was at the forefront of the low carb, low inflammation, hormone-focused dietary paradigm shift. His frank declarations of the limits of our genetics on losing fat and gaining muscle mass prevent any hyperbolic statements of success of his method.

The "BBS" method of exercise is simply a once a week intense resistance exercise formula. Dr. McGuff and his coauthor John Little (accomplished fitness author and researcher) prescribe about 12 minutes a week of intense exercise. Using the super slow method of weight training, they propose that all the health benefits of exercise can be gleaned from this simple prescription. The entire regimen is predicated on the concept of minimal effective dose. Why take 650mg of aspirin when 81mg will give the desired effect? Why lift weights or run 5 miles every day when a fraction of this will make us healthier.

BBS resistance training draws on robust research illustrating the effect of high intensity interval training, or HIIT. Experimental data suggests, if not proves, that going out into the backyard and sprinting on and off for 10 minutes grants more health benefits than a 30 minute walk or even a five mile jog. BBS brings this concept to weight training, showing that high intensity resistance training (specifically *one* set of each of five

exercises) once a week crosses the stimulus threshold to cause aesthetic and physiologic improvement.

In many studies, weight training improves insulin sensitivity, increases muscle mass and decreases adipose tissue, decreases inflammation, relieves stress, increases bone density, *improves* resting blood pressure, raises HDL, and often improves body image. And for our chronically ill patients who might be admitted to the hospital, the literature shows a clear benefit: stronger patients with more muscle mass are less likely to be admitted to the hospital and have better chances of being discharged and getting back to baseline function. I'd like to invent a drug with this patient-oriented benefit.

Perhaps my favorite aspect, and most relevant to our patients, is the very low risk of injury with this method. Using relatively low weight, moved through natural range of motion at a speed of 20 seconds per rep for 90-120 seconds, it is virtually impossible to injure oneself. No rectum-prolapsing maximum weight squats are prescribed here. This allows one to reach muscular failure and subjective exhaustion without injury, a rare feat.

Dr McGuff and his data even confront the dogma that we all must partake in aerobic exercise as "cardio." Using a complex  
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## DOCTORS' LOUNGE

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physiologic and biochemical foundation, he argues that our metabolic cascades at the cellular level cannot discern jogging from weight lifting. His statements on mechanical venous return during resistance training provide rationalization for the following: weight lifting is better tolerated (far less angina) in post-myocardial infarction rehabilitation patients than is aerobic exercise.

In fact, the literature is beginning to look empirically into the aerobics versus resistance training debate. Studies within the last five year seem to indicate similar benefits in muscle hypertrophy and physiologic adaptations in both activities when "maximum effort" is reached. Yes, a subjective sense of "this is really hard" might be the key ingredient for effective exercise. More studies with more complex biological analysis will surely emerge.

The BBS exercise technique combines the medical literature, physiology, and experience from many training sites to illustrate a safe and effective technique for anyone who wants to become healthier. The chap-

ter on effective exercise in seniors lists 17 references showing positive health benefits in parameters from bone mineralization to lipid profiles to depression.

Perhaps the most refreshing and convincing argument for this *Body by Science* high intensity super slow weight-training is that Dr. McGuff is not selling us anything. He'd like us to buy his book, and if we live in his town in South Carolina he would be happy to train us - but unlike many of the podcasters and diet/exercise gurus, his website is not an online store. He lists his workout each week (with videos illustrating technique) and posts a teaching point, encouraging healthy discussion amongst the commenters on his site.

When our friends and patients start burning out on their New Year's resolutions to exercise 5 days a week, I say we tell them about this method of weekly safe, effective resistance training. Let's be more specific than "You need to exercise." Tell them to go out and do something hard. The anti-fragile human body responds to stressors by getting stronger, in order to not die the next time

it is pushed.

### References

1. McGuff, Doug, Little, John. *Body By Science*. McGraw-Hill. 2009
2. Fisher J, Steele J. Questioning the Resistance/Aerobic Training Dichotomy: A commentary on physiological adaptations determined by effort rather than exercise modality. *Journal of Human Kinetics*. Vol 44/2014. 137-142.
3. Taleb, Nassim Nicholas. *Anti-fragile: Things That Gain from Disorder*. Random House. 2012.

For more information about the work of Doug McGuff, MD, visit [www.bodyby-science.net](http://www.bodyby-science.net). His book, *Body By Science*, is available for purchase at <http://amzn.to/1A0S99m>.

*Note: Dr. Huecker practices Emergency Medicine with Physicians in Emergency Medicine. He serves as gratis faculty for the University of Louisville School of Medicine, Department of Emergency Medicine.*