Relax, but don't "Super Relax" to drive metabolic rate **Dr. Clyde Wilson**

Keenan Mayo emailed me this morning to ask about my recent research on metabolism. His upcoming book with David Zinczenko entitled "The Super Metabolism Diet" claims you can "lose up to 20 pounds in four weeks with a scientifically proven and rigorously tested eating plan that will torch fat and ignite your body's fuel furnace." This sounds a bit commercial, but I appreciate his interest in science and am happy to help anyone in their quest for understanding. What follows is my email back to him:

The motor protein "myosin" that binds to and pulls on actin to shorten muscle is a major contributor to metabolism by the mere fact that this is the basis of muscle metabolism. On a side note: the metabolism i.e. amount of calories expended maintaining excitation (the nerve and within the muscle itself) is likely as high as the calories burned to generate force, so you cannot simply say that generating force account for all or even most of the metabolism associated with movement.

In any case, different species, disease states, and fed versus starvation states regulate how much of myosin is "shut off" in the super-relaxed state ("SRX") to conserve energy. Since myosin binding to its own thick-filament backbone ("shut off") reduces muscle metabolism by as much as an order of magnitude compared to when it is in the regular relaxed state, this conserves a massive amount of calories over a 24 hour time period. Staying out of the SRX to increase metabolism in the face of starvation (ketosis, intermittent fasting, caloric restriction, etc.) would require regular (almost continuous) low-intensity movement throughout the day, NOT merely standing versus sitting; indications that standing really resolves this issue have already been shown to fail in some studies. Ironically, sitting might actually be better under circumstances when you stand frequently, because it is the process of going FROM sitting to standing that triggers muscle the most, NOT standing in a stationary pattern. If you are already standing, you obviously cannot stand up, and therefore lose the potential benefit of standing up.

Exercise would not counteract the inhibited metabolism from the SRX and would likely actually make it worse, since most people do not know how to coordinate their nutrition with their exercise, resulting in their body experiencing "starvation" in the hours after exercise, sometimes for a full 24 hours or more after harder exercise, which will shut off their metabolism via the SRX simultaneous to their increase in metabolism from the exercise itself. This would be like 2 steps forward (exercise) and 1 or 2 steps back (SRX) depending on how poorly they coordinate their exercise and nutrition. Poor sleep quality and poor psychological stress response would pull the rug out from underneath metabolism, making neither nutrition nor exercise as effective, possibly completely ineffective. It is the convergence of all lifestyle factors that determines their relative contributions to metabolism.

On a side note, my abbreviated notes on how to think about optimizing your metabolism are in my last post entitled "How to discover your personal best diet from moment to moment."