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Nov 6, 2016 · 4 min read

Strength Training is Learning from Tail Events

I was honored to be asked by Mark Rippetoe to write the foreword of [book]. But the reader may ask the following: What does someone whose research is on the risk of random events, particularly extremes, have to do with strength training?



Milo of Croton

Well, the Starting Strength approach is precisely about extremes, what people in my business call the “tails,” the rare events that are consequential though of low probability. Just as systems learn from extremes, and for preparedness, calibrate themselves to withstand large shocks, so does the human body. Indeed, our body should be seen a risk management system meant to handle our environment, paying more attention to extremes than ordinary events, and disproportionally learning from these.

You will never get an idea of the strength of a bridge by driving several hundred cars on it, making sure they are all of different colors and makes, which would correspond to representative traffic. No, an engineer would subject it instead to a few multi-ton vehicles. You may not thus map all the risks, as heavy trucks will not show material fatigue, but you can get a solid picture of the overall safety.

Likewise, to train pilots, we do not make them spend time on the tarmac flirting with flight attendants, then switch the autopilot on and start daydreaming about vacations, thinking about mortgages or meditating about corporate airline intrigues—which represent about the bulk of the life of a pilot. We make pilots learn from storms, difficult landings, and intricate situations—again, from the tails.

So when it comes to physical training, there is no point engaging in the time-consuming repetitive replication of an active environment and its daily grind, unless you need to do so for realism, therapy, or pleasure. Just calibrate to the extreme and work your way down from there.

The other reason Rip asked me to write this foreword is because I am myself engaged in a variant of his exercise program—and the ethics of skin in the game dictate that one should be eating his own cooking, tell us what you think and what you do. I learned that what you do for training needs to be separate from what you do for pleasure. I enjoy hiking, walking, ocean swimming, riding my bicycle, that sort of things; but I have no illusion that these activities will make me stronger. They may be necessary, but for other reasons than the attainment of strength. I just consider walking necessary therapy, like sleeping.

It also happened that part of my research in risk overlaps with complexity theory. The first thing one learns about complex systems is that they are not a sum of body parts: a system is a collection of interactions, not an addition of individual responses. Your body cannot be trained with specific and local muscle exercises. When you try to lift a heavy object, you recruit every muscle in your body, though some more than others. The heavier the weight, that is, the more in the tails, the higher number of muscles involved. You also produce a variety of opaque interactions between these fibers.

This complex system method applies to all situations, even when you engage in physical therapy, as I did for an injured shoulder. I discovered that doing the more natural barbell presses and (initially assisted) pull-ups, works better and more robustly than the complicated and time consuming multi-colored elastic bands prized by physical therapists. Why don't physical therapists make you do these robust barbell exercises? Simply, because they have a rent to pay and, just as with gyms, single-exercise machines look fancier and more impressive to the laity.

Further, muscles are not the whole story. In a line of research pioneered by Gerard Karsenty and his colleagues, the skeleton with its few hundred bones has been shown to be endocrine apparatus, regulating blood sugar, fertility, muscle growth, and even memory. So an optimal exercise would need to work, in addition to every muscle in your body,

every bone as well, by subjecting the skeleton to weight stressors in order to remind it that the external world exists.

Finally, the body is extremely opaque; it is hard to understand the exact physiological mechanisms. So we would like to make sure our methodology is robust and can stand the judgment of time. We have had theories of how muscles grow; these come and go. We have theories of nutrition; these come and go—the most robust is the one that favors occasional periodic fasts. But we are quite certain that while theories come and go, the phenomenologies stay; in other words, that in two thousand years the method of whole-body workout in the tails will still work, though the interpretation and “scientific” spin will change—just as two thousand five hundred years ago, Milo of Croton carried an ox on his shoulders and got stronger as the ox grew.

