

October 12, 2008

Benjamin Mindell, Editor  
American Medical News  
[www.amednews.com/letters](http://www.amednews.com/letters)

re: September 15, 2008 issue (Volume 51, Number 35)

Dear Mr. Mindell,

My first reaction to the article by Susan J. Landers entitled, *Muscles Matter* was, “It’s about damn time!” And as I read the article I became more conflicted.

In my opinion, there are good reasons for medical doctors to completely avoid the topic of *exercise* while at the same time it is irresponsible to ignore the topic. I will try to clarify this.

As stated by Landers in the first three sections of the article, strength training—the only meaningful approach to exercise for almost all *homo sapiens* (my adamant assertion)—has tremendous medicinal benefit against a host of age-dependent conditions. As much as this is promoted as a recent epiphany in medicine, particularly in molecular biology (not exercise physiology), it is not new.

The medical community has avoided the obvious exercise connection to these conditions for decades. My Bloom and Fawcett *Textbook of Histology* in 1971 clearly illustrated that skeletal muscle is the site of the most dramatic physiology resident in the body by virtue of its heat production, mitochondria number, blood supply, insulin receptor site number, nerve supply, and water storage. We did not need MRI and CAT scan to reveal this! So why the disconnect until now? This is a big “duh.”

Also, Arthur Jones, the inventor of the Nautilus machine, clearly underscored as early as 1972 that of those six factors governing the functional ability of a subject (bodily proportions, neurological ability, vascular sufficiency, flexibility, skill, and muscular strength), the strength of the skeletal muscles is the only truly productive factor. The others—although absolutely essential—are merely supportive, not productive.

Jones also underscored that the skeletal muscles represent the only window into the body to address any benefits that might be reasonably expected from exercise.

And I have belabored the point that the skeletal muscles are the only volitional factor with which to accomplish what Jones was stating.

I find all these supposedly recent epiphanies by mainstream medicine 35 years overdue. And I find your accompanying picture by Bedrosian infantile. Here I am merely repeating the words of an internist who reads my work and who read your article before forwarding it to me.

Physicians are partly to blame for their overdue interest in strength training. But others—the exercise physiologists along with Kenneth Cooper, MD, and other pseudo exercise experts—deserve a horsewhipping for their distracting aerobics mixed with Christian evangelism. *Aerobics* has been an unsophisticated explanation for exercise as well as a clever deception falsely connecting this noun to a proper adjective, *aerobic*, that designates a pathway in the study of biochemistry. The noun and the adjective are not equivalents. Doctors should have caught this. Of course, many of them continue to confuse *progesterone* and *progestin*.

Unbeknown to the medical community are the murky origins of exercise physiology. Exercise physiologists are not real physiologists since they did not get their training in the schools of biology, chemistry, and medicine. They are glorified jocks who studied tennis, golf, badminton, shuffleboard, soccer, baseball, and volleyball in order to avoid the science courses they could not hack!

Predominantly, the exercise physiologists are joggers who naturally seized upon the exclusionary and fallacious steady-state (*steady-state = aerobics = cardio*) studies per the use of the  $\dot{V}O_{2\max}$  measuring device after it was invented *circa* 1909. They then latched onto the specious notions of Cooperism. [As the late Michael Pollock, PhD, and major developer of many  $\dot{V}O_{2\max}$ -based cardiac rehab programs stated, “ $\dot{V}O_{2\max}$  is no test of anything.”  $\dot{V}O_2$  measurement was originally developed to use as a *minimum* to monitor the metabolic rates of comatose patients. It cannot be used—nor was it ever intended—as a performance testing tool as in  $\dot{V}O_{2\max}$ , but it has been applied by the aerobicists to erect a bogus billion-dollar industry. This industry encompasses academic, medical (cardiac rehabilitation) and popular venues.]

Because of their steady-state origins and continued proclivity, exercise physiologists are slow on the uptake regarding strength training. They spent a century disparaging it and recommending against it, and now they want the rest of us to respect their Johnny-come-lately self-appointed authority on the subject. And as Landers reports from the American College of Sports Medicine, they continue to stress the importance of maintaining the silly *cardio*—the most popular term for the steady-state nonsense—in an exercise program as they are unwilling to acknowledge its counterproductive effects encouraging sarcopenia and trauma. Therefore it is oxymoronic to have a director of exercise physiology (pro-steady-state) simultaneously and ostensibly anti-sarcopenia! Most laymen and physicians are unlikely to realize these extreme contradictions (hypocrisy). As a case in point, your article references Roger Fielding as the director the Tufts Nutrition, *Exercise Physiology* and *Sarcopenia* Laboratory. This is likened to a convention for hunters and gun-control fanatics. The two don't mix.

Exercise physiology is not a science. A science requires working definitions, measuring tools with a repeatable and published error, and studies performed and ongoing with said definitions and with said measuring tools that include sample sizes of statistical significance. Exercise physiologists possess none of these requirements. And only by a recent liaison with the molecular biologists have exercise physiologists been able to peripherally hitch their star to a semblance of science. Of course, their quintessential baggage remains in tow.

The only working definition of exercise to date is: “a process whereby the body performs work of a demanding nature in accordance with muscle and joint function, in a clinically- controlled environment, within the constraints of safety, meaningfully loading the muscular structures to inroad their strength levels to stimulate a growth mechanism within minimum time.” Of course, the exercise physiologists have definitions—if we dare to stretch that term to ridiculous proportions—that are circular statements dependent upon measurements obtained with invalid testing equipment. It is obvious to me that without a workable definition of exercise, it is impossible in a study to define either the research group or the control group.

Another caveat: Exercise physiology research is rife with fraud, more so than that of any other biomedical field. Too strong?...No...Not strong enough, when these people squander public funds to fake research ultimately making false conclusions for doctors to read and recommend to their fragile patients!

Of course, taken in proper context, we should all be interested in the physiological enhancement derived from exercise. The miscarriage herein resides from misplaced emphasis. Physiology is not the basis of exercise—as the exercise physiology textbooks are intended to imply. The basis of exercise, instead, is mechanical physics and its application to load the skeletal musculature to invoke the physiology. (Leonardo da Vinci first defined a muscle as “a force-producing engine.”) Physiological enhancement is what comes out the end of the equation. It is the effect, not the cause, as the exercise physiologists seem to have the cart before the horse.

Also, exercise should be a branch of physics and/or engineering, not left to the lamebrains in sports who brand themselves, *exercise physiologists*. Some will read this and assert that my name calling is overboard and not politically correct. These people are perverting science, and I am being kind with my criticisms. This matter deserves no latitude for political correctness.

All this is an issue of semantics and seemingly trite on the surface, but as one person commented, “Semantics are *just everything!*” These semantics bode crucial importance to the future of the medical

community and their patients. Doctors must learn to distinguish the stark distinctions between *exercise* and *recreation*. They must know the difference between *weightlifting*—a dangerously violent sport—and *weight training* (*strength training* is a better term)—the safest and most productive approach to exercise. Doctors must learn that anyone using the term, *resistance training*, is poorly educated on the subject, because it is not distinctive. All movement involves resistance and most non-movement existence involves resistance. The only difference is the fact that what the exercise physiologists have been traditionally touting is a low-quality resistance—steady-state—while proper strength training is high-quality resistance for exercise purposes. Landers made most of these paramount errors in her article.

But to fair, it is not Lander's fault that she is ignorant of the required distinctions. Nor is the medical community entirely at fault for their ignorance. The major fault lies with the misinformation spewed by the exercise physiology community. After all, who else is conveniently and ostensibly authoritative for the medical community to consult on the subject?

Another mistake: The sidebar entitled, *Use It or Lose It*, recommends not exercising the same muscle group on consecutive days. This implies that it is also acceptable to sleep with one eye open or to eat and defecate with different parts of the body on consecutive days. I would hope that medical doctors already realize that you work, feed, rest, etc., the entire body as unit, not separate parts. This is crass... and in a medical publication!?

Not always a mistake, but used *ad nauseum* (as well as by Landers) are allusions to famous athletes and athletic performance by supposed exercise experts. Doctors must make these references reservedly and only with the fact clearly in mind that great athletes are not normal people off the street. They are genetic freaks! They have been blessed—or cursed—with particular physical characteristics that give them an advantage in a particular sport. Great athletes are also often highly superstitious and extremely prone to overtraining and touting practices that spite their success. Athletes have little if any relevance to the patients.

If the docs are really going to recommend/prescribe exercise to their patients they will be necessarily saying *strength training*. And if they do this they will be making a huge stride forward in two major areas as I see it. First, they will be promoting what their patients have been needing for eons. Second—and they had better think deeply about this commitment—they will be jumping into a legal concern that they have cleanly avoided until now!!!

My father was a general practitioner who built his practice in the early 1950s working the local emergency room (without pay). This experience made him keenly aware—as most physicians quickly become—of all the myriad activities that people do that get them injured.

If a patient asked my father, “Dr. Hutchins, don't you think an exercise program would be a good thing for me?” he would answer, “Sure.”

Then if that same patient took the next step and said, “Then, doctor, I want you to tell me what I should be doing for exercise.”

Now my father—as all doctors should be—would be squirming. Their recollections of all those injuries brought into the ER pass before them as they desperately stutter and eventually—after many years of blind evolution—develop the answer, “Go walk.”

Walking—for better or worse—has been the doctor's exercise copout...and for good reason. Never in the history of malpractice has anyone ever been sued based on proximate cause for something that was an activity of daily living. Let's see, we have: eating, sleeping, defecating, urinating, fornicating, and walking. “Go walk!”

And although this inadvertent insulation from the attorneys is all but worthless as exercise due to its poor mechanics against the skeletal muscles, doctors must not underestimate the seriousness of venturing

beyond this refuge. I see a horrendous nightmare for any doctor who gets a semantics champion (attorney) positioned between him and the sophomoric linguistics (uttered by jocks).

[Just a partial list of the exercise physiology jargon that doctors need to avoid lest making fools of themselves before learning their lack of meaning or linguistic distinctions:

aerobic	anaerobic	weight bearing
tone	toning	hyperextension
low impact	target heart rate	<i>weight versus resistance</i>
power	intensity	core

“There is no greater impediment to the advancement of knowledge than the ambiguity of words.”—Thomas Reid. After reading this letter Landers might consider doing another article about exercise entitled, *Semantics Matter.*]

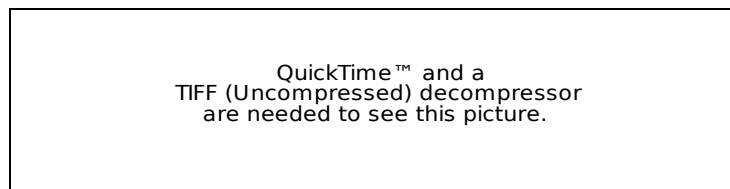
I predict the following scenario if physicians do not quickly supersede the semantical inadequacies of the exercise physiologists: Physicians will appreciate the huge benefits of strength training for diabetes (for example). Following the advice of the exercise physiologists, they confuse exercise to also include sports and recreational activities. Now although getting people to be more generally active is a step in the right direction, increased exertional activity that does goes beyond the exercise definition is fraught with a high incidence of injury. (In the U.S., more than 20 million per year—a conservative number from the Bureau of Statistics—bad enough to seek medical consultation due to sports and recreation.) The treatment then backfires as patients are injured, laid up, depressed, and fatter than before the increased activity. This brings out the attorneys in droves.

Sincerely,

Ken Hutchins  
Altamonte Springs, Florida

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<http://www.ama-assn.org/amednews/2008/09/15/hlsa0915.htm>



## HEALTH & SCIENCE

### Muscles matter: Physicians advised to tell patients to build up strength

#### People have been jogging for years. But lifting weights? Not so much. It's time to rethink the importance of resistance training.

By [Susan J. Landers](#), AMNews staff. Sept. 15, 2008.

Jeff Williamson, MD, a geriatrician at Wake Forest University School of Medicine in North Carolina, can be persuasive about the benefits of building muscle. "I like to say there are really only two reasons why older people end up in a nursing home. One is that their brains stop working, and the other is that their muscles stop working. Especially their leg muscles."

While the loss of skeletal muscle inevitably comes with aging, no one should just sit still and take it. In fact, sitting still would be the worst thing. People in their 40s and 50s need to take prompt action to preserve what strength they still have, said Dr. Williamson, clinical director of the J. Paul Sticht Center on Aging and Rehabilitation at Wake Forest.

Muscle loss probably starts around age 40 for some people and by age 50 for most. But young, sedentary people likely will arrive at later life with less muscle than those who are more physically active, said Roger Fielding, PhD, director of the Nutrition, Exercise Physiology and Sarcopenia Laboratory at Tufts University in Boston. That circumstance could set them up for more disability in later years.

"We are becoming much more aware now than at any time in the past that as people get older, the amount of muscle they have in their body becomes smaller," Fielding said.

It only has been during the past decade or so that imaging techniques have captured this muscle loss, noted Dr. Williamson. These advances have allowed physicians to quantify how much muscle people should have at certain ages and to develop outcome measures to test interventions that are intended to preserve muscle.

### **Most people have lost muscle mass by age 50.**

General consensus surrounds the idea that physical inactivity plays a big role in muscle loss. "We see pretty large declines in strength in people because they don't maintain activity," said Barbara Bushman, PhD, a professor of health, physical education and recreation at Missouri State University. In one study, 40% of women ages 55 to 64 said they couldn't lift 10 pounds.

"We suggest that people get a dog and walk the dog for exercise, but then they can't even lift a 10-pound bag of dog food into their car," she said. The numbers are even worse for women 75 and older -- 65% said they couldn't handle that amount of weight.

"To me, that's pretty frightening," Bushman said. "They couldn't lift a grandchild or respond in an emergency situation."

Lean body mass decreases about 15% between ages 30 and 60, she said. "It comes down to about five to seven pounds of muscle lost each decade."

Although it's probably never too late to try to regain strength, the middle years -- starting at age 40 -- are a key time to pick up the weights.

"It's like saving money. In middle age, you save so you can have a good retirement. But if you save muscle mass, you'll have an even better retirement," Dr. Williamson said.

W. Jack Rejeski, PhD, a behavioral scientist at Wake Forest, warned that difficulty climbing stairs can be the first sign of functional decline. "We've shown in our research that [such problems] are one of the first signs of early disability."

"The one thing people are most fearful of losing is the ability to function independently," said Tony Marsh, PhD, associate professor of exercise science at Wake Forest. "The strength of your muscles is fundamental in maintaining your independence."

### **Disease fighter**

It's not only functional decline that becomes evident with muscle loss. The Centers for Disease Control and Prevention poses the question on its Web site: Why strength training? The agency provides a number of answers.

For example, arthritis pain was reduced by 43% after a group of older men and women completed a 16-week strength training program. Exercise was just as effective, if not more so, than medications, based on the CDC findings.

### **Lean body mass decreases about 15% between ages 30 and 60.**

Strengthening exercises also can improve balance and flexibility, important in reducing the risk of falls and injury. And, the pull of muscle on bone also builds bone density and helps ward off osteoporosis, which is a major problem for post-menopausal women and older men.

There even is good news in glucose control. The CDC materials include a study of Hispanic men and

women who demonstrated improved glucose control after 16 weeks of strength training. The results were comparable with those produced by medication.

In another study, weight training helped to lift depression as effectively as did medications. Why this response should occur is not yet known, but speculation centers on the increased self-confidence that people build as their strength improves. Or perhaps the strength training is producing helpful biochemical changes in their brains, the CDC suggests.

Given that muscles are major reservoirs for the body's supply of fuel in the form of amino acids, having more muscle also may mean having more fuel, said C. Jessie Jones, PhD, professor of kinesiology and health science at California State University, Fullerton, and co-director of the university's Center for Successful Aging. "When recovering from an illness, a person relies on amino acids. The less muscle tissue they have, the less of a reservoir there is."

Muscles' metabolic properties also play a role in improving glucose control. More collective muscle could help control the global diabetes epidemic. CDC figures show that in the U.S. alone, more than 14 million people have type 2 diabetes, a 300% increase over the past 40 years.

### **New guidance**

Recent guidelines also underscore the need for muscle strength. The American College of Sports Medicine and the American Heart Assn., for instance, stressed muscle strength importance in last year's joint recommendations for physical activity in older adults.

In addition to 30 minutes a day of moderately intense aerobic activity five days each week, the organizations call for muscle strengthening activity using the major muscles of the body at least twice weekly.

### **Weight training has been shown to improve glucose control and lessen arthritis pain.**

The AHA published a separate statement last year that emphasizes resistance training's benefits for older people, especially women and those with certain heart conditions. These populations were highlighted because often they become unable to function independently.

"The purpose of the [AHA] update was to underscore the importance of the health benefits of resistance training," said Mark Williams, PhD, director of Cardiovascular Disease Prevention and Rehabilitation at the Creighton University School of Medicine in Nebraska.

"In addition, resistance training has now been reported to potentially positively impact body composition with increased muscle mass, and improve various metabolic factors such as blood lipids and blood sugar levels," he added. Williams led the team that wrote the AHA statement.

Several experts in exercise science point to the role physicians can play in persuading patients to get moving. "Research has shown that if a primary care physician is behind something, patients are more likely to respond," Bushman said.

Physicians also may intercede when patients are recovering from illness. "Just being in the hospital for a few days can dramatically affect muscle mass," Dr. Williamson said. "So physicians, in addition to thinking, 'I've successfully treated this person's heart failure or pneumonia,' need to be thinking, 'How can I help restore their muscle mass and function?'"

Assessing a patient's physical functioning should be part of an office visit, Rejeski said.

One way to conduct an assessment of lower extremity function is by the Short Physical Performance Battery, Rejeski said. It takes about 10 minutes to administer and tests balance, gait, strength and endurance. "It's a very simple test, but it has been shown in large studies to be predictive of decline in function."

Action then should be encouraged.

"The sooner you jump on any signs of decline, the better off you are," Rejeski noted. "As you get further down the slope of disability, it's more difficult to recover."

### **Use it or lose it**

If your patients -- or you -- need strength training, here are some suggestions from the National Institute on

Aging.

- Do strength exercises for all major muscle groups at least twice per week. Don't do strength exercises for the same muscle group on any two days in a row.
- Use a minimum amount of weight the first week, then add weight gradually. If out of shape, start with as little as one or two pounds, or no weight at all. The tissues that bind the structures of the body together need time to adapt to strength exercises. Beginning with weights that are too heavy can cause injury.
- Gradually add a challenging amount of weight in order to continue the benefits from strength exercises. If muscles are not challenged, no benefit occurs.

### **Exercise helps, even after muscle fibers start to go**

John Faulkner, PhD, has spent his University of Michigan career studying skeletal muscles. Now a research professor of molecular and integrative physiology at the university's medical school, he has made good personal use of the findings he has gathered.

He's 83 and has two artificial knees. Yet he bikes 10 miles a day, plays tennis five days a week and lifts weights.

He also has a firm grasp of why muscle mass declines as the years go by. "That's the one element that is very, very clear. There is exceptionally good data that muscles lose the number of fibers present as we age."

Neurological loss is another factor that seems to be at work. Faulkner's research has focused more recently on the role played by motor units that send signals from the brain to the muscles.

It turns out that physical activity plays a role in strengthening motor units, too. "People who are sedentary not only lose the motor units and the fibers, but even those that are left don't work very well," he noted.

This loss begins to occur in the major weight-bearing muscles between ages 40 and 50. "From there it's a pretty linear decrease until the end of the road," he said.

But that's not the end of the story. Although muscle fibers can't be preserved, the ones that remain can be made more effective, Faulkner explained. The size of the fibers can be increased by lifting weights.

Aerobic activity also can boost performance by increasing the fibers' endurance so they won't tire as quickly.

This strengthening process has been shown to work. "Master athletes maintain a high level of fitness throughout their life span," Faulkner wrote in a study published last July in *Clinical and Experimental Pharmacology and Physiology*.

Although the performances of marathon runners and weight lifters decline after 40, well-designed and carefully administered training programs can provide dramatic evidence that age-associated atrophy, weakness and fatigue can be slowed, he wrote.

### **Weblink**

Exercise is Medicine Program, sponsored by the AMA and the American College of Sports Medicine ([www.exerciseismedicine.org](http://www.exerciseismedicine.org))

"Exercise: A Guide from the National Institute on Aging," National Institute of Aging ([www.nia.nih.gov/healthinformation/publications/exerciseguide](http://www.nia.nih.gov/healthinformation/publications/exerciseguide))

Centers for Disease Control and Prevention on the benefits of strength training for older adults ([www.cdc.gov/nccdphp/dnpa/physical/growing\\_stronger](http://www.cdc.gov/nccdphp/dnpa/physical/growing_stronger))

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