

FUELING FOR VINTAGE MACHINES

How Training and Nutrition Can Work Together to Keep You Humming Longer

by Christine Ennulat

Change is one thing you can depend on in the aging human body. Time passes; things go south, and not just the obvious. We become less able to feel

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thirst. The sense of taste fades, the appetite flags. Metabolism

slows, the balance of muscle to fat tilts toward the latter, and the remaining muscle is weaker. Bones thin and become more prone to fracture.

While these generalizations describe the majority of aging Americans, who tend to be sedentary, exercising seniors often defy those trends. Accordingly, they have different nutritional needs. Most Masters swimmers, especially those of an age to need to think on these things (for our

purposes, age 55 and up), are keenly aware of the anti-aging benefits of exercise, and a solid general knowledge of good nutrition is a given.

But most of the nutrition information on *exercising* elders is extrapolated from what we know about young people and applied to older people, according to William J. Evans, Ph.D., director of the Nutrition, Metabolism, and Exercise Laboratory at the University of Arkansas for Medical Sciences, where he is also a professor of geriatrics, physiology and nutrition. "Virtually every dietary recommendation that you see out there is made for people who are not very physically active, and that's because most Americans are pretty sedentary," he adds.

Masters athletes are not sedentary, which makes them a unique population. What to do?

Retired exercise physiologist and Florida Mavericks Masters swimmer Paul Hutinger, 80, sums up the experience of the older athlete trying to manage what may be an increasingly cranky apparatus: "Nutrition for the older swimmer is tough to figure out, and everyone has to figure out for themselves what works. You can take some different ideas from people, what works for them, and then try it out and see if it works for you and go from there."

Older Masters swimmers seem to do fairly well with this approach, although it's no simple matter. "I discover, as I age, that the metabolism slows down and the weight starts *leaping* on and doesn't come off," says Lois Kivi Nochman, an 80-year-old retired English professor and world record-setting butterfly swimmer with Michigan Masters. "I thought I had control, but all my tried-and-true diets simply don't do the job. It's a bummer." The Michigan native gets to the pool for about an hour a day, five days a week, and covers about a mile. "All this exercise you'd think would take care of it," she laments. "And I don't pig out—I'm eating less than 2,000 calories a day."

Here is the key: Any nutritional recommendation should be based on how the body will actually use the nutrition, and research shows that how the body uses nutrition depends in great part on the proportion of fat-free body mass—muscle

mass, the gradual loss of which is one of the hallmarks of aging. It begins as early as the third decade of life.

Muscle mass comprises fast-twitch fibers and slow-twitch fibers, respectively responsible for high-intensity strength activity and low-intensity endurance activity. It's the fast-twitch fibers that we lose as we age, leading to that decrease in fat-free body mass, which in turn leads to decreased metabolism and therefore reduced caloric needs. The body also has decreased capacity for protein synthesis (resulting in even greater difficulty maintaining muscle

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SWIMMING NOT ALL AEROBIC? FOOD FOR THOUGHT

"There's a myth about swimming that it's not weight-bearing," says Paul Hutinger, a retired exercise physiologist now swimming with the Florida Maverick Masters. "But if you push off real hard like most swimmers do, and you get out past the flag on your push-off, you have exerted a lot of force on your legs and on your body. You're working against the resistance of the water there, so you're doing a resistance type of vertical jump."



mass), decreased capacity for glycogen storage—and therefore a harder fight against encroaching body fat, to which leftover glycogen converts.

This age-related deterioration of muscle strength and quality finally picked up a name in 1988: sarcopenia, a condition yet to be categorized as either a disease or a natural part of the aging process. Either way, at least one study has associated sarcopenia with “a 3- to 4-fold increased likelihood of disability in elderly people, independently of age, sex, obesity, ethnicity, socioeconomic status, chronic morbidity, and health behaviors,” according to a 1998 report

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Sanguily strives to consolidate his nutrients among high-quality foods such as leafy greens, lean meats, low-fat dairy products and the like. He takes no supplements. Nochman, on the other hand, could probably sing her list of supplements: “A, B, C, D, E...,” calcium, magnesium, potassium, vitamin D. Boak also takes calcium, along with a multivitamin and a soy supplement. Protein is an integral part of her diet, as well. “When I’m competing my favorite thing to eat is a soft-boiled egg.”



appearing in *The American Journal of Epidemiology*.

Here’s the rub: Studies show that activities such as swimming or running may slow—but do not prevent—age-related loss of muscle mass. So how can swimmers keep that slow slide in check?

Evans contends that sarcopenia can be slowed, even reversed. “Essentially, the only way to preserve muscle mass is through strength training, weight lifting.” Muscles need to be used in such a way that the activity is intense enough and long enough to call upon—and therefore preserve, even recruit—fast-twitch muscle fibers.

One 2000 study in *The American Journal of Physiology* noted improvement in muscle protein synthesis after just two weeks of resistance exercise. Increased quantity of muscle enhances quality of muscle, which increases quantity of muscle, and round and round, ultimately stalling and reversing at least some of the deleterious metabolic domino effect. The resting metabolic rate rises, leading to system-wide benefits.

But for many swimmers, swimming is the only exercise they really like. Carolyn Boak is one of them. “I hate doing weights,” says the 60-year-old nurse and USMS coach, who divides her time between Texas and California. “The way I get myself to do it is that it’s a 30- to 35-minute routine concentrating on swimming

muscles. If I had to weight train longer than that, I’d put it off—I wouldn’t do it,” she admits. Suffering through the routine two or three times a week has brought one benefit Boak relishes: “I did notice that when I started regularly doing weights in my late 50s, my sprints got better.”

Indeed—you can see the change on her list of USMS Top 10 swims (found at usms.org—she’s had a dozen already this year), in 50 SCY free alone, from age 55 to 58: 2001, 28.53; 2002, 28.10; 2003, 27.79. (Full disclosure: This progression has faltered by all of a half-second over the last two years.)

The 60:20:20 rule. To fully address nutrition, swimmers need to think not just in terms of maintenance but also in terms of supporting improvement. Much of current discussion about nutrition for adult athletes in general centers around the ideal balance of carbohydrate with protein and fat on a day-to-day basis. Evans, author of *Biomarkers: The 10 Determinants of Aging You Can Control* and *Astrofit*, advocates a 60:20:20 ratio—60 percent of caloric intake drawn from carbohydrate, 20 percent from protein and 20 percent from fat (the good fats, of course). The 20 percent protein recommendation is a bit higher than the typical American consumes, where protein accounts for about 15 percent of caloric intake, says Evans. The recommended daily

allowance (RDA) of 0.8g/kg is too low, certainly for athletes, and definitely at later ages. “One of the things we’ve seen as people grow older is that they need more protein because the body is less efficient at making muscle protein, probably because in men testosterone levels are lower, in women estrogen levels are lower and, in men and women both, growth hormone levels are lower,” he says. Another reason is that, “while fat and carbohydrate are certainly the most abundant source of fuel during exercise, protein contributes maybe 5 to 6 percent of the total energy demand of exercise. But, unlike the fat and carbohydrate that the body can make, if you burn essential amino acids, you have to get them from your diet.” The highest-quality proteins, those high in digestibility and essential amino acids, are found in most animal proteins. The only vegetable protein that is a complete protein—that has all the essential amino acids—is soy. Whey is the highest quality available. “I try to say high quality, low fat,” adds Evans.

“I’m a big protein believer,” says Manuel Sanguily, 72, a 1952 Olympic breaststroker and physician who lives in New York’s Westchester County. “I used to eat rice every, every single day—I mean, a Cuban kid who doesn’t eat rice? We’ve changed that a lot. I try to eat less carbs, because I don’t want to get fat, although I’m

very active.” Sanguily, eats “with moderation,” he says, and therefore strives to consolidate his nutrients among high-quality foods such as leafy greens, lean meats, low-fat dairy products and the like. He takes no supplements. “I’ve taken so many pills for asthma and so many pills for things in my life that I don’t take pills unless I really need to take a pill,” he says.

Nochman, on the other hand, could probably sing her list of supplements: “A, B, C, D, E...,” calcium, magnesium, potassium, vitamin D. She also actively researches ways to increase nutritive bang for the buck; fig juice concentrate is a recent purchase.

Boak also takes calcium, along with a multivitamin and a soy supplement to counter menopausal symptoms. Protein is an integral part of her diet as well, especially in the morning, she says. “When I’m competing my favorite thing to eat is a soft-boiled egg—eggs have protein and enough fat that they stay with you, and it’s a small amount of food so it doesn’t make me sick when I compete.”

How should the balance shift, if at all, with approaching competition? Rest is best, advises Evans. “Carbohydrate loading, glycogen loading are really not necessary for almost any swimming event unless you’re competing in a triathlon or a very long distance,” he says. “Anything that takes less than



Edyta Pawowska



Stroie Mihai Razvan



Andrei Teherov



Johanna Goodyear

NO DISAGREEMENT ANYWHERE, Hydrate, hydrate, hydrate.

an hour to perform, it's really unnecessary. You won't burn it up." Continuing the usual high-carb 60:20:20 diet and resting the last few days before an event allow for a sort of passive carb loading that ensures abundant glycogen stores, he says.

The 30-minute rule. What about nutrition after a tough workout, or a tough event? The word these days is that the ideal time to consume carbs and protein is right after a workout, most say within 30 minutes. Carbohydrate "to help you recover that day," says Hutinger, "then you need protein to help you recover for the next day's workout." This recommendation applies across all ages, and the physiology behind it suggests an added opening for older athletes to bolster their muscle mass. That first half-hour post-exercise presents "the greatest opportunity to stimulate muscle protein synthesis," says Evans. "Muscle is extremely sensitive to insulin right after exercise, and insulin does two things—it drives sugar into the muscle to synthesize glycogen, but it also drives amino acids into the muscle for protein synthesis.... The other thing that you have is increased blood flow right after exercise." In the first 30 minutes post-exercise, your system is already humming. Internal activity begins to diminish beyond that point.

Liquid is the most efficient way to get these macronutri-

ents where they need to go, and the myriad recovery drinks on the market now—Endurox R4, Accelerade and others—are designed specifically for that purpose. (Or you can make your own; see sidebar.) The late Edward Burke, Ph.D., author of *Optimal Muscle Recovery*, explained the advantages of these drinks. "First of all, they digest more quickly. Also, most people have trouble exercising right after eating, and eating right after exercising. Liquids go down more easily and are less likely to cause gastrointestinal distress," he said, quoted in *Men's Fitness*, July 2002. Burke, interviewed by *Outside* in May 2001, also believed that the ideal ratio in these drinks is 4 grams carbohydrate to 1 protein, so that the more difficult-to-digest protein would not interfere with the replenishment process.

Of recovery drinks, Nochman says, "I don't do it in general, because I don't think I'm working that hard." But she did have one after a recent 5K swim, she says, "and I do think the whole thing helped. I was only feeling weak for about two days instead of longer."

Boak is partial to Amino Vital. "It really tastes good, and it has amino acids as well as electrolyte replacement. I use that like crazy during competition days," she says, adding that she felt it helped her swim really well at the last couple of nationals. Fellow USMS member Hutinger uses

Endurox, while Sanguily prefers smoothies, or liquid yogurt.

What rules? It always comes back to what works for the individual. "I think your system is used to the kind of food that you eat on a routine basis," says Sanguily. "I find that physiology kept at its best is routine." His particular routine has allowed him to swim the 16 miles between the Tappanzee and George Washington bridges

four times now, alongside his friend Paul McClintock.

So before morning practice, Boak has her egg; Sanguily has his yogurt, maybe a muffin; and Hutinger has his banana and a cup of coffee. Nochman also likes a banana before competition, but well beforehand; otherwise, "it comes up on me," she says. "I'll never forget a meet where I'd had creamed tuna fish on toast." <<<

BEYOND GATORADE

Endurox R4, Accelerade, Amino Vital, SPIZ, PowerBar Recovery, Cytomax Recovery—these and other "protein-laced" sports drinks draw increasing attention, inspiring this line in *The New York Times*: "Recovery drinks infused with protein are becoming the drink of choice for some of the world's fittest people, and, some experts predict, they may soon become the next generation of sports drinks for average exercisers." (Lucky us!) They are available at GNC, online or at bike supply stores.

Or, if you're feeling domestic, whiz your own in your blender using this recipe used with permission from William Evans, Ph.D., with the University of Arkansas for Medical Sciences.

●●● ASTROBLAST PROTEIN SHAKE

- 3-5 **ice cubes**
- 2 T **instant chocolate milk**
- 1 c **soy milk (or 1 percent milk)**
- 1-2 ounces **wehy or soy protein powder**
(1 ounce if you weigh 100 to 150 pounds;
2 ounces if over 150)

In a blender, combine all the ingredients. Process until the ice is crushed and the drink is smooth. If the chocolate or protein powder sticks to the inside of the blender, use a spatula to scrape it off and blend it for another 10 seconds. Drink it all.

>>> Nutrition information: 30 grams protein (with 1 ounce of powder and milk; 50 grams with 2 ounces of powder), 30 grams (approximately) carbohydrate