How Old is Your Body?

Chronological vs. Biological Age
As I sat down to write this issue’s letter, I realized that this is the thirteenth edition of my New Year’s letter to our readers. Not wanting to repeat myself, I decided to dig up all those past issues and a common theme soon emerged: the New Year brings the opportunity to try something new. I can’t say that I’ve always followed my own advice, but I did appreciate the reminder. So I decided instead to revisit some of my favorite thoughts from past New Year’s letters.

1999: “My challenge to you this year is to create your own standard, your own measurement of success. Stop making comparisons to other people, people you deem more successful, more disciplined than you. Instead, make an effort to try new approaches, take a new path and see where it leads you.”

2000: “If there is anything the transition to a new year—in this case, a new millennium—reminds us of is that time is not an unlimited resource. The awareness of time—or, more accurately, the lack of it—is what makes this time of year so significant. Whether or not you agree with making resolutions, it is an opportunity to reevaluate your goals, your values, your use of time.”

2002: “In light of all that we have witnessed in the past few months, the only New Year’s resolution that seems worth making is to learn to be thankful and to do everything in your power to appreciate life.”

2004: “…it suddenly dawned on me—resolutions sound more like punishments than anything else. Stop eating sweets, stick to a budget, develop six-pack abs….Instead of focusing on the rewards of doing these things, we focus only on the sacrifice they require. No wonder we fail to keep them....”

2006: “If nothing else, the New Year reminds us that we can, in fact, make changes, that we don’t have to keep doing the same things, the same way, day after day. Fitness experts urge participants to regularly change their exercise routines to avoid hitting a plateau. The same principle can probably be applied to just about every area of life—keep doing the same thing too long and you’re likely to grow stagnant. But that doesn’t mean you quit—you just find a new or better way to do it.”

Have a wonderful New Year!

Christine Ekeroth

LETTER FROM THE EDITOR

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Researchers have begun exploring the difference between chronological age (how old we are according to the calendar) and biological age (our age in terms of our physiology, fitness and the overall health of our organs, tissues and cells). We explain the difference between the two and why experts believe that biological age is a better predictor of health than how long you’ve been on the planet.

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Sitting at a desk all day can be hazardous to your health. Poor posture and body mechanics in the workplace are a common cause of back pain, and frequently repeated motions for prolonged periods, such as working at a computer or talking on the phone, can lead to repetitive stress syndrome. These three exercises, performed periodically throughout your work day, can help alleviate the discomfort of working at a desk.

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Here are two mini-workouts that do double-duty. Not only can they each be done in about 10 minutes, these workouts will either help you get moving in the morning (or anytime you need a little pick-me-up) or help you wind down from a stressful day.

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When jazz legend Charlie Parker died in 1955, the physician performing the autopsy estimated the saxophonist’s age to be 60. Parker was 35. A lifetime of heroin and alcohol abuse, as well as the loss of his infant daughter and the toll taken by the peripatetic life of a musician, had accelerated his aging process (and destroyed his kidneys). In short, Parker was almost twice as old as his years.

Parker’s tragic life illustrates an emerging scientific concept: the difference between chronological age (how old we are according to the calendar) and biological, or functional, age (our age in terms of our physiology, fitness and the overall health of our organs, tissues and cells).

For example, take the converse of Parker: a 70-year-old man who runs marathons or demonstrates the strength of a 50-year-old. That man—someone such as Jack LaLanne—is considered to have a biological age of 50.

Experts believe that biological age is a better predictor of health than how long you’ve been on the planet. Biological age is determined by testing the following functions:

- Muscular strength and endurance
- Flexibility
- Aerobic fitness (\(\dot{V}O_2\)max)
- Lung function
- Blood testing of glucose, cholesterol and triglycerides
- Body composition
- Blood pressure

However, there is no universal standard for pinpointing one’s biological age, according to Michael E. Rogers, Ph.D., associate professor in the department of kinesiology and research director for the Center for Physical Activity and Aging at Wichita State University in Wichita, Kan. Instead, there are a number of tests considered relatively comprehensive, such as the “functional age score,” the Tsukuba test (developed in Japan) and the “Index of Physiological Status.” (See sidebar: The Body Age Tests.)
Chronological Age vs. Biological Age

As you might expect, attempts have been made to capitalize on Baby Boomers’ fears of decrepitude by offering commercial versions of these tests, such as the “Body Age System” devised by Polar, a manufacturer of heart-rate monitors, and offered by major U.S. gyms such as Equinox, and RealAge, a consumer-health media company, offered by Bally’s Total Fitness health club.

Experts are skeptical of the accuracy of these tests, commercial or otherwise. Dr. Erika Schwartz, an internist in private practice in Manhattan, told The New York Times: “We are all individuals, and statistics never address individuals.”

This is not to say that these tests are without merit. Some people who otherwise may not be motivated to exercise may decide to get serious about their health when their doctor tells them that their body is 15 years older than the age on their driver’s license.

Rogers says that the chronological and biological ages for most Americans are roughly the same. This is unlike, say, the Japanese, who tend to be biologically much younger than their calendar age and have one of the longest life expectancy rates in the world—which Rogers attributes to a combination of diet, fitness and genetics.

Is it Possible to Stop the Clock?

As gerontology (the science of aging) becomes a hot field for research, the $20 million question is: How much can you reduce your body’s age? The results so far are a mix of good and bad news.

The bad news is that while you can slow down your biological clock, you can’t stop it entirely. However, the good news is that the inevitable bodily decline is much slower in athletic individuals. In other words, a very active 60-year-old might attain the bodily functions of a 50- or 45-year-old, but they’re not going to start skateboarding and asking Dad if they can borrow the car.

For Rogers, the key is to “maintain the health and vigor of the first part of our lives, or even, if we’ve been sedentary, to improve our fitness. We should keep doing the activities we enjoy, even though it gets more challenging the older we get.”

The reason for our body’s inevitable decline is that as we age, we lose the capacity to renew and repair cells, says Waneen Spirduso, Ed.D., a professor in the department of kinesiology and health education at the University of Texas at Austin. “One way to describe it is that cells produce waste products and when things are working well, there are garbage collection cells to remove the waste products. As you age, the garbage collectors come by less often, and when they do they don’t pick up all the waste, which accumulates in the cells and impairs function.”

As it turns out, probably the best way to prod those cellular sanitation workers to stay on the job is exercise.

Beyond all the ways in which exercise enhances our physiology (increasing muscle tone and bone density, improving circulation, etc.), it’s becoming clear that fitness also can reduce our biological age by enhancing cognition, says Spirduso. This is supported by a growing body of research on the effects of physical activity on cognitive function in older adults. In one study, Spirduso tested information processing functions such as scanning and perceptual speed in 300 men and women between the ages of 60 and 70, comparing those who had been physically active to those who hadn’t.

Continued on page 16
RESEARCH WRAPUP

Too Many Marathoners Skip the Sunscreen

GREATER EXPOSURE TO THE SUN MAY PUT MARATHON RUNNERS AT greater risk of developing skin cancer.

Researchers at the Medical University of Graz in Austria compared 210 male and female marathoners with 210 non-runners of the same age and sex. The marathon runners were found to have more atypical moles, which are larger than common moles with irregular and poorly defined borders. They also had more liver spots—harmless lesions that are small, flat and brownish.

The number of these moles and liver spots is considered a strong independent indicator of increased risk for developing malignant melanoma. The runners who trained at the highest intensity levels generally had the highest number of these indicators.

Only 56 percent of the runners in the study reported using sunscreen regularly.

Source: Archives of Dermatology, 2006; 142, 1471–1474

FACE FACTS

AUDIOLOGISTS HAVE COME UP with some general guidelines for headphone use that doesn’t damage one’s hearing.

• The amount of time spent using headphones is less important than how loud the music is played.
• Listening to music at full volume for just five minutes can damage hearing.
• The average young person can listen to music for more than four hours at 70 percent volume without damaging his or her hearing.
• Avoid listening to music in noisy environments because the tendency is to turn up the volume. Instead, use noise-blocking headphones in these environments.

Source: Brian J. Fligor, Children’s Hospital Boston; Terri Ives, Pennsylvania College of Optometry School of Audiology; Cory Portnuff, University of Colorado

Letters to the Editor

I have seen wall sits promoted as beneficial exercise for skiing for many years and, frankly, am quite surprised that they are.
I have taught skiing as well as been a skier for close to 40 years and wall sits simply do not prepare a person for skiing as one might think. I am surprised that whoever wrote this piece did not do some simple investigation into the biomechanics of skiing and been able to come up with a couple of much better choices.

—Gregory L. Welch, M.S.

Response from the author, Fabio Comana, M.A., M.S.: Late summer and early fall constitutes the period where recreational skiers and snowboarders initiate some base conditioning that should always begin with basic muscular conditioning, which is best achieved utilizing exercises that are more generalized and non-sport-specific in nature. Consistent with the practices of most strength coaches, this is not the stage where sports-specific exercises are introduced; rather, this serves as a foundation to condition muscles in preparation for more advanced exercises that will mimic the movement patterns of the sport. The wall squat, aptly named a “muscle conditioning” exercise and not a “muscle strengthening” exercise, achieves this basic conditioning with minimal overload or training specificity to promote muscular endurance by training the muscle to a point of fatigue (whether static or dynamic exercise). If one examines the mechanics involved in skiing and snowboarding more closely, one will notice that the quadriceps are involved in both activities, functioning both isometrically and dynamically.

Additionally, the forward shift of one’s center of mass toward the balls of the feet may increase the potential for a more rounded upper back and internally rotated arms.

The wall squat illustrated offers some basic conditioning to address these matters. While promoting basic muscular conditioning of the quadriceps, it includes an upper body position to improve conditioning of the muscles that
FACT OR FICTION?

ACE Examines Three Commonly Held Fitness and Nutrition Myths

• High-fructose corn syrup caused the obesity epidemic.
• Training at altitude will increase your athletic performance at sea level.
• "Isolating" your abdominal muscles is effective and safe.

Three propositions, all of which are commonly accepted, either by the diet and exercise communities, the general public, or both. All of which have a patina of scientific credibility.

And all of which are wrong—the result of a sensationalistic, sound bite–oriented media and a public craving for simple answers to thorny problems. Here, we show you why.

Training at Altitude Won’t Help Your Sea-level Performance

Endurance athletes, like all athletes, are constantly looking for an edge. Despite a substantial body of solid evidence to the contrary, many athletes still believe that training at high altitudes will improve their performance at sea level.

Richard Lampman, an exercise physiologist at St. Joseph Mercy Hospital in Ann Arbor, Mich., provides the simple reason why this assumption is false. “Training at altitude wouldn’t enable you to improve your sea-level performance, because you can’t train as hard at altitude,” he says. “The relative lack of oxygen at altitude changes your acid-base balance, which saps some of your stamina.”

The higher the altitude, the lower the atmospheric (or barometric) pressure. Your VO2max is reduced by approximately 1 percent for every 100 meters (328 feet) above 1,372 meters (4,500 feet) in recreational athletes, and a reduction can be detected in highly trained athletes at altitudes as low as 457 meters (1,500 feet) above sea level.

This means that your lungs, bloodstream and cells get less oxygen. This low blood oxygen level is called hypoxia. Although your heart rate (and thus your cardiac output) increases to deliver more blood to the cell, it doesn’t completely compensate for the hypoxia.

“The only potential benefit from training at altitude is an improvement of your ability to perform at altitude,” Lampman says. “Even then, it would take quite a few months to get used to the higher elevation.”

Lampman, a former competitive middle-distance runner, says that he and some colleagues from Penn State University, in preparation for the Mexico City Olympics in 1968, trained in Peru at 4,268 meters (14,000 feet). “In about two months, I was able to run a four-and-a-half-minute mile. But at sea level, I had already run a four-minute mile. At altitude, I never came close to equaling my sea-level time.”

The results of the study performed by Lampman and his colleagues have been confirmed by many subsequent research papers. The popular misconception about the supposed benefits of training at altitude, particularly for distance athletes, derives from flawed studies.

However, there is some evidence to suggest that acclimatization to moderately high altitude, combined with training at low altitude—known as “living high-training low”—has been shown to improve sea-level endurance performance in accomplished, but not necessarily elite, runners. The way to live high and train low, Lampman says, is to do the lion’s share of your training at sea level, live for a month or so at altitude, then resume sea-level training.
High-fructose corn syrup (HFCS, as it’s known in the trade) is almost impossible to avoid. This synthetic sweetener has supplanted sugar’s role in the American diet and seems to be in every mass-produced foodstuff—from soft drinks to yogurt, soup to salad dressing.

It also has been demonized by gourmands, parents and nutritionists. It’s been called “the Devil’s candy” and the “crack of sweeteners.” This vilification has occurred on several fronts. A widely publicized paper published in The American Journal of Clinical Nutrition in April 2004 suggested that the rate of HFCS consumption paralleled the rise in American obesity rates. (HFCS was introduced to the American diet in 1980, which was the beginning of a 20-year increase in the incidence of obesity.)

The book Fat Land by Greg Critser proposed that the syrup made consumers obese because it was cheaper than sugar. Thus, food makers could afford to offer more HFCS products in more copious portions, which impelled consumers to drink more soda.

However, most scientists have concluded that HFCS has taken the rap for a myriad of other causes of obesity, ranging from supersized meals and drinks, to a sedentary population that uses food as an emotional sop.

Indeed, there is little data to back up the scapegoating of high-fructose corn syrup, and links between the sweet goop and obesity are based on misperceptions and unproved theories, or are simply coincidental.

Scientists say part of the confusion about the ingredient’s role in the nutrition debate stems from a basic misunderstanding: the idea that high-fructose corn syrup is actually high in fructose (which the human body does metabolize in a way that promotes weight gain).

Marilyn Schorin, chief nutrition and regulatory officer for Yum Brands in Louisville, Ky., says that HFCS is high in fructose only in relation to regular corn syrup, not to sugar. “High fructose corn syrup is about 45 percent glucose and 55 percent fructose. Sucrose, or table sugar, is about 50 percent of each, while corn syrup is 100 percent glucose and not very sweet,” she says. “To make [corn syrup] taste like sugar, they added enzymes to turn glucose to fructose. This 90 percent fructose syrup mixture is then combined with regular corn syrup.”

Moreover, Schorin says, “Metabolically, our body processes all sugars the same. And they all have the same caloric value.”

Ruth Frechman, a dietitian and spokesperson for American Dietetic Association, in Los Angeles, agrees that no matter how you blend it, sugar is sugar—just another carbohydrate and not a diabolical catalyst of weight gain. “Too many calories causes weight gain, not any particular product.”

Schorin adds that the scientific studies such as the one in the American Journal of Clinical Nutrition assumed a cause-and-effect relationship between HFCS and obesity where none existed. “There’s no evidence that overweight people consume a lot of HFCS. And its small amount of additional fructose, as opposed to sugar, doesn’t make a difference in people’s weight.” Besides, Schorin says, many countries that still use sugar instead of HFCS, such as Brazil, also have a high incidence of obesity.

So next time you see “high fructose corn syrup” in the ingredients list of your favorite snack food, put the product back on the shelf not because it’s evil, but because you don’t need the excess calories.
When it Comes to Abs, Don’t Be an Isolationist

When it comes to abs, don’t be an isolationist. There is no hard science that supports the idea that one can isolate the various abdominal muscles—turning one on and the others off. All the muscles have to act together, says McGill. Moreover, many of the exercises said to isolate a particular abdominal muscle put undue stress on the lower back, McGill says. “Movements such as doing crunches on a fitness ball with a full range of motion actually replicate the pattern of movement that leads to injury.”

What about transverse abdominus exercises, which are generally believed to enhance core stability? “Studies have shown that isolating them actually reduces stability,” McGill asserts. McGill recommends that you scrap your isolationist program and substitute safe, effective and comprehensive abdominal exercises, such as those pictured below, taken from his book Ultimate Back Fitness and Performance (available from www.backfitpro.com).

Fitness ball curl. Lay on the ball with your hands on the small of your back. Before you start to move, completely contract your abdominal wall. Slightly curl up your head and shoulders. Concentrate on contracting the abdominal wall. Never flatten your back to the floor; just lift your elbows up and don’t use your shoulders to cheat.

Push-up position walk-out (for high-performance training). Assume the push-up position and walk your hands forward. This stiffens the entire abdominal flexor system.

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Sitting at a desk all day can be hazardous to your health. Poor posture and body mechanics in the workplace are a common cause of back pain, and frequently repeated motions for prolonged periods, such as working at a computer or talking on the phone, can lead to repetitive stress syndrome. Remember to take periodic rest breaks and incorporate these three exercises throughout your work day to help alleviate the discomfort of working at a desk.

1. Elbow Curls (stretches chest, strengthens back)

Sit upright in your chair with both feet placed firmly on the floor, hip-width apart. Engage your core and abdominal muscles to support your upright torso and maintain neutral alignment of your spine throughout the exercise. Raise your arms out to your sides to shoulder height, and then bend your elbows to touch your knuckles to your temples. Inhale and squeeze your shoulder blades together, holding the contraction for one to two seconds. Next, exhale and move your elbows forward to touch each other in front of your nose. Keep your knuckles on your temples at all times and avoid any forward movement of the head during the curl movement. Repeat 12 to 15 times.

2. Back and Traps Stretch

Sit upright in your chair away from your desk with both feet placed firmly on the floor, hip-width apart. Engage your core and abdominal muscles to support your upright torso. Extend your arms out in front at shoulder level and interlock your fingers so your knuckles face away from you. Begin by first gently exhaling and slowly lowering your extended arms to lightly touch your lap. Relax and slowly return your extended arms to shoulder level, gently exhale again and attempt to reach farther forward with your arms, slowly bowing your back and allowing your torso to flex forward. Relax and repeat the entire exercise 12 to 15 times.

3. Hip Flexor Stretch with Upper-arm Movement

Position the backrest of your chair against the desk for support and place your right foot on the seat pan and extend your arms overhead. Slowly lean forward by shifting your weight forward, but maintain a slight backward lean from the hips to keep your torso vertical. Gently arch your back, extending your arms back behind your head. Hold the end position for one second, relax and return to your starting position. Repeat the same movement, but this time lean to the right as you shift your weight forward. Hold the end position for one second, relax and return to your starting position. Continue this cycle for eight repetitions, and repeat with the opposite leg.

Eye Breaks

Working at a computer or reading over documents all day can be hard on the eyes. Try these techniques to reduce eye strain.

**Micro-breaks:**
- Change your depth of focus for 20 to 30 seconds every 10 to 15 minutes (look at an object at least 20 feet away).

**Mini-breaks:**
- Perform one eye exercise (for example, near-far focusing, rapid blinking, following your finger with your eyes) for 20 to 30 seconds every 30 minutes.

**Maxi-breaks:**
- Take a 10-minute workstation break every two hours.
Here are two mini-workouts that do double-duty. Not only can they each be done in about 10 minutes, these workouts will either help you get moving in the morning (or anytime you need a little pick-me-up) or help you wind down from a stressful day.

If you have a hard time getting out of bed in the morning, an energizing Pilates routine may be just the thing to jumpstart your internal alarm clock. This workout will get you going even before you get out of bed. Or, if a harder surface is desired, use the space at the side of your bed—you don’t even have to change out of your pajamas! These five Pilates exercises will lengthen you, stretch you and help "align" your day.

At the end of the day, it can be difficult to transition out of work mode. These five yoga-based exercises (plus a relaxation pose) will help reduce tension and improve flexibility. Try it first thing after work or right before you go to bed, whichever works best for you. The workout begins with a few strengthening poses and ends with several stretches and a relaxation pose for stress relief. Focus on your breath and create a relaxed and serene environment—light some candles and turn on some soothing music. This workout is guaranteed to make you feel stronger, more relaxed and ready for a good night’s sleep.
Single-leg Stretch (works the abdominals)

Lie on your back with your knees bent to the chest and toes pointed. Engage the abdominal muscles to lift your head and shoulders off the bed or floor. Relax the front of your neck as you hold yourself up with the strength of your abs and mid-back; look at your knees. Inhale and draw your left knee toward the chest as you extend your right leg about 45 degrees above the bed or floor. Switch and do eight to 10 repetitions on each side.

Rolling like a Ball (works the abdominals, massages the spine)

Sit on the bed or floor with your knees bent and your spine rounded into a C curve. Lightly place your hands on the knees. Inhale and rock back until the bottom of your shoulder blades touch the bed or floor, and then exhale and pull the navel to the spine and come back up to a balance. Repeat eight to 10 times.

Single-leg Circles (works the hips, inner and outer thighs, hamstrings and abdominals)

Lie with your right leg extended to the sky (bend the knees 90 degrees if your hamstrings are tight) and your left leg flat on bed. Engage your abs and point your right foot and rotate the leg; inhale and trace a small circle on the ceiling with your toe, moving the entire leg from the hip socket. Think of your leg like a spatula scraping the sides of the bowl (the hip socket). Do eight to 10 circles and repeat on other side.

Windshield Wiper (torso twist, spine rotation)

Lie on your back with your knees bent at a 90-degree angle and your arms extended out to your sides. Keep your shoulders relaxed and on the bed or floor as you inhale. As you exhale, drop both knees to one side. Inhale again and slowly lift your legs and switch to other side.

Half Roll Back (works the abdominals, stretches the back)

Sit tall with knees bent, hands placed lightly behind the thighs and feet on the bed or the floor. Inhale and contract your abdominals and roll halfway back—your spine should be rounded into a C curve. Hold this position and take three breaths. Then roll back up to a seated position, lengthening the spine. Repeat three to five times.

MORNING
Cat/Dog Stretch (strengthens and stretches the abdominals and spine)

Begin on all fours, with your knees under the hips and wrists under the shoulders. First, round your back up toward the ceiling; drop your head and look for your belly button (cat). Next, look up and arch your back as you extend through the whole spine, including your neck (dog). Repeat eight to 10 times, inhaling as you move into dog stretch and exhaling as you move into cat stretch.

Side Plank (strengthens and stretches the obliques and shoulders)

Sit on the floor with your legs to the right side. Place your left hand on the floor, directly below the shoulder. Stack the feet or keep the bottom knee on the floor as you lift your body off the floor. Engage the abdominals and keep the core tight as you extend the right arm up toward the ceiling. Keep the body in one plane and hold for several seconds and lower back down. Repeat eight to 10 times on each side.

Warrior One (opens the hip flexors, stretches the lats, and strengthens the quads, glutes and torso)

Step your feet wide apart and lunge forward with your front leg. Point your front toes straight ahead, turn your back toes in slightly. Keep the knee over the toes and your back leg straight; your back foot should stay flat on the ground. Extend your arms high overhead, lifting through the chest and heart. Try to stay as low as possible in your lunge and take four to six deep breaths. Repeat on the other side.

Forward Bend with Chest Expansion (stretches the hamstrings, deltoids and pectorals)

Interlace your hands behind your back (use a towel if hands don’t reach) and bend at the hips into a forward bend. Drop your forehead to your knees. Keep a slight bend in the knees if your hamstrings are tight. Stretch the arms up toward the ceiling, feeling a stretch throughout the chest, and hold for about 20 seconds.

Legs Up-The-Wall Pose (relieves tired legs and feet, calms the mind and body)

This is your final relaxation pose. Lie on your back with your feet up the wall or the side of your bed at a 90° angle. Extend both legs in the air and straighten the knees as much as you can. Relax your arms at your sides, close your eyes and breathe deeply.

Pigeon Pose to Sleeping Pigeon (stretches the hip abductors, hip flexors and glutes, relieves stress)

Begin with your hand on the floor on either side of your right knee and your left leg extended back on the floor behind you. Drop the right knee toward the right hand and turn the foot so that the top of the foot is toward the floor, close to the left hand. If this is uncomfortable, the foot can move back toward the groin. Sink into the hips while keeping them square to the floor. Walk your hands out in front of you (sleeping pigeon) to stretch the back and relax into the pose. Hold for at least 20 seconds.
Q: Can you offer some basic guidelines for avoiding overuse injuries associated with running?

A: Generally speaking, the vast majority of overuse injuries associated with running can be avoided by utilizing commonsense and not exposing your body to sudden, high levels of orthopedic stress. Here are some basic guidelines for sidestepping running-related overuse injuries:

- **Stretch before and after exercising.** Proper stretching can mean the difference between pain and enjoyment, and can provide several potential benefits, including improving joint flexibility, enhancing performance and reducing injury potential. As a general rule, always precede stretching exercises with at least five minutes of low-intensity physical activity.

- **Increase your mileage sensibly.** Avoid doing too much exercise too soon. A general guideline is to limit any increase in weekly distance to 10 percent or less of the previous week’s total mileage. Contrary to what some people believe, more is not always better. Instead, limit your total weekly mileage to a reasonable level according to your fitness level, body size and training experience. Exercising too much substantially increases your chances of sustaining an overuse injury. Remember: Exercise quality is usually more important than quantity.

- **Don’t subject your body to consecutive days of very intense exercise.** Always follow a relatively “hard” day of exercising with an easier day. If you run considerably faster and farther than usual on a particular day, take the next day off or decrease the duration and/or intensity of your next workout.

- **Incorporate an occasional “easy” week into your exercise regimen.** Keep in mind that you don’t need to increase your mileage every week to continue to benefit from your training efforts. Some level of physical and/or psychological fatigue is natural following a steady diet of hard workouts. Fatigue may increase the likelihood of injury because it can diminish the precision of motor control and inhibit voluntary muscle-stabilizing activity.

- **Don’t ignore sudden pain or discomfort.** Pain is the body’s way of telling you that if you persist in what you’re doing, you will either injure yourself or exacerbate a relatively minor injury that has already occurred. You must learn to listen to your body and respond appropriately. The acronym “RICE” (rest, ice, compression and elevation) should serve as the basis of treatment for most minor injuries such as pulled or strained muscles and shin splints). If your acute pain does not respond to self-treatment within a reasonable period of time, see a physician, preferably a sports medicine specialist.

- **Don’t try to “run through” pain.** If you alter your normal running mechanics in an effort to accommodate pain or discomfort, you may place excessive stress on your joints, muscles and connective tissues (ligaments and tendons). Refrain from exercising until the pain subsides and no longer interferes with your natural running pattern.

- **Periodically replace your running shoes.** Proper footwear can have a significant impact on minimizing your chances of being injured. Record your mileage daily and replace your running shoes once the cumulative total exceeds 500 miles.

- **Vary your workout options.** Give your joints and muscles an occasional break from the “same old grind.” Engage in other forms of low-impact, joint-friendly exercises such as elliptical cross-training, cycling or swimming, in addition to running. Exercise variety can be both physically and mentally refreshing.

Do you have a question for Dr. Bryant, or would you like to respond to this issue’s column? Please send your comments and questions to acepubs@acefitness.org.
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Circle the single best answer for each of the following questions.

1. High fructose corn syrup is approximately ________________.
   A. 50% glucose and 50% fructose
   B. 45% glucose and 55% fructose
   C. 33% glucose and 67% fructose
   D. 10% glucose and 90% fructose

2. Which of the following is among the factors often used to determine biological age?
   A. Skintensity
   B. Ratings of perceived exertion
   C. Appetite
   D. Blood glucose values

3. Which of the following muscle groups is strengthened by the Warrior One pose?
   A. Deltoids
   B. Pectorals
   C. Gastrocnemius
   D. Quadriceps

4. To help avoid sustaining an overuse injury associated with running, individuals should replace their running shoes after exceeding how many miles of use?
   A. 500
   B. 400
   C. 300
   D. 200

5. Which of the following is recommended to reduce eye strain associated with working at a computer or reading documents for several hours?
   A. Take a 10-minute workstation break every hour
   B. Change your depth of focus for 20 to 30 seconds every 10 to 15 minutes
   C. Perform one eye exercise for 20 to 30 seconds every two hours
   D. Position your computer screen or reading material at a distance of 3 feet

6. Which of the following abdominal exercises is recommended for high-performance training?
   A. Fitness ball curl
   B. Wall pulley/cable crunches
   C. Push-up position walk-out
   D. Captain’s chair crunches

7. At an altitude of 6,000 feet, how large of a reduction in maximal oxygen uptake should a recreational athlete expect?
   A. 1%
   B. 3%
   C. 5%
   D. 10%

8. With regard to age and brain function, physically active individuals have been observed to have______________ than their sedentary counterparts.
   A. Better parietal lobe circulation
   B. Better frontal lobe circulation
   C. Better temporal lobe circulation
   D. Better occipital lobe circulation

9. Which of the following would be an effective spinal rotation exercise?
   A. Windshield Wiper
   B. Rolling like a Ball
   C. Half Roll Back
   D. Side Plank

10. According to audiology experts, listening to music at full volume while wearing headphones can cause hearing damage after how many minutes?
    A. 5
    B. 15
    C. 30
    D. 60

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HOW OLD IS YOUR BODY?

Continued from page 5

Spirduso found that the more active a person had been—as measured by the number of years they had exercised—the greater their ability to preserve cognitive function as they aged.

This may have something to do with the fact that an active lifestyle slows the loss of brain tissue, as was demonstrated in a 2003 study conducted by researchers at the University of Illinois. And preserving more brain tissue means more active neurons, which results in enhanced cognition.

In addition, Spirduso says, “There is pretty strong evidence that exercise helps prevent and control depression, and depression has very powerful negative effects on cognition. As do stroke, cardiovascular disease, diabetes and stress, all of which are positively affected by exercise.”

While science hasn’t pinpointed the exact mechanism by which exercise boosts brain function, the theory is that physical activity creates an optimum physiological milieu in the brain, particularly in the frontal lobe. This is the seat of executive function, which allows you to plan ahead and engage in program sequencing—a multi-step cognitive process that accompanies even a simple act such as putting a key in a door. “It’s been speculated that frontal lobe circulation seems to fail a little earlier in sedentary people,” says Spirduso.

Physical fitness also leads to increased reaction time and improved quick decision-making, such as “Should I stop at this yellow light or not?”

Exercise also helps regulate insulin and glucose in your system, and chronic glucose overload has detrimental effects on brain function.

The Exercise Recipe

All that said, older people needn’t worry that they must start training for a triathlon to begin their fight against aging. Besides, as Rogers says, “It becomes increasingly difficult to maintain the volume and intensity of training as one ages.”

A program of walking, bike riding and/or swimming for 30 to 60 minutes four to five times a week, with a balance of high and low intensity, will allow the older adult to maintain many of their usual activities and functions. In addition, focusing on joint flexibility and executing fast, but controlled, “explosive” movements will give you the power to do such things as get up out of a chair effortlessly.

Spirduso agrees that as you get older, you need to work on all aspects of fitness: strength, power, endurance, flexibility and balance. The last two are of particular importance, she says. “One of the keys to looking younger is maintaining a good posture. You often see elderly people crouched over with their chests pulled down. You can improve your mobility if you work on keeping your shoulders and arms back and your head and chest up while you’re walking. Also, to improve balance, practice walking on a curb or narrow line.”

Scientists don’t yet know how long a life can be extended by exercise, or how early you must start a physical fitness regime to extend your life span, but they logically estimate that the earlier you start and the longer you maintain a program, the better off you’ll be. That shouldn’t discourage people who have just awakened to the benefits of exercise, which as has been proven by studies of resistance training among even the very old, can be gained at any age.

Who knows? If Charlie Parker had worked out instead of doing all the things that led to his premature death, he still might be with us. Even though he died in 1955, he’d only be 86.