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REFLECT. GROW. ELEVATE.

Summer always seems to be full of opportunities to reflect. During graduations or weddings, at a reunion of your growing family or while taking in an ocean sunset on vacation. These reflections can be the springboard for growth. They can emotionally overrun us with happiness and wonder, putting a smile on our face and, perhaps, inspiring a trickle of joyful tears. They can also cause us to pause and debate whether we are on the right path personally or professionally.

As you read our cover story on Brian Nguyen’s own career crossroads, you’ll find inspiration in his widespread success in the realm of collegiate and professional sports training, and as a highly respected trainer of high-profile and celebrity clients including Mark Wahlberg, Mila Kunis and Will Ferrell. You’ll also learn how an unforeseen tragedy caused Nguyen to reflect on his focus and passion and, ultimately, change the trajectory of his career. Now, Nguyen works with clients across all walks of life, helping as many as possible to achieve their fitness goals. What does he feel will define his success? Find out in “Brian Nguyen: Down to Earth & Flying High.”

Speaking of careers, I’m always intrigued by how the fitness professional’s career continues to evolve and grow, often in response to clients’ and members’ shifting expectations of fitness services and products. Products like virtual training, large to small group training or one-on-one experiences. Be sure to add “The Hybrid Instructor” to your summer reading list, and see what skills you need to meet these new demands—and how every level of fitness pro fits into the bigger picture.

Also worthy of reflection this season: What should we do if we become injured or sick? We love our careers—helping others get healthier and fitter. But fitness is a physically demanding job! You wouldn’t tell an injured client to push through the pain or to tackle an all-out Tabata workout while battling an illness, so why would you expect that of yourself? If you’ve ever debated whether you should take some time off to heal and recover—and how much time you might need, check out the real-world scenarios and sound advice from other fitness professionals in “The Injured Instructor’s Path to Recovery.”

As you’ll see in many of the stories in this issue of American Fitness, there are abundant opportunities for reflecting, growing, elevating our skills and guiding those around us to success—whether that means our clients, our fitness facility members or fitness professionals who are starting their journey in this rewarding field.

We’d love for you to share your definition of a successful fitness career—and the steps you’re taking to achieve it. Leave me an email at AmericanFitness@nasm.org, and we’ll be sure to reflect on your responses and share some of our favorites.

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Yours in health,

Laurie McCartney
President – Global Fitness & Wellness Solutions
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Some of the most demanding careers in America involve serving within the nation’s military force. If you have a client who plans to enlist, you may want to modify his or her program. “At our core, we’re a fighting force,” says U.S. Army Staff Sergeant (SSG) Nicholas Savas, who is a Medical Instructor for the 80th Training Command’s Health Services Brigade. “We need strength and endurance in a way we will genuinely use on the battlefield.” In addition to being a U.S. Army Master Fitness Trainer, SSG Savas is an NASM-certified personal trainer who holds every NASM specialization. Uniquely, he earned his NASM Master Trainer title while serving in support of Operation Enduring Freedom. His dual role means he works with a diverse population civilian-side while specifically training and instructing medical personnel Army-side. Here are some of his insights:

**TRAIN LIKE THEIR LIVES DEPEND ON IT**

Some of the most demanding careers in America involve serving within the nation’s military force. If you have a client who plans to enlist, you may want to modify his or her program. “At our core, we’re a fighting force,” says U.S. Army Staff Sergeant (SSG) Nicholas Savas, who is a Medical Instructor for the 80th Training Command’s Health Services Brigade. “We need strength and endurance in a way we will genuinely use on the battlefield.” In addition to being a U.S. Army Master Fitness Trainer, SSG Savas is an NASM-certified personal trainer who holds every NASM specialization. Uniquely, he earned his NASM Master Trainer title while serving in support of Operation Enduring Freedom. His dual role means he works with a diverse population civilian-side while specifically training and instructing medical personnel Army-side. Here are some of his insights:

**KNOW WHO YOU’RE TRAINING.** “These are warriors in every sense of the word. I have a family at home and can’t afford to be killed, so I train hard,” he says. “We have to train as we fight.” Consider adding extra challenges, such as training safely in temperatures outside of the client’s normal comfort zone. A moderately weighted vest in place of body armor is realistic.

**START WITH A SOLID FRAMEWORK.** “We’re a team of professionals. Every one of us is an American Soldier, but we each specialize in a few areas. Check out this statistic my counterparts have uncovered,” says SSG Savas. New recruits are at risk for stress fractures—particularly if they are white, female, and/or under the age of 20 [2016; AMSUS, 181 (10), 1308–13]. According to a summary article in Medicine & Science in Sports & Exercise, the risk “may be reduced by high intakes of calcium, vitamin D, and possibly protein (e.g., milk products),” so be sure to discuss proper nutrition [2008; 40 (11), S609–S622].

**ASSESS AND ADDRESS COMPENSATIONS.** In addition to assessing the client with the NASM Optimum Performance Training™ (OPT™) model, consider doing the gait treadmill walking assessment (Appendix C, NASM Essentials of Personal Fitness Training 2017). “Correcting a simple mechanic distortion like externally rotated feet can go a long way for people doing miles and miles of heavy rucking,” says SSG Savas. “A common U.S. Army ruck covers 12 miles in less than 3 hours, but ideally closer to 2. We wear a full combat uniform with matching boots, put a minimum of 35 pounds on our back (before water), and carry rifle in hand.”

**TALK ABOUT CROSS-TRAINING.** Events in the Army Physical Fitness Test (APFT) are pushups, situps, and a 2-mile run. Doing only those things can quickly become ineffective or counterproductive. SSG Savas highly recommends foam rolling and stretching. In the office, he keeps a full set of dumbbells, a TRX® Suspension Trainer™ and a jump rope alongside his mounted punching bag. This allows him additional ways to get his cardiovascular fitness in without running. Arming your clients with knowledge of cross-training may help them to avoid overuse injuries during basic training.
If you want word-of-mouth advertising from your members, you’ll need to keep them “very satisfied,” according to a recent Market Force survey.[2017; marketforce.com] Customers who gave their gym a five-star rating were almost three times as likely to recommend their club compared to those who ranked theirs at four stars. “Simple things can make a huge difference in customer satisfaction,” says Liz Cox, NASM Master Trainer and general manager at The Center Fitness Club in Wilmette, Illinois. For starters, she advises that you walk the floor of your club every day and listen to every member’s opinion, even if you can’t always accommodate their request. “This shows them they are valued,” she explains. A few

In a study reported in Medicine & Science in Sports & Exercise, 10 elite cyclists experienced less dehydration and better performance when following a prescribed rehydration program than they did when drinking “ad libitum” (as much as they wished) in temps around 88 degrees Fahrenheit [2017; doi:10.1249/MSS.0000000000001202]. The takeaway here: Elite athletes training in the heat may want to focus on matching fluid losses during training, rather than relying on thirst or convenience to trigger a water break.
URBAN ATHLETES TAKE NOTE: Workout pace can affect the amount of pollutants you inhale. A recent study reported in the *International Journal of Sustainable Transportation* examined how the speed of walking/running/biking affects the amount of air pollution inhaled over the course of the trip [2017; 11 (3), 221–29]. The paper’s author, Alex Bigazzi, PhD, assistant professor in civil engineering at the University of British Columbia in Vancouver, says, “Speed affects both your breathing rate and the amount of time it takes to complete a trip.” He found that the study participants (who were “travelers,” not athletes) seemed to naturally select a pace that exposed them to the minimum dose of air pollution (referred to as minimum-dose speed or MDS). The report listed the MDS for walkers as 2–6 kilometers per hour and for bicyclists as 12–20 km/h; that’s roughly 1.2–3.7 miles per hour and 7.5–12.4 mph, respectively.

However, “for people vigorously exercising, the pollution inhalation can be several times greater than for people walking slowly,” warns Bigazzi. “Basically, the faster you go, the harder you work, and the more pollution you will breathe in per minute of exercise.”

While Bigazzi doesn’t recommend abbreviating your workout, he says there are ways to be smart about it. First, check the local Air Quality Index on airnow.gov to see if it’s safe to exercise outside. When air quality isn’t as good, or when your route wends through more-polluted areas, try to slow your pace. Also, avoid exercising in industrial areas and other locations where you know air quality is poor. “Traffic-related pollution hotspots will be any high-volume roadway, such as a freeway, and areas with lots of diesel trucks and buses,” he says. “Cycling behind a diesel bus is an especially bad idea.” If you encounter that often, it’s time to map a new route.
While today’s research sets the minimum hydration rate at 2 grams of water per kilogram of body mass, there is no current guideline telling athletes what temperature the water should be. In a recent trial at the University of Montana, researchers tested the effects of an “ice slurry” on thermoregulation and physiological responses during a 3-hour treadmill workout in 88 degree Fahrenheit ambient temperatures (with 50% relative humidity). The ice slurry was made up of two-thirds shaved ice and one-third water.

When cyclists drank the ice slurry, they fared better in terms of thermoregulation and physiological responses than they did when hydrating with room-temp water and following the same 2 g/kg hydration rate. But even those who sipped ice slurries at a reduced rate of 1 g/kg body mass did just as well as when they drank 2 g/kg of ambient-temp water.

The study, published in *Wilderness & Environmental Medicine*, suggests that people who need to carry water with them during outdoor exercise may be able to tote far less if they are able to keep it icy cold [2016; 27 (3), 386–92].

**Patch Work: 3 High-Tech Wearables for Athletes**

It helps to be in tune with your body, but thanks to today’s wearable technology, you don’t need to be tuned in all the time. Researchers have been working to develop small, low-cost patches to measure a variety of factors that may help athletes know when to make adjustments to their training. Three of the newest patches perform these functions.

**Monitoring Sun Exposure.** Researchers at the University of Southern California have developed a half-inch-square patch that changes color when it’s time for the wearer to get out of the sun. The patch turns orange when the dose of a “day’s worth” of vitamin D has been reached [2016; *ACS Sensors*, 1 (10), 1251–55].

**Measuring Hydration.** A palm-size patch created by Purdue University researchers changes color based on the body’s hydration level. Tiny channels loaded with water-activated dye turn from blue to red as perspiration increases, reminding the wearer to drink up [Dec 6, 2016; www.purdue.edu/newsroom].

**Analyzing Biomarkers in Sweat.** Northwestern University researchers developed a patch about the size of a quarter that analyzes biomarkers in sweat such as chloride and hydronium ions, glucose and lactate. A smartphone app then shares data on sweat rate, total sweat loss, pH, and concentration of chloride and lactate. This can help athletes know when to replenish electrolytes and fluids [2016; *Science Translational Medicine*, 8 (366), 366ra165].

Is it time to seek shade? Science is working on an easy way for athletes to tell for sure.
Strength Training Reduces Risk of Type 2 Diabetes and CVD

[2017; 49 (1), 40–46] looked at nearly 36,000 women ranging in age from 47 to 97. Those who did any amount of strength training had a 30% lower risk of type 2 diabetes and a 17% reduction in risk for cardiovascular disease compared to women who didn’t strength train at all. What’s more, women who did both strength training and cardio activity enjoyed greater benefits than those who stuck with aerobics alone. “This study shows that women who are currently doing aerobics will gain significantly more protection against CVD and type 2 diabetes by adding strength training,” says lead researcher Eric J. Shiroma Jr, ScD, from the National Institute on Aging (part of the National Institutes of Health).

LAURA QUAGLIO has spent 18 years gleaning tips from experts to bring readers surprising solutions to life’s challenges. She’s also a mom, 2nd-degree black belt, and costume designer for local theater.
THE CPT’S PLAYBOOK FOR HIGH-SCHOOL PRESEASON TRAINING

Before you meet with students to train them for fall sports, do some prep work of your own: Read here how evidence-based assessments and assessment-based programming can reduce injuries and improve performance.

By Chris Ecklund, MA

At most levels of performance enhancement, sports specificity is more of a marketing message than a systematic approach. The areas of strength and conditioning and performance enhancement have been increasingly researched and improved over the past 25 years. We have also learned a great deal about reducing the risk for injury.

Yet two areas that remain insufficiently addressed in sports training, including in high-school sports, are (1) the effective assessment of movement competency to maximize movement quality and (2) the systematic implementation of periodization and coaching methods to maximize results. Instead, we continue to see outdated, inappropriate or even risky practice methods and an overemphasis on “sport-specific” movements that lead to overuse injuries. In this installation, our focus will be on preseason programming and implementation for the fall high-school athlete, specifically those involved in football, cross-country and tennis.

Your First Goal: Assess the Athlete
Goal-setting in youth sports should focus on the needs of the sport, the age of the athletes and their performance goals for the season. To a great degree, most sports deal with significantly similar needs and movement qualities, which means that most high-school athletes have similar movement compensations and programming needs. With a few exceptions (such as swimmers or members of a rowing crew), most athletes play their sport primarily while moving on one leg at a time (e.g.,
running, cutting, jumping). They move in multiple planes, accelerating and decelerating. They utilize their upper body in various and frequent unilateral and sometimes bilateral motions.

Therefore, the first goals you develop for your athletes must be based on movement assessments. By assessing athletes, then addressing compensations and maximizing a stable platform, you will prepare them to develop the strength, power and conditioning needed to support them in their sport. Progressing the athlete through the NASM Optimum Performance Training™ model helps ensure that the participant is prepared. Once coaches and their athletes have addressed compensations and progressed through the OPT™ model levels—stabilization, strength and power—they can focus their effort on specialization of movements as they move from freshman to senior year.

The NASM Performance Enhancement Specialization (PES) provides fitness professionals with additional tools and techniques for working with athletes at all levels, from youth to elite to professional—a key addition being Phase 6 Maximal Power, which utilizes high-speed training with lighter loads, accelerated through the entire range of motion, thereby allowing athletes to increase and fully express power beyond the supersets of Phase 5.

Make Assessments More Meaningful
Assuming that a health-care professional has cleared the athlete for sports participation, it is imperative to make a basic inquiry into injury history, as this is one of the top three contributing factors to injury in sport: (1) previous injury, (2) rapid increase in training volume and (3) movement compensation (Nelson & Padua 2016). The NASM PES program provides extensive evidence-based information on selecting and executing assessments specifically for athletes wishing to improve in their sport of choice. Here’s a sampling of the factors to consider during assessments.

Assessment of Injury
Because of the competitiveness of youth athletics, some high-school athletes may be training year-round, overtraining and feeding directly into the cumulative injury cycle. They may not have dealt with previous injuries, at the risk of being benched. Addressing the effects of injury is essential to break this cycle, in which tissue trauma can lead to inflammation, muscle spasms, and adhesions (trigger points), which can further alter movement and potentially lead to subsequent injuries (NASM 2017).

“Previous history of musculoskeletal injury is a strong predictor of future musculoskeletal injury during physical activity,” according to Kucera et al. (2004). So, ask about past and recent injuries, as well as surgeries (sport-related or not), which also can lead to neuromuscular

**Assessments: Football, Tennis and Cross-Country**

**Football and Tennis Assessment Sequence**
- Double-leg vertical jump
- Repeat vertical jump
- Broad jump, frontal and sagittal
- 10-yard sprint
- Landing error scoring system (LESS) test
- Double-leg lowering test
- Davies test
- Shark skill test
- Standing soccer throw
- Rotation medicine ball throw
- T-test (tennis only)
- Lower-extremity functional test (LEFT)
- 5-10-5 test
- 300-yard shuttle*
- Single-leg star excursion balance test

**Cross-Country Assessment Sequence**
- Single-leg vertical jump
- Repeat vertical jump
- Broad jump, frontal and sagittal
- 10-yard sprint
- Single-leg landing error scoring system (LESS) test
- Double-leg lowering test
- Shark skill test
- 300-yard shuttle
- 1-mile run
- Single-leg star excursion balance test

*For football players, do the test as written for skill players and a modified shorter test for linemen.
adaptations and muscle imbalances. It’s worth noting that the NASM PES delves deeply into “Current Concepts in Injury Prevention,” so fitness professionals can help their athletes be more proactive in this realm.

**Assessment of Movement Quality**
Since more than 66% of injuries in sport involve the lower body (Ambler-Wright 2016), and we know that movement compensations are one of the most common reasons for injuries, the following assessments are a great place to start.

- Overhead squat assessment
- Single-leg squat assessment

It’s also worthwhile to assess the athlete’s upper-body strength and shoulder motion as well as cervical, thoracic and lumbar motion. This is especially helpful if these areas are relied on heavily in the athlete’s sport, as is true for weightlifting, wrestling, diving and gymnastics (Huang et al. 2016), among other sports.

**Assessment of Movement Quantity**
How much, how fast, how many? There are several athletic-performance tests that are relatively low risk, provide valuable information about the quality of the program, give insights into athlete effort, and have good reliability and validity qualities. On the previous page, you’ll find a list of some assessment options for football, tennis and cross-country; complete descriptions of these tests can be found in chapter 3 of NASM Essentials of Sports Performance Training (2015). First, a few notes.

**Record the Results.** Whichever testing battery is chosen, make absolutely certain to keep accurate records of your testing protocols (surface, indoor/outdoor, conditions, time of day, etc.), adjustments (changes to standard equipment, distances, heights, loads, etc.) and scores. Having these notes to reference will maximize the reliability for mid- and postseason testing.

**Be Mindful of Testing Order.** Ideally, the performance coach will conduct tests in an order that will allow the best results for each test and will not affect the results of other tests performed later that day. This means the order should be: power, then strength, then conditioning; if conditioning tests precede power tests, the results for the power tests will decline. Further, it is recommended that balance tests be included at the latter stages of the testing battery, giving the performance coach a better understanding of an athlete’s motor control ability under fatigue, which provides strong correlations between loss of motor control under fatigue and subsequent injury.

**Skip the 1-RM Testing, If Possible.** When assessing high-school athletes, the question is always there: “Should we test max loads for squat, bench, clean, etc?” In most cases, the simple answer is: No. It puts the emphasis in the wrong place from the start. That said, some coaches really want the 1-RM tested. The NASM PES provides additional information on conducting such tests safely. If you have to test, test RIGID and test STRICT.

If you are able to hold off on 1-RM testing, you’ll find that most maximal loads will increase in time as your athletes develop. By the time your athletes are getting solid in lifts and patterns by their junior and senior years, the loads/reps/max numbers will be evident in their training sessions and won’t require “testing” or “max” days.

**Making Use of Assessments in Team Corrective Programming**
Corrective programming to maximize quality and limit compensations is a preseason priority, but individualizing corrective programming in a team environment can be challenging. A simple approach is to choose 3–5 areas to focus on in the warm-up period and then focus on the top 1–3 of those areas throughout the workout. These should flow directly from the movement assessments. This way, you can manage timing of each pattern, allow your athletes to hit their hot spots, give extra individual work where required, and keep training on schedule. Let’s take a look at how that might look.

**Sample Warm-Up**
This warm-up focuses on 5 areas, with 1 (30-second) set of each exercise.

- Hip: piriformis
- Lower leg: peroneals
- Thigh: adductors
- Shoulder: pectoralis minor
- Spine: thoracic spine

**Learn More About the NASM PES**
The NASM Performance Enhancement Specialization provides unique training modules focused on improving sports performance, including training for flexibility, cardio, core, balance, plyometrics, SAQ and Olympic lifting. Completing this specialization will earn certified personal trainers 1.9 CEUs from NASM. The PES program is available as a self-study course or an all-inclusive option with a live workshop. To learn more, go to www.nasm.org/pes.
### Cross-Country Preseason Programming, Junior/Senior

<table>
<thead>
<tr>
<th>MOVEMENT CATEGORY</th>
<th>DAY 1</th>
<th>DAY 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plyometrics/Explosives</td>
<td>1a. CM 1-leg box jump</td>
<td>CM 1-leg lateral box jump</td>
</tr>
<tr>
<td></td>
<td>1b. CM 1-leg mini hurdle jump</td>
<td>CM 1-leg lateral mini hurdle jump in/out</td>
</tr>
<tr>
<td></td>
<td>1c. CM overhead medicine ball throw</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1d. Barefoot balance</td>
<td>Resistance-band posterior tibialis</td>
</tr>
<tr>
<td>Core</td>
<td>2a. Kettlebell farmer’s carry</td>
<td>Loaded 1-leg lateral (side) plank</td>
</tr>
<tr>
<td></td>
<td>2b. Loaded floor bridge</td>
<td>½-kneeling overhead antirotation press</td>
</tr>
<tr>
<td></td>
<td>2c. Resistance-band straight-leg quadruped</td>
<td></td>
</tr>
<tr>
<td>Power</td>
<td>3a. 1-arm kettlebell swing</td>
<td>Reverse overhead medicine ball scoop toss</td>
</tr>
<tr>
<td></td>
<td>3b. SMR posterior tibialis</td>
<td>SMR anterior tibialis</td>
</tr>
<tr>
<td>Strength</td>
<td>4a. Rear-foot-elevated suitcase split squat</td>
<td>½-kneeling kettlebell pronating shoulder press</td>
</tr>
<tr>
<td></td>
<td>4b. ½-kneeling 1-arm lat pulldown</td>
<td>Resistance-band bent-leg hip extension on floor</td>
</tr>
<tr>
<td></td>
<td>4c. SMR quads</td>
<td>SMR quads</td>
</tr>
<tr>
<td></td>
<td>5a. Split-stance 1-arm cable chest press</td>
<td>Lunge lateral slide</td>
</tr>
<tr>
<td></td>
<td>5b. 1-arm 1-leg contralateral straight-leg dumbbell dead lift</td>
<td>1-arm 1-leg contralateral cable row</td>
</tr>
<tr>
<td></td>
<td>5c. AIS hamstring</td>
<td>AIS gastrocnemius</td>
</tr>
</tbody>
</table>

AIS = active-isolated stretching  
CM = countermovement (increasing elastic response)  
SMR = self-myofascial release
Creating a Systematic Training Program

Next, the training session would be designed to focus on 1–3 hot spots from the warm-up: in this case, the lower leg, hip, and shoulder. For the lower leg, that might include explosive and balance exercises and SMR of the peroneals. The thoracic spine may be targeted with the exercises and SMR of the peroneals. For the shoulders, upper-body upper-body pull, lower-body squat and thoracic spine may be targeted with the exercises and SMR of the peroneals. The reality: These traditions come with a danger of increasing injury and even getting into more severe health and medical trauma. Excessively increasing volumes and intensities of training also leads to increases in orthopedic injury (Nelson & Padua 2016; Aune & Powers 2016) as well as more severe situations like exertional rhabdomyolysis (Hammer 1997; Smoot et al. 2013; Rawson, Clarkson, & Tarnopolsky 2017; Lin, Chie & Lien 2006; Ehlers, Ball, & Liston 2002).

Locally, I have been pleased to see that sport coaches are beginning to recognize that there are more efficient ways of getting athletes into playing shape, setting the stage for healthier training expectations and opportunities. If a Hell Week is to be used, the day’s session should be broken up by coaching, teaching and training techniques that allow athletes time to recover between physical bouts. From Goal Setting to Team Scoring

As in all facets of life—starting with a clear goal in mind and assessing the steps to get there—is key. By building a training program based initially on assessments of injuries and compensations, the performance coach helps athletes break the cumulative injury cycle, address movement quality/quantity issues, and make improvements at his or her pace based on individual abilities. Using the principles discussed here is a useful way to clarify your systems and methods for assessment and training before meeting the team. Above all, keep your trainings simple and science-based. Don’t let overzealous parents, inevitable time or facility limitations and other factors distract you. Keep the focus on your priorities, just as your athletes keep their eye on the ball or finish line.

REFERENCES


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Terms and conditions apply. Excludes Life Time Academy and Exam Only programs.
THE INJURED INSTRUCTOR’S PATH TO RECOVERY

We love to be front and center in the gym, leading our members through their workouts, but we all get sidelined once in a while. Consider this advice on deciding when and how to push through, take a rest or readjust your role.

BY CHRISTY STEVENSON

Though fitness instructors try to train wisely, practice perfect form and stay strong, we still suffer the occasional injury or illness—sometimes job-related, sometimes not. No one enjoys experiencing physical setbacks, but they can be especially difficult for fitness pros, whose very livelihood depends on stamina, physical health and soundness of body.

There’s a strong temptation to teach through such challenges—but is that the wisest course of action? Read on for recommendations on when, how and even if you should return to your former responsibilities after an injury or illness.

**Minor (Bearable) Injury/Illness**
You can usually work around minor injuries and illnesses like occasional knee pain, a slightly tweaked shoulder or a mild cold. These minor setbacks don’t specifically affect your workout and probably won’t distract your attendees. Most likely, you won’t have to miss work much, if at all. Lisa Pitchie-Payne, a group fitness instructor based in South Florida, says she keeps leading workouts during her annual bout of laryngitis. “My members have grown accustomed to my once-a-year voiceless class,” she says. “I use even more hand signals to cue, and because I’m compensating, [members] sometimes get a tougher workout.”

Some instructors say that pushing through minor (or bearable) health issues keeps them physically, mentally and
emotionally strong. Even more-serious conditions may allow you to continue to train, provided that your symptoms don’t interfere with the workout and your healthcare team is on board. Cynthia Shepard, whose group fitness business serves several cities in South Carolina, continued to hold her classes while undergoing chemotherapy for ovarian cancer. She credits her fitness and precancer health for allowing her to teach during those difficult times.

If you feel like you can work through your injury or health issue, be sure to listen to your body, just as you always tell your clients to do. Modify how much you demonstrate, using regular patrons to model exercises. Brush up on your verbal cueing skills; be as specific and clear as possible. Be up front with staff and clients regarding your injury or illness, and remind your class members to do the same if they face a similar challenge.

**Moderate Injury/Illness**
A moderate injury needs time for healing and recovery, but it should allow you to return to work within a matter of days. Most of us have experienced moderate problems like bronchitis, a wrist strain, a broken toe or extreme muscle soreness. And seemingly minor tweaks can become major challenges. I still have painful memories of getting tiny lava rock shards embedded in my foot while surfing in Kauai, Hawaii, on vacation. By the time I got home, I couldn’t bear weight on my foot and had to seek medical attention before returning to work.

The trickiest part of moderate injury/illness is knowing exactly when to return to your job. Ideally, you’ll be consulting with a doctor or physical therapist, but if that’s not an option, then you’ll have to trust your judgment. You may not know how long recovery will take, but be sure to get coverage for your classes in advance. Don’t decide last-minute that you do, indeed, need a sub: Line up subs a few days to a week ahead, promising 24-hour notice before calling them in.

Again, listen to your body, stay humble, and modify your demonstrations and the intensity of your exercise when you was still demonstrating my yoga to them. Showing you are human resonates with your students.”

Many fitness instructors return too soon, whether out of pride, stubbornness or the need of a paycheck. Remember: It’s best to err on the side of caution; a quick return defeats the purpose if you inadvertently worsen your injury or illness and drag out your recovery. The worst decision is neglecting your health and turning a moderate issue into a serious one.

**Serious Injury/Illness**
A serious injury/illness can come on suddenly or gradually. This category may include an acute overuse injury, surgery, broken bone, pregnancy complications or a disease that degrades your physical abilities. It can take weeks or months to resolve a serious health problem, and you’ll need clearance from a medical professional before returning to work.

You should probably discuss these issues with your supervisor and be candid about the expected recovery time and quantity of coverage you will need. Ideally, your employer/facility will be helpful and flexible with your leave.

Kalene Collard Danley, an athletic trainer at a physical therapy clinic at Weber State University in Ogden, Utah, says determining when to return to work can be a complex process: “When dealing with an injury,

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### RECOMMENDATIONS FOR RESPONDING TO INJURIES OR ILLNESSES

<table>
<thead>
<tr>
<th>Severity</th>
<th>Work Impact</th>
<th>Time Off</th>
<th>Proper Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor</td>
<td>Minimal</td>
<td>Little or none</td>
<td>Take it easy to avoid worsening the injury.</td>
</tr>
<tr>
<td>Moderate</td>
<td>Pain may interrupt exercise.</td>
<td>A few days to a few weeks</td>
<td>Don’t return to work too early and risk worsening the injury.</td>
</tr>
<tr>
<td>Serious</td>
<td>Long healing or recovery time required.</td>
<td>Weeks or months</td>
<td>Consult with medical professionals before returning to work.</td>
</tr>
<tr>
<td>Severe</td>
<td>Movements become physically impossible.</td>
<td>Potentially permanent</td>
<td>Shift to different kinds of movement or to less-active fitness duties.</td>
</tr>
</tbody>
</table>

“**When dealing with an injury, we have to … look at muscle length … range of motion, gait, mechanics with lifting, and of course the healing …. All these areas must be addressed before an instructor returns fully to his/her own fitness regimen.**”

—Kalene Collard Danley, Athletic Trainer
we have to look at the whole kinetic chain to determine where the problem is and not just treat the symptoms. We look at muscle length, joint range of motion, gait, mechanics with lifting, and of course the healing of the tissue/joint/bone. All these areas must be addressed before an instructor returns fully to his/her own fitness regimen.

When instructors do get the clearance to return to leading a workout, fully or using modifications, they should continue any physical therapy recommended. Also, keep in mind that if you’ve had long-term subs, you may need to build your class back up. Be patient and realistic about your expectations; if you have a long road to recovery, switch to gentler class formats for as long as necessary.

For Tamra Stephenson, an instructor at HIGH Fitness and owner of Core Balance Fitness in Salt Lake City, a multiple sclerosis diagnosis was not a mandate to quit the job she loved. But she did recognize the need to shift the volume and intensity of her teaching schedule: “[Today,] I’m teaching about half the classes I used to. While it was hard to let go, I realized I needed to give a few classes my best energy instead of [leading] a lot of classes with half my energy. I teach mostly in the morning because MS causes you to fatigue as the day goes on. I may wear tennis shoes when teaching Pilates if the neuropathy in my feet is acting up. I didn’t plan on being an instructor with a neurological disorder. I’ve had to learn to be okay with smaller accomplishments, adjust daily and go with the flow.”

Severe Injury/Illness
This can be the worst news of all: an injury or illness so grave that we must consider giving up a specific instructing modality or quitting altogether. This can be an immediate decision, but it might occur after some time when symptoms do not improve.

For a passionate fitness instructor, this can be a devastating life event. Some who have quit have experienced an identity crisis and all the stages of grief. We tend to define ourselves by our jobs and our hobbies, and fitness is both for instructors. What happens to us if we stop doing what we love most?

First, know that stopping may not be your only option. Determine if you can adapt to a different modality of instruction. Perhaps you can still teach in the water but not on land, or maybe you can no longer do power yoga, but you can still lead meditative yoga. Also think about using your fitness skills in other ways, such as writing, coaching or mentoring.

Tonya Davis-Miller, adjunct professor at Hillsborough Community College and owner of Zenith Exercise Nutrition in Tampa, Florida, suffers from post-concussion syndrome from her athlete days, and she has a severely damaged spine from a car accident. She had to give up on classes, but she didn’t give up on fitness. “I teach certification workshops, but only with someone else capable of demonstrating the exercises,” says Davis-Miller. “I’m now changing my business from gym classes and personal training to online personal training and mentoring [of] younger trainers. [And] I’ve shifted all my personal exercise to Zen activities when I’m not dizzy.” Even though some of her medications leave her feeling “emotionally flat,” she tries to stay positive, and she continues to persevere in her career in the fitness industry.

Never Forget What Matters Most
As much as we love our jobs and the people we influence, we must remember that our health is important, too. Ignoring your body today could set you up for complications later. Be present, be mindful, be wise—and when you do experience a setback (large or small), know you’re not alone. Overcoming injuries and illnesses makes us more empathetic, relatable and knowledgeable as instructors and as human beings. And if your body does force you to slow down, modify workouts, step away for a while or change direction, you can rest assured that it’s possible to stay true to your passion for fitness. In the end, we must make sure we are pursuing our goals in a way that works for us in mind, spirit and body.

Christy Steven-son, AFAA-certified instructor, FiTOUR® ProTrainer and fitness writer/presenter, has worked in the fitness industry for more than 16 years. She owns the YouTube channel Real Fit for Real Life. Follow her on Instagram @realfitforreallife.
This generation has been much maligned. Here’s the truth about the unique skills they bring to the fitness industry... and what they need in order to succeed in the workplace.

BY FRED HOFFMAN, MEd

Millennials are the most studied generation of all time, perhaps because they are also likely the most misunderstood. They have always gotten—and continue to get—a bad rap from older generations. Why is this? Lazy data interpretation may account for some of the problem, but it’s more likely that people have heard and repeated unsubstantiated narratives, leading to prejudice.

Although not everyone agrees on the exact years that define the millennial generation, most members of this group entered the world during the ’80s and ’90s. Last year, the youngest millennials had 16 candles to blow out, and this year the oldest turned 40. Millennials (also known as Generation Y) also represent the largest generation, with about 2.5 billion members worldwide (Kurz 2012). According to the U.S. Bureau of Labor Statistics, as of 2015, they accounted for more of the workforce than any other generation, and by 2020, 46% of all U.S. workers will be millennials (Toossi 2015).

The sheer magnitude of this population—and, thus, its potential to transform the world—is not something to be taken lightly. Businesses must be prepared for a huge wave of change in both culture and mindset.

The fitness industry, which has often been resistant to change, is quickly realizing that a shift is happening, and it must adapt accordingly to survive. It’s important, too, for fitness professionals themselves to learn why they can and should embrace working with people from this generation. And if you are a millennial, it may be helpful to understand how other generations may perceive you—and how to work positively and productively with them.
Myths About Millennials

Here are a few of the most common and damaging misconceptions about this group, and some insights into what really motivates (and bothers) them.

**MYTH: THEY FEEL ENTITLED.**

*Entitlement* is the word that is most often associated with millennials—a result of constant “positive” feedback from parents, teachers and technology. For years, they have been told that they’re capable of doing whatever they desire and that they did well (even when they didn’t). Participation trophies are a classic example.

Millennials have a reputation for “expecting the world” without working hard to get it. This is false. They are willing to work hard, but they want to know beforehand that they will advance in their position and career—and they want to know how long it will take them to achieve this.

**MYTH: THEY ARE LAZY.**

Some members of this generation, like others before and after them, are lazy. But studies show that laziness is not a common attribute among millennials overall. In research conducted by Bentley University, more than half of millennials are willing to work long hours and weekends to achieve career success (CWB 2013). Another survey found that one-third of millennials reported working every day of their vacation (Alamo 2017). But they need to be motivated at work, they want their work to have meaning and they need to be recognized for hard work. And they desire reassurance that what they are doing is contributing significantly to the overall well-being and productivity of the business.

**MYTH: THEY ARE JOB-HOPPING, UNRELIABLE AND DISLOYAL.**

Data shows that these behaviors are not specific to millennials but have always been common among young workers in general. As workers age, these characteristics tend to be less true.

Millennials want the same things as other working professionals (job satisfaction, career mobility, flexible hours, etc.), but they are more willing (and more likely) to leave a job if they’re not getting what they had expected, or if they don’t believe that they will be allowed to advance in a relatively short amount of time. They love praise and enjoy being rewarded (financially or otherwise) for hard work and engagement. But if they do not feel appreciated, don’t expect them to give it their all.

**MYTH: THEY HAVE BEEN DUMBED-DOWN BY INTERNET USAGE.**

On the contrary, millennials are the most highly educated generation to date. And they want to continue to learn, especially in the workplace. Learning new skills on the job and improving overall knowledge keeps them engaged. If they are not learning something new on the job, don’t be surprised if they go somewhere else so they can.

Millennials, like all of the generations, appreciate having continuing education opportunities—formal or informal, work-related or not. They are also open to being mentored. A study from Intelligence Group found that 79% of those surveyed wanted their boss to serve as a coach or mentor (Asghar 2014).

**What Matters Most to Millennials**

Here are a few things that are important to millennials and should be considered when recruiting, hiring and managing them. Some of these desires may ring true for you, too, even if you aren’t part of this generation. Regardless, they may help you understand why millennials act and react as they do.

**A CLEAR-CUT ROLE.** Transparency is extremely important for millennials. No fluff, no hidden agendas, no fine print. Millennials want to know exactly what their specific job responsibilities are, as well as the actual potential for employment growth within the company.

**PERKS AND PRAISE.** They like challenges, but expect competitive salaries and good benefits, and they want to be recognized for their efforts. Confident, hardworking and fast-paced, millennials seek both appreciation and growth opportunities from their employers. They want flexibility in work hours and schedules, and they prefer “remote” options that allow them to work from anywhere at any time.

**GIVING BACK.** Millennials want their work to be meaningful and to enable them to “make a difference.” This generation is interested in “giving back”—working to help their communities and supporting all things local. They believe that buying local strengthens the local economy; that it creates a healthier environment. Fitness clubs and studios that source locally and...
work directly with the community are an ideal fit for this generation.

FITTING IN. There is also a need to feel that they are part of a larger group who believe in the same things, respect the same things, and rally around a common cause. Millennials need to be part of a family or a network, connected to each other, connected to who is in charge, and connected to an idea or philosophy. In the fitness business, we often talk about connected to an idea or philosophy. In other, connected to who is in charge, and family or a network, connected to each cause. Millennials need to be part of a same things, and rally around a common believe in the same things, respect the that they are part of a larger group who ideal /f_i  t for this generation.

Millennials work directly with the community are an ideal fit for this generation.

PERSONAL EXPRESSION. All generations have had their own proper dress and style. (Who can forget the days of stonewashed denim or the Goth look?) Millennials demonstrate personal expression through clothes, hairstyle, tattoos and piercings. Casual work dress is the rule. /T_h  is does demonstrate personal expression through denim or the Goth look?) Millennials can remember the days of stonewashed denim or the Goth look and when tattoos were a shame to lose a wonderful employee just because they have a pierced nose or tattoos.

WORKPLACE CONNECTIONS. Millennials view friendships with co-workers and bosses as extremely important. They want to work for a company that cares about them, and they want to feel that their work matters and is valuable to the overall organization. But be aware that they will jump ship for another company if it offers them career growth opportunities and allows them to share their ideas and input. Invest in their development to keep them!

UP-TO-DATE TECH. Having grown up in the technology age, millennials are adept at bringing technology to the workplace. They are great resources for information. They also expect technology hardware and software to be current and reliable, and they may look elsewhere if it’s not. They embrace social media and instant messaging platforms as a primary mode of communication. They also maximize tech options that allow them to work remotely: a practice that millennials embrace, as they see it promoting a healthier work-life balance. Millennials’ tech skills also make them excellent tech mentors who often enjoy teaching their older colleagues how to use and be successful with technology.

Building Bridges Between Generations

Although millennials will continue to be the dominant force in the workplace, we must keep in mind that they will be working directly with three other distinct generations for some time to come: baby boomers, Generation X and Generation Z. It is possible (and desirable) that these four generations can work as a team despite their differences. But to work efficiently and to reduce the possibility of intergenerational conflict, management should learn how each generation functions and communicates. They should also consider the positive traits and qualities that each generation brings—and know how the business can profit from their input. Understanding your team members is essential. Just ask the millennials!

FRED HOFFMAN, MEd, is owner of Fitness Resources Consulting (Paris) and author of Going Global: An Expert’s Guide to Working Abroad in the International Fitness Industry.

REFERENCES
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METABOLIC TRAINING: Is Cardio Worth Your Time?
Moderate-intensity continuous cardio workouts are the gold standard for many health organizations. But other types of training may offer equal or greater benefits, especially for some people. Here is a summary of the research and how you can adapt client programs accordingly.
Many people think of “cardio” and “aerobic exercise” as one and the same. Sometimes cardio is described as “long slow distance” exercise, or any activity that raises the heart rate high enough for the exerciser to be working but still carry on a conversation. The American College of Sports Medicine (Garber et al. 2011) describes cardio as “exercise that uses large muscle groups and is done for 30–60 minutes.” In all of these cases, the type of cardio being discussed is moderate-intensity continuous training, or MICT.

When asked, fitness professionals are almost unanimous in their confirmation that MICT is important. Many trainers and clients enjoy longer, more moderately paced workouts, such as a weekend run or a day of rails-to-trails bicycling. However, considering clients’ time-crunched schedules and the popularity of high-intensity interval training, the question becomes this: Are MICT workouts worth the time commitment? These workouts can take hours to complete. On the other hand, many respected health associations recommend MICT almost exclusively due to its proven ability to lower disease risk. But are other forms of exercise equally effective—or even more effective? And is MICT safe and effective for all participants? Some of the answers may surprise you.

What Is MICT (“Cardio”)?
Certainly, MICT has benefits for health, fitness and sports performance. It is also useful when trainers are working with special populations and when it is used as a modality for rehabilitation from heart attacks. In fact, the activity guidelines of many health associations feature MICT. For instance, the American Heart Association recommends 150 minutes per week of MICT, or 75 minutes per week of vigorous exercise, or a combination of both (AHA 2016). Examples cited include walking, jogging, swimming and biking. The AHA also suggests there is benefit even when the exercise is divided into segments of just 10–15 minutes, adding up to 30 minutes per day and done 5 days a week. The aerobic exercise recommendations of the ACSM (Garber et al. 2011) and the newly updated ones from the American Diabetes Association (Colberg et al. 2016) are identical to AHA’s with one exception: ADA also recommends 3 or more minutes of light activity every 30 minutes during “prolonged sedentary activities” to benefit blood glucose management, especially among people with type 2 diabetes (ADA 2013; ADA 2016). The U.S. Department of Health & Human Services also suggests a program of 150 minutes per week—and further acknowledges the benefits of increasing baseline activities such as standing, walking slowly, and lifting lightweight objects (2008). Several of these
groups do mention nontraditional exercise, such as yoga, resistance training, boot camp and Pilates, but these forms may not be receiving the widespread attention they deserve. This is particularly important to note when we consider the research indicating that MICT may not be a good choice for all clients.

First, some studies have shown MICT to be ineffective for a percentage of individuals. In 1999, Bouchard et al. showed that different people who followed identical MICT exercise programs had dramatically different changes to their VO₂max. (To review, VO₂max is the maximal oxygen uptake used during exercise, measured in milliliters of oxygen per kilogram of body weight per minute.) In this MICT study, the overall average increase in VO₂max was ~400 ml/kg/min, and some subjects improved their score by as much as 1,000 ml/kg/min. However, many subjects did not improve their VO₂max.

Furthermore, it’s possible for MICT to cause negative effects in individuals. In 2012, Bouchard et al. used 1,687 subjects to investigate adverse physiological responses from the MICT protocol. The results show that 8.4% of subjects had an adverse change in insulin, 12.2% had systolic blood pressure increases, 10.4% responded adversely with triglyceride measures, and 13.3% showed a decrease in HDL (“good”) cholesterol levels. These adverse effects increase a person’s risk for diabetes and cardiovascular disease. Also, 7% of the subjects experienced more than one of these adverse responses. (The adverse response traits are independent of the improvement in cardiorespiratory fitness.) This is evidence that MICT is good for some clients, but not so for others.

What Is Metabolic Training?

**Metabolic training** generally refers to any type of high-intensity exercise that includes anaerobic training, such as interval training, Zone 3 workouts and resistance training, all of which will be discussed later in this article. Perry (2016) indicates that metabolic training is structural (spine-loading/core) and compound (multijoint) exercises with little rest between exercises, with the goal of maximizing calorie burn and increasing metabolic rate during and after the workout. Similarly, DuVall (2016) describes metabolic training as structured patterns of exercise and rest to produce a desired response from the body. And Verstegen (2013) states that metabolic training includes exercises that improve the capacity of energy systems—and thus, in the traditional sense, it is interval training.

A key benefit of metabolic training is increased excess post-exercise oxygen consumption (EPOC). EPOC can be defined as disequilibriums in physiological function that lead to an increase in recovery metabolism (McArdle, Katch & Katch 2014). The increased calorie burn is caused by the body working overtime to get body functions back to resting metabolism. To do this, the body needs to resynthesize lactate to glycogen; reload hemoglobin with oxygen; start tissue repair; and redistribute calcium, potassium and sodium in the muscle cell (McArdle, Katch & Katch 2014).

EPOC is dependent on the intensity and duration of exercise as well as the participant’s training status and gender (e.g. females have less muscle mass). Elevated post-exercise metabolism can last anywhere from 90 minutes to 24 hours.

**What Is Interval Training?**

Simply put, interval training is training that alternates between intense effort and periods of rest or lower-intensity exercise. Most of the time, when fitness professionals talk about metabolic training, they are referring to different types of interval training or training that involves both aerobic and anaerobic exercise. *NASM Essentials of Personal Fitness Training* (2017) states that cardiorespiratory training, in fact, must train both the aerobic and anaerobic energy systems in order to achieve its most common goals, which are:

- to improve health by reducing cardiovascular risk factors such as high body fat, undesirable blood lipids and high blood pressure;
- to improve performance in sports, work and everyday activities;
to maintain a healthy weight; and
• to reduce stress levels.
Interval training dates back to 1912, when Hannes Kolehmainen, a Finnish middle-distance runner, used race pace intervals to train for the Olympic 10,000-meter race. Later, Emil Zatopek—who was a gold medalist and Olympic record-holder in middle-distance races in the 1952 Helsinki Olympics—also used wind sprints with jog recoveries.

Robbins (2015) describes interval training as it relates to running intervals in preparation for races: Sprint 200 meters, recovery run 400–600 m, sprint 200 m and so on. This sequence can stress the anaerobic energy system while giving the body time to remove some waste products and replenish some energy. According to Robbins, the benefits of interval training also include
• burning more calories in a shorter period of time;
• avoiding monotonous exercise intensities;
• improving cardiorespiratory efficiency; and
• boosting EPOC.

Some types of interval training are zone training, Tabata, high-intensity interval training and moderate-intensity interval training.

**WHAT IS ZONE TRAINING?**
Cardiorespiratory training must include overload- ing in order to trigger adaptations and improve metabolism. However, recovery is also vital, since it is during recovery that the adaptations actually occur (NASM 2017). For this reason, NASM suggests a type of interval training called zone training. Zone training involves alternating among three zones based on heart rate maximum, with HRmax calculated by the following formula: 208 – (0.7 × Age).

**ZONE 1** is exercise at 65%–75% of HRmax. Depending on level of fitness, a client can train in Zone 1 for a continuous 15–45 minutes. (In MICT, the exerciser essentially stays in Zone 1 for the entire workout.)

**ZONE 2** is exercise at 76%–85% of HRmax, which is usually close to a person’s anaerobic threshold. At the anaerobic threshold, the body can no longer meet its demand for oxygen, so anaerobic metabolism takes over. A client cannot train at this heart rate for long and may cycle back to Zone 1 for recovery.

**ZONE 3** is exercise at 86%–90% of HRmax. A client might be able to exercise for 30–60 seconds in Zone 3, then recover in Zone 1 or Zone 2 before repeating Zone 3. Training once a week in Zone 3 is generally enough to confer the benefits associated with Zone 3, while not risking overtraining. (Training in Zone 3 is a form of high-intensity interval training, or HIIT.)

**WHAT IS HIIT?**
Some fitness professionals are confused by the terminology used to describe high-intensity interval training and the studies done by Japanese researcher Izumi Tabata (1996).

HIIT is one of the hottest forms of training in the fitness industry (Thompson 2016). This training technique alternates between intervals of high-intensity effort and recovery. With HIIT, the work-to-rest ratio protocols that trainers can use with their clients are unlimited.

**TABATA** is a HIIT training protocol with specific guidelines: 20 seconds of all-out effort followed by 10 seconds of passive rest, done continuously for 4 minutes. Tabata used the protocol to investigate the effects of HIIT on the Japanese Olympic speedskating team. The team’s coaches wanted to know if a decrease in training volume and an increase in intensity could maintain or improve anaerobic capacity and VO₂max. By the end of the study, the HIIT group had improved their anaerobic capacity by 28% and their VO₂max by 7 ml/kg/min.
WHAT ARE THE BENEFITS OF HIIT?
One of the strongest arguments against performing MICT exclusively is that HIIT has been found to provide almost identical benefits but in a shorter amount of time (Gibala et al. 2012). In fact, HIIT research demonstrates that results similar to those of MICT can be achieved with up to 90% less training volume and 67% less time commitment (Comana 2014). Here’s a look some other HIIT research results.
• Whyte, Gill & Cathcart (2010) worked with 10 men who were classified as overweight/obese and sedentary. Over the course of 2 weeks, the researchers had the men perform 6 sessions of 4–6 Wingate (30-second) sprints with 4.5 minutes of recovery between sprints. The results after 2 weeks showed that VO2max and Wingate power increased and waist and hip circumferences decreased. Also, 24 hours postworkout, the subjects’ insulin sensitivity and resting fat-burning rate were higher, while their systolic blood pressure and resting carbohydrate burning were lower.
• Hazell et al. (2014) had 15 recreationally active women perform 6 weeks of sprint interval training. The subjects did 4–6 (30-second) maximal sprints on a treadmill with 4 minutes of rest between sprints, 3 times per week. The sprint interval training decreased the subjects’ body fat by 8% and waist circumference by 3.5%. There were increases of 1.3% in fat-free mass, 8.7% in VO2max, and 4.8% in peak running speed. The researchers conclude that their training protocol is a time-efficient mode of training for decreasing body fat, increasing aerobic capacity, increasing peak running speed and increasing fat-free mass in healthy young women.
• Tremblay, Simoneau, and Bouchard (1994) compared the effects of MICT exercise and HIIT on fat loss and muscle metabolism. The MICT group did 20 weeks of endurance training on a cycle ergometer, 4 then 5 times per week, 30–45 minutes per session, at an intensity of 60%–85% of heart rate reserve (HRR). The HIIT group did 25 half-hour aerobic training sessions at 70% of HRR plus 19 short interval sessions (starting with 10 sets of 15–30 seconds of work, increasing later to 15 sets) and 16 long interval sessions (starting with 4 sets of 60–90 seconds of work, increasing later to 5 sets). In sum, the MICT group did more than 80 sessions (over 40 hours total), while the HIIT group did 60 sessions (about 16 hours total).

The total calories burned for the endurance (MICT) group was greater, at 28,757.04, whereas the HIIT group burned 13,829.17—a difference of 14,927.87. The remarkable finding in this study was that while the HIIT group burned fewer calories, they decreased their subcutaneous fat far more than the MICT group did. The HIIT group also had a significant increase in enzymes promoting fat metabolism for muscle contraction. The bottom line: HIIT may confer greater fat loss and metabolism benefits than MICT, and in an abbreviated timeframe.

Making “Cardio” More Effective
For clients who don’t respond as well to MICT but enjoy this type of workout (distance runners, for instance), fitness professionals have many options for exercise programming. One option is to alternate workouts among MICT, high-intensity continuous training and HIIT. Here are two others.

With resistance training, clients can improve fitness, reduce weight and body fat, increase bone mineral density and improve self-confidence.
INCREASING EXERCISE DURATION OR INTENSITY
Consider the findings of Ross, de Lannoy & Stotz (2015), who investigated the effect of different intensities and durations on improvements in VO₂max. There were 121 middle-aged (average age 53.2 years) subjects in the study, all of whom had abdominal obesity. Subjects were assigned to one of three training protocols:

- low-amount, low-intensity training for 30 minutes at 50% VO₂max
- high-amount, low-intensity training for 60 minutes at 50% VO₂max
- high-amount, high-intensity training for 40 minutes at 75% VO₂max

The results indicate that increasing the duration or intensity of a training session can eliminate the problem of “nonresponders,” or people whose VO₂max is not improved by a MICT workout. In this study, 38.5% in the low-amount low-intensity group were nonresponders (their VO₂max did not improve). When the duration was doubled, only 17.6% (those in the high-amount low-intensity group) were nonresponders. And when both intensity and duration were increased, all of the participants showed improvements in VO₂max.

ADDING RESISTANCE TRAINING
Another way that trainers can help clients be responders is to have them perform resistance training. Not only is a benefit derived from burning more calories, but clients can also improve fitness, reduce weight and body fat, increase bone mineral density and improve self-confidence. Artero et al. (2012) did a review of literature on the effects of increased muscle strength and found that strength training has a protective effect against cancer and all other causes of mortality in healthy middle-aged men, men with hypertension and patients with heart disease. Westcott (2012) completed another review of the literature on resistance training, and he found that perks included improved sports and fitness performance, movement control, cognitive abilities, self-esteem, walking speed and functional independence (for elderly clients). Further, Westcott’s review indicated that resistance training can promote bone development, with studies showing a 1%–3% increase in bone mineral density. Also notably, he shared that weight training can reduce lower-back pain and the discomfort of arthritis and fibromyalgia.

Get Creative With Program Design
Even though many health resources recommend MICT for improved fitness and health, fitness professionals and clients should be aware that the benefits of other forms of exercise can be as good as—or better than—those of MICT. This is not to suggest that MICT does not have benefits; rather, it’s an indication that other forms of exercise can (and perhaps should) be included along with MICT in a total training program.

To summarize, cardio/MICT has been shown to reduce cardiovascular risk factors, improve blood lipid measures, lower high blood pressure, improve sports performance and reduce anxiety. But it is important to remember the research done by Bouchard et al. (1999) and Ross, de Lannoy & Stotz (2015), which showed that some people do not respond to MICT. For this group, increasing the intensity and duration of training may elicit the desired physiological response. From Tremblay, Simoneau & Bouchard (1994) to Hazell et al. (2014), we learned that interval training at high or moderate intensities produces very good results for burning calories during and after exercise, improving VO₂max, increasing fat loss, reducing waist and hip circumferences, reducing systolic blood pressure and increasing fat-free mass. Further, weight training has benefits for almost every aspect of health and fitness, especially its role in increasing bone mineral density and weight loss. With so many options for exercise, fitness professionals shouldn’t hesitate to be creative with their programming in order to help their clients achieve all of their goals in a safe, effective and time-efficient manner.

References

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Glossary

Cardiorespiratory Training: Cardio is widely used to describe any type of workout that is predominantly aerobic with sessions that last for 30 minutes or more. For many industry professionals, cardio is synonymous with moderate-intensity continuous training (MICT). Examples: distance running, swimming, cycling. (Note: NASM 2017’s definition of cardiorespiratory training includes both aerobic and anaerobic exercise; see Zone Training below and “What Is Zone Training?” in the article.)

High-Intensity Interval Training: HIIT is exercise that alternates between short periods of very intense (vigorous) exercise and recovery periods.

Interval Training: This is any form of metabolic training in which participants alternate between periods of intense/increased effort and periods of rest/lower-intensity exercise.

Metabolic Training: This encompasses any kind exercise that is high-intensity and alternates between periods of work and rest with the goal of increasing metabolism. Examples: Zone 3 training, HIIT, Tabata, weight/resistance training.

Tabata: This refers to a type of HIIT with a very specific protocol: 20 seconds of all-out effort, followed by 10 seconds of passive rest, done continuously for 4 minutes. Many people mistakenly refer to all HIIT as Tabata, but the two are not synonymous.

Zone Training: This is NASM’s protocol for cardiorespiratory training. It is a form of interval training that divides work into three zones, with Zone 1 being the equivalent of MICT and Zone 3 the equivalent of HIIT. (See also “What Is Zone Training?” in the article.)

REFERENCES


Cameron, F. 2014. HIT, HVT, or VR7: Which IT are you doing and do you know the differences? Accessed Mar 30, 2017. blog.nasm.org.


To earn 2 AFAA/0.2 NASM CEUs,
CEU QUIZ: Metabolic Training: Is Cardio Worth Your Time?

LEARNING OBJECTIVES: After reading the article, you should be able to:

- Define the types of cardio training and metabolic training, and explain their benefits.
- Summarize most health organizations’ recommendations for aerobic physical activity.
- Discuss the research on moderate-intensity continuous training (MICT) versus other training protocols.
- Adapt clients’ training programs based upon their goals and their responses to cardio.

5. What do additional research findings regarding MICT protocols indicate?
   a. MICT was effective at improving maximal oxygen uptake during exercise (VO_{2\text{max}}) for all subjects.
   b. Some subjects increased VO_{2\text{max}} by more than 2,000 ml/kg/min.
   c. Many subjects did not improve VO_{2\text{max}}.
   d. The average increase in VO_{2\text{max}} was 600 ml/kg/min.

6. The National Academy of Sports Medicine (2017) indicates that benefits of “cardio” training include:
   a. improved capacity to eat more of all foods
   b. reduced cardiovascular risk factors
   c. increased levels of blood lipids
   d. elimination of resistance training from your program

7. In order to achieve the benefits of “cardio” training, what does NASM (2017) recommend?
   a. training with a Tabata HIIT protocol
   b. training in Zone 3, 5 times/week
   c. alternating training among Zones 1, 2, and 3
   d. using metabolic training exclusively

8. Perry (2016) described metabolic training as:
   a. any exercise that increases the demand of oxygen to the muscles and is done for a long period of time
   b. training in Zone 1, then progressing to Zone 2, and completing the workout in Zone 3
   c. performing structural and compound exercises with little rest between exercises to maximize calorie burn and increase metabolic rate during and after the workout
   d. the increased calorie burn caused by the body working to get body functions back to resting metabolism

9. Which of the following best defines EPOC?
   a. training in Zone 1 that consists of exercising at 65%-75% of HR_{\text{max}}
   b. the body working overtime to get body functions back to resting metabolism
   c. carbohydrates and fats being burned simultaneously during exercise
   d. a network of hormones and enzymes that affect how we burn fuel

10. EPOC is dependent on all of the following EXCEPT:
    a. intensity and duration of exercise
    b. training status
    c. gender
    d. hours of sleep prior to the workout

11. Why is HIIT among the most popular training styles used in the fitness industry?
    a. Many health organizations recommend HIIT almost exclusively in their activity guidelines.
    b. An individual can achieve the same results with HIIT as with MICT, but with 90% less training and in 67% less time.
    c. Individuals prefer moderate-intensity training over high-intensity training.
    d. It is less demanding for individuals because it does not include anaerobic exercise.

12. Tabata HIIT protocol refers to 4-minute continuous sets that pattern which of the following work-to-rest ratios?
    a. 20 sec all-out exercise, 20 sec active rest

13. Tremblay, Simoneau & Bouchard (1994) compared MICT and HIIT. What was their major finding?
    a. The total calories burned for the MICT group was 13,829.17.
    b. The HIIT group burned more calories than the MICT group.
    c. The MICT group produced higher levels of enzymes promoting fat metabolism.
    d. The HIIT group decreased its subcutaneous fat more than the MICT group did.

14. Research shows that some people do not show improvements in VO_{2\text{max}} when they do MICT training. According to Ross, de Lannoy & Stotz (2015), what combination of exercise intensity and duration eliminated “nonresponders”?
    a. high-amount, high-intensity exercise (40 min at 75% VO_{2\text{max}})
    b. low-amount, low-intensity training (30 min at 50% VO_{2\text{max}})
    c. high-amount, low-intensity training (60 min at 50% VO_{2\text{max}})
    d. low-amount, high-intensity training (30 min at 75% VO_{2\text{max}})

15. For clients who typically perform only MICT workouts, what can a fitness professional do to improve their fitness and health results?
    a. measure resting heart rate (RHR) and VO_{2\text{max}} before and after exercise
    b. add resistance training, and alternate MICT workouts with HIIT workouts
    c. decrease the duration and intensity of workouts
    d. alternate between MICT workouts and long slow distance training

purchase the CEU quiz ($35) and successfully complete it online at www.afaa.com.
BRIAN NGUYEN: DOWN TO EARTH & FLYING HIGH

THE MAN WITH THE DRAGON TATTOO: NGUYEN PROUDLY SHOWS OFF HIS SPIRIT ANIMAL ON HIS ARM—AND THEIR SHARED FIERY FEARLESSNESS ON HIS FACE.
It all changed with one tragic tackle on April 10, 2005. Brian Nguyen was head athletic trainer (AT) of the Los Angeles Avengers in the Arena Football League. Ambitious, dedicated and caring to the core, he was right where he wanted to be: training the players on a professional sports team.

The Avengers had just scored a touchdown. On the ensuing kickoff, one of his tacklers piled into the kick returner and a defender—then collapsed.

Al Lucas, 26, was unconscious on the field when Nguyen arrived at his side. "As the head AT, I was holding his head and his neck," Nguyen recalls. "And then he stopped breathing."

Soon afterward, Lucas was pronounced dead at a Los Angeles hospital. "His C3 had exploded from the impact," Nguyen says. "It was just such a heavy thing to hold for the rest of the season. It hit me in the heart."

That dark day would, in fact, trigger a change of heart in Nguyen—and alter the trajectory of his career.

Today, this NASM PES and CES trains clients from all walks of life in Redondo Beach, California, but he is best known as the personal trainer who puts Hollywood A-listers through their paces—and the man partially responsible for Mark Wahlberg's fighting physique.

Those who know Nguyen say his persistently impassioned demeanor and simmering intensity inspire even the most reluctant nonathletes to believe they could beat Usain Bolt in a footrace.

Though he came close to losing his passion after that tragic event in Los Angeles, it turned out that the same forces that propelled him into a career in pro sports would send him in a new direction and make him one of the most renowned fitness professionals in the business.
It’s All About the Work
When American Fitness caught up with Nguyen for a call this spring, he was in a relaxed state—admittedly not his natural frequency. “This place is beautiful, man,” Nguyen says by phone from Kauai, Hawaii. “There’s an amazing breeze. The flowers are incredible. I just got back from ziplining with my daughter, which was so special. I feel very lucky to be here right now.”

Then, a pause.
“But I’m ready to get back to work,” he says with a jolt of excitement.
For Nguyen, taking a brief break from his hectic work schedule (the Hawaii vacation lasted only a few days) is a rarity. For more than 20 years, he’s pushed his limits in hopes of becoming the best so that he can help others to do the same. That has meant working harder than anyone else…showing up early and staying late…defeating darkness and difficulty to fuel progress…and, most of all, giving everything he has to as many people as possible.

Indeed, this diehard dedication has enabled Nguyen to build an impressive résumé. He started out working his way up to the National Football League before becoming head AT for the Avengers. In addition to working with celebs like Wahlberg, Mila Kunis and Will Ferrell, he has been a go-to trainer and coach for sports movies like The Longest Yard, Invincible and The Fighter. His track record is proof positive that grand efforts can give rise to grand rewards.

A Fiery Passion Is Ignited
Nguyen grew up as a first-generation American, born to a Vietnamese father and Filipino mother. “It was the typical Asian household,” he says. “The biggest thing my Dad wanted was to have a Year-of-the-Dragon-born son. He got one.”

In the Chinese Zodiac, the Dragon is the mightiest of all signs. Dragons symbolize dominance and ambition, and prefer to live by their own rules. Allowed to explore their will without others hampering their progress, they usually find great success, according to ancient lore. Dragons are driven, unafraid of challenges and willing to take risks. With such character attributes baked into his birth year, Nguyen knew early on that his parents expected a lot from him.

“The only thing they ever wanted me to do was to study and go to medical school. And I hated studying,” says Nguyen. “But no matter what it is you choose to do, there’s this mentality Asian parents have that you’ve always got to do better and be better.” Nguyen wholeheartedly embraced their “Today I Can Do Anything” attitude (if not their my-son-is-a-doctor dreams).

After high school, Nguyen enrolled at UCLA as a kinesiology major and set his sights on becoming a member of the school’s volleyball team. He loved to play and thought he’d make a great addition to their roster—until he walked into the gymnasium.

“When I went to try out, I noticed that everyone else was about 3 feet taller than me,” Nguyen says, exaggerating slightly. Standing 5’4”, he would never play NCAA Division I volleyball, but he wasn’t ready to give up on sports altogether.

“How could I be involved if I wasn’t a player?” he asked himself. Then he noticed a guy wearing a UCLA Sports Medicine T-shirt and asked him about it. The wearer said he was an intern for the Acosta Center, UCLA’s athletic complex, which was accepting applications for the upcoming football season.

Something clicked. Nguyen immediately applied to the athletic department and soon was accepted into the program.

“I didn’t know anything about football at the time, but I knew that this was where I needed to be;” he says. “And I fell in love with it.”

Nguyen soon discovered that rehab is a huge component of an athletic trainer’s work. “That’s when I [began to learn] how to program exercise for rehabilitation,” he says. “I loved the equation of being able to provide exercise prescriptions and get results that allow players to achieve their best.”
Going Pro

Always thinking of his next move, Nguyen decided that if he wasn’t going to become the doctor his parents had hoped for, he’d have to do something equally impressive. “I knew that I was going to work in the NFL,” he says. He also knew that his UCLA sports medicine internship offered an excellent foundation for him to get there.

“I realized that the AT staff at UCLA had great connections. And so I decided I was going to be the best I could possibly be. I was going to work the hardest because I know these guys appreciate hard work. They always talked about how they want to see us working all day and all night, and so that’s what I did. And to my parents’ dismay, I said, ‘Screw the studies; I’ll be good with Bs and Cs.’”

His work ethic and ability to connect with players, coaches and ATs paid off.

“I applied for NFL gigs after my first year of UCLA sports medicine. One morning I got a call asking if I wanted to do a summer camp with the [Jacksonville] Jaguars. And I responded, ‘Would I ever?!’ I hung up the phone and then had to ask, ‘Where the hell is Jacksonville?’ I did the AT stuff there for the summer and got to feel what pro sports was like.”

The Jaguars’ AT staff was so impressed that they asked him back the following two summers. During that time, he earned his CSCS (certified strength and conditioning coach) and NATA (National Athletic Trainer Association) credentials. After he graduated from UCLA with a sports medicine degree, he took the position of full-time assistant AT to the Jaguars and, a few years later, the L.A. Avengers “recruited” him to be chief trainer and conditioning coach. He jumped at the chance to move back to his home state and to take on a more prominent role with a professional team.

A Forte in Fitness—and Leadership

The Avengers job was a big deal after working in Jacksonville with respected NFL strength and conditioning coaches like Jerry Palmieri and Greg Finnegan. “Now I was the guy on the field with the players. I was the guy that warmed them up and worked on their patterns. I did the in-season and offseason stuff. [When I was an assistant AT], I appreciated...
Brian Nguyen's Career Highlights

PRO SPORTS
» Assistant athletic trainer, Jacksonville Jaguars, National Football League, 2000–2002
» Head athletic trainer, Los Angeles Avengers, Arena Football League, 2002–2006

MOVIE WORK
» Coach and athletic trainer for The Longest Yard, Semi Pro, BASEketball, The Game Plan, We Are Marshall, Invincible, The Fighter

CELEBRITY CLIENTS
» Mark Wahlberg, Mila Kunis, Will Ferrell, Blake Griffin, Amy Adams, Adam Sandler, Dwayne "The Rock" Johnson

CERTIFICATIONS/CREDS
» NATA ATC
» NASM Master Instructor, CES, PES
» NSCA CSCS
» FMS I, II, SFMA I, FCS
» Speaker, Perform Better, a functional fitness company
» Inaugural Member, Under Armour® Performance Team
» Inaugural Master Instructor, Everlast®
» Master Instructor, TRX®
making the Gatorade and taping the ankles, but it’s so much fun when you’re on the field working with the players and getting them ready for the game.”

Back in Los Angeles, Nguyen met Luga Podesta, MD, team physician for the Avengers. Podesta is now the director of sports medicine at St. Charles Orthopedics in East Setauket, New York.

“We worked together as a sports medicine team, along with another AT, Marco Nuñez, who was Brian’s assistant,” Podesta says. “We were in communication 10 times a day at minimum regarding players and treatments and evaluations. I would be with him at least three times a week during the season—twice to evaluate patients in the middle of the week and then [again] at home games.”

Podesta, whose résumé includes employers like Major League Baseball and the NFL, knew that Nguyen was remarkable.

“I’ve been around a lot of trainers at every level. Brian is one of the best, if not the best, that I’ve worked with over the years. I knew he wasn’t long for being confined to the training room. His forte was fitness and getting guys in optimal shape.”

Adds Nuñez, MS, ATC, now the head athletic trainer for the Los Angeles Lakers: “Brian was happy when other people succeeded. For example, when a player would score a touchdown, it was almost as if he scored the touchdown. That’s how happy he was for his athletes.”

Returning to Southern California also gave Nguyen a chance to dabble in another high-profile world: Hollywood.

“One day I got a call from a production company, which is now known as Game Changing Films. They were looking for an AT and strength and conditioning coach for a football movie,” he explains. The film would be Adam Sandler’s 2005 remake of The Longest Yard. “From that one movie—which was a huge production—I got to know a lot of producers. I was asked back the next summer to take care of the movie Semi Pro. That was followed by BASEketball, The Game Plan with The Rock and We Are Marshall.”

Nguyen enjoyed the extra work and the added challenge of training actors, but he never expected to leave pro sports. Then came the loss of Al Lucas on that April afternoon at Staples Center, and something changed.

Nuñez explains that Nguyen saw his players as more than athletes or professional colleagues. “He saw them as friends and family.”

“The next year, he and I would talk on a regular basis, and I could tell that his love affair for athletic training and being in the sports environment had changed. You could tell he wanted to move on from it,” says Nuñez.

For Nguyen, a light had gone dark. “I stopped caring about AT. My attitude and approach wasn’t the same anymore. I’d lost the vigor for it,” he says. “After that day, every single thing I did reminded me of how much control I don’t have when it comes to injuries.”

Building Actors Into Athletes While Staying Grounded

A few months later, Nguyen got a call to work on a football movie called Invincible, starring Mark Wahlberg. The actor was in incredible shape, Nguyen says, but he kept getting injured while running drills on set. When Wahlberg asked him about the endless injuries, Nguyen recognized the problem: a distinct lack of functional training. “You train to look camera-ready,’ I told him, ‘but that won’t translate to the field the way you want it to.” The actor was impressed with Nguyen’s knowledge and expertise and asked him to join his infamous “entourage” and become his full-time trainer. “As much as I loved taking guys from being in the worst possible place and helping them overcome injuries, I decided that I was going to do the Wahlberg thing,” he says. “I went for it and he gave me so much opportunity. While he needed my help keeping him from injury, it was still very much fitness-focused. That’s how I got my entry into the fitness industry and I began to make a lot of connections.”

Nguyen got a call to work on a movie starring Mark Wahlberg. When the actor asked Nguyen about his endless training injuries, Nguyen recognized the problem: a distinct lack of functional training. The actor was impressed.
Brian Nguyen’s Core Values

**Attitude**—be positive and solutions-minded.

**Move**—well and move often.

**Best**—bring it.

**Improve**—1% a day.

**Team**—together everyone achieves more.

**Inspire**—through FUN!

**Over deliver**—exceed expectations.

**No excuses**—(see Attitude).
Twelve years later, Nguyen still works with Wahlberg and remains the head of athletic performance for “The Real Entourage,” though he no longer trains the actor full-time. He opened BRIK Fitness in 2013 in Redondo Beach, California, where he worked just as zealously with a wide range of not-so-famous clients.

One of those clients is Bo Kaplan, president and CEO of Lakeshore Learning. “He gives more than he asks,” Kaplan says. “And that’s rare in this day and age. He has such a generous heart. He genuinely wants to make your whole life better.”

Kaplan, a 42-year-old husband and father of five, believes that one of Nguyen’s greatest assets is his ability to relate to and inspire his clients.

“He would set goals, walk me through what we’re doing and why—but not in a way that was over my head or boring, or speaking so he could speak. He was more into being interested than interesting. This is always a great quality for anyone offering a service. He knew what was important to me and was able to move me on the things I was wrong about.”

Still Leading With His Heart

Nuñez, now at the pinnacle of pro sports training with the [Lakers], still marvels at Nguyen’s approach. “His work ethic is incredible. His commitment and passion for what he does are incredible. There are only a few people that I’ve ever met that have that much passion and commitment for what they do. That’s why he’s been so successful.”

Never satisfied with the status quo, Nguyen continues to find ways to make an impact on the fitness industry for clients and coaches alike. In May of 2017, he shuttered the doors of BRIK Fitness and started a new endeavor, Elementally Strong, which he describes as a business “dedicated to the art and practice of strength training, coaching and character development.”

Nguyen has also taken on the role of master instructor for TRX® and speaker for Perform Better, and this year he also became an inaugural member of the Under Armour® Performance Team and an inaugural master instructor for Everlast®.

“When I was on the road with Wahlberg, I read this book called Conversations With God,” he says. “In it, there’s a passage that states, ‘A true master is not the one with the most students, but one who creates the most masters.’ That quote resonated with me and made me realize that I must teach. [My knowledge] isn’t going to stop with me; I want to be able to share what I have.”

One of Nguyen’s greatest priorities is to make sure that today’s coaches and trainers are in it for the right reasons and willing to do the work—and whether they’re ready to suffer some dark days along the way.

“Every trainer needs to ask themselves what they really love about being a coach. Because that’s what it is. Nobody cares about what you know until they know how much you care. That’s tantamount to life. Ultimately, you are going to be a coach for someone else. If you’re the person that’s taking a bunch of selfies or you care more about your workouts than your clients, you’re going down the wrong path. People don’t follow you because you’ve got a great body. They follow you because you care.”

He adds, “You will have a hard time with this profession if you don’t realize why you’re in it. If you get frustrated because your clients aren’t committed—that’s on you. It’s on you to help them create the commitment.”

“Every trainer needs to ask themselves what they really love about being a coach. People don’t follow you because you’ve got a great body. They follow you because you care.”

—Brian Nguyen

RYAN HALVORSON is an award-winning writer, editor and content marketing specialist based in San Diego.
The Hybrid

A Vital Link in Today's
Don’t typecast yourself as simply a personal trainer or a group exercise instructor. Today’s clients demand a mix of fitness products from pros with diverse skillsets. Blurring the lines can help your business thrive in these changing times.
The lines between personal training and group fitness instruction have all but vanished as trainers teach more classes and instructors deliver more personalized services. If you’re still labeling yourself as one or the other, you’re probably limiting your professional and financial potential.

As far as our customers are concerned, fitness is fitness—whether we’re helping them one-on-one, one-to-few or one-to-many. Meanwhile, technology and broad social trends are accelerating vast changes in the way consumers want to experience our expertise. We need to be sure we are evolving with them. That means shifting to a hybrid style of defining, designing and delivering our fitness services. While we don’t need to be jacks-of-all-trades, we do need to develop new strategies to increase our earning potential over the next 3–5 years and adapt to the changing marketplace. Amazing opportunities await those who are prepared to take advantage of them. That starts with getting rid of labels and widening your perspective.

Rethinking the Roles of Fitness Pros

Getting people fit for the sake of a dress size or better 10K time will never go away. But our concept of fitness must broaden to counter the effects of sedentary lifestyles, chronic disease and ever-expanding waistlines. More than ever, fitness has to work with life and become a sustainable daily practice. Thus, the roles and the products of trainers and instructors must shift as well.

The critical first step is to explain what we do versus who we are. You are more than your job title: a personal trainer or a group fitness instructor. You are a fitness professional specializing in delivering a service to a target market to achieve a goal.

Personal trainers and group instructors used to work on opposite ends of the fitness spectrum—which defined training as the elite product and group exercise as the product for the masses. But these days, large groups aren’t always free, and training doesn’t always mean high-priced, one-on-one services.

Consumer tastes are changing. Not everyone wants one-on-one attention, but some do want personalized programs. And not all those opting for complimentary...
group fitness are interested in the giant, mega, dance-based, beat-driven classes—but they may still want the community. That’s why it’s so crucial to rethink what we provide and to whom we provide it. In the end, we deliver products. How should they be positioned, and how can we ensure we are prepared to provide the best fitness experiences?

Redefining (and Adding More) Fitness Products
It’s time to stop defining offerings by the professional—personal training versus group ex—and start basing our goals on what clients want in a fitness experience. It’s better to think of fitness products on a continuum with low-touch, lower-priced options on one end and high-touch, higher-priced options at the other. For example, we can envision our products served on a spectrum from virtual...to large group...to small group...to private/semiprivate (see table on page 48).

We also can think in terms of which services have the lowest risks and smallest barriers to entry for consumers and which have the highest. And we have to think about how to add these products to our portfolios. Here’s a look at how these common product categories fit in the changing fitness landscape—and the skills required of the fitness pros who provide them.

VIRTUAL TRAINING
Computers, mobile devices and wearable technologies enable virtual training, which has the widest potential appeal because it poses the lowest risk and smallest barriers to entry for consumers. So, it’s no surprise that virtual is the fastest-growing segment of our industry. Some professionals fear virtual could replace live options, but learning to embrace and work with virtual also creates an opportunity to increase our reach beyond our four walls. Virtual training can include:

ACCOUNTABILITY. Virtual accountability is a great starting place for new exercisers and an excellent add-on for current clients, regardless of whether the accountability partner is a pro providing nudges and insight—or an app built on artificial intelligence or algorithms. End users get powerful benefits from being able to log and analyze data or generate reminders to drive improvements.

PROGRAMMING. Virtual programming is a natural first step for new exercisers because it provides guidance without perceived judgment. Design and delivery of programming options are diverse; with an app, the diagnostics may be algorithms or features the consumer chooses. Fitness pros can add assessment elements and create customized workouts. Or they can repurpose workouts and programs...to high-touch, higher-priced options at the other end of the spectrum.

Valuing Each Other’s Work
Just as we need to transcend the hierarchy in products, fitness pros need to value the people and the work we do in every facet of the business. Take, for instance, the roles of programmers, program leaders and program supervisors. Each one requires a specific skill to give the customer a specific benefit. Walking through all these roles makes it clear that none of them is inherently better or worse than the other. These, too, are additional areas that fitness instructors and personal trainers alike may want to explore and potentially add to their résumé.

PROGRAMMERS use in-depth knowledge of the body, movement and assessment to create top-notch workouts and programs. They enjoy the intricacies of uncovering the perfect formula for success in a wide variety of settings. Programmers create the recipes, taste the food to ensure the right temperature and flavor, then put it on a plate to be served. But a programmer might not be best suited to delivering the product.

PROGRAM LEADERS implement the creations of programmers. They’re naturally skilled at communication, cuing and pivoting in real time to make participants feel successful. They may not be the best person for putting together workouts or developing programs, but they may know how to deliver amazing programs and communicate the what, why and how of the offering. Not all chefs can wait tables, but a good waiter can describe the chef’s special.

PROGRAM SUPERVISORS want to motivate and inspire. Movement is part of their DNA, and their communication and social skills make it easy to lead a group. They appreciate fitness and the way the body works, even if they have less knowledge of biomechanics, programming or cuing. Program supervisors are like the aspiring swim coach who starts out as a pool deck supervisor. Sure, the qualifications are lower, but so are the expectations. A programmer or a program leader can be the mentor who guides them to new roles with more responsibilities and challenges.

All three of these jobs are crucial to the fitness industry ecosystem—but not every fitness professional must be all three. Yet many fitness professionals feel pressured to “move up” the so-called career ladder even when their skills are valued where they are now. Again, viewing fitness roles on a horizontal continuum instead of vertical tiers can help fitness pros better match their skills to their own personal strengths and, more importantly, to clients’ changing needs, which is what the entire industry wants.

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Continuum of Fitness Products

Meeting the increasingly varied needs of today’s consumer requires fitness professionals to think in terms of a continuum of potentially equal products versus a hierarchy based on price or personalization.

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Virtual</th>
<th>Large Group</th>
<th>Small Group</th>
<th>Personal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>Mobile devices, computers</td>
<td>Larger gyms, fitness centers</td>
<td>Studios, spas, smaller gyms</td>
<td>Chosen by client and trainer</td>
</tr>
<tr>
<td>Perceived Risk/Barriers to Entry</td>
<td>Lowest</td>
<td>Medium</td>
<td>Higher</td>
<td>Highest</td>
</tr>
<tr>
<td>Level of Personalization</td>
<td>Highly varied with app options and wearable tech</td>
<td>Lowest, but can be the most social option</td>
<td>More options as smaller groups become more specialized</td>
<td>Most options, but generally at highest price point</td>
</tr>
</tbody>
</table>

they've created by aggregating the data on a streaming service and offering digital downloads or subscriptions.

**SKILLS YOU’LL NEED:** Virtual training requires technical knowledge and written communication skills. If you’re looking to provide accountability, you’ll need to learn more about behavior change. While you may provide advice on exercise, you may also provide information on nutrition, lifestyle and healthy choices. The programming side requires more exercise-science knowledge and, depending on your delivery, on-camera talent. It’s important to remember that our customers live increasingly unstructured lives. They’re traveling for work, using flexible work schedules and participating in a raft of children’s activities. That makes it tough to be in any one place frequently. Finding ways to “meet them where they are” will add to your bottom line.

**LARGE-GROUP TRAINING**

Typically, large-group training is a moderate-risk, lower-barrier-to-entry option, meaning participants have a more diverse risk profile than those who go virtual.

Even so, the rise of studios, boutique fitness, outdoor boot camps and the like have reinvented large-group training. You can no longer assume that one-to-many fitness is free (such as a perk of membership), as many large-group classes have fees these days. Price alone does not determine risk in the minds of consumers, who use the power of choice to get more autonomy. They choose when they come and what they do with the programming you provide.

Those who enjoy large-group training are looking for community, accountability and either the ability to blend in or to enjoy the push they get standing next to others doing the same workout. All these ingredients make large-group training a great choice for a wide array of people.

**SKILLS YOU’LL NEED:** Large-group training requires the ability to create memorable and personal experiences without individualized touch points. Of course, hands-on corrections are included from time to time, but your global cuing needs to create the magic. Managing large groups while allowing participants to feel “seen” is a different talent. You also must learn to program so people cannot fail, which requires sequencing exercises that can be easily progressed, regressed or modified on the spot.

**SMALL-GROUP TRAINING**

Though small-group activities have larger risks and more barriers to entry for consumers, they also provide more opportunities for fitness professionals to satisfy clients’ specialized interests and provide personalized guidance.

Small-group training is changing rapidly; it can look very different depending on the provider. The nature of small-group training makes it easier to help clients progress based on their specific goals and abilities. Small-group training should feel more like traditional, one-on-one training but with extra layers of community, accountability and fun.

Small-group scheduling can be tricky. Facilities should offer small-group options throughout the day allowing members to sign up and come when it’s convenient (like large group). The price point is typically higher compared to the first two options, due to more individualized attention.

**SKILLS YOU’LL NEED:** Small-group training requires time-management skills and the ability to provide individual attention while not excluding others. Members seeking a more intimate environment may have additional concerns that you’ll need to program around, requiring deeper knowledge in exercise science and program design. You’ll also need to have skills in harnessing the energy of the group and creating meaningful connections.

**PRIVATE/SEMIPRIVATE PERSONAL TRAINING**

Finally, private/semiprivate personal training has the highest perceived risk and barriers to entry for consumers. But clients may also get the greatest benefit, which is reflected in the higher prices.

Today’s customers are traveling for work, using flexible work schedules and participating in a raft of children’s activities. Finding ways to “meet them where they are”—such as virtual training—will add to your bottom line.
If you hope to transition into private/semiprivate fitness, bear in mind that the experience is much more personalized. Many trainers start by conducting a fitness assessment and having clients fill out intake forms to develop goals and provide options to meet them. Scheduling is much more complex because both the trainer and the client need to align their calendars. You may have to rework your schedule and change where you train.

**Skills You’ll Need:** Private and semiprivate participants are looking for white-glove service. You’ll need to be able to create the feeling of personalization and exclusivity, while maintaining a professional distance. Keeping the session moving and fun is a special skill.

**Transcending the Fitness Hierarchy**

It’s tempting to rank product categories by the prices we charge, valuing personal training and devaluing virtual, for instance. But if we start looking at each of these products as equal options and get away from the price-implies-quality hierarchy, we’ll be better able to match more people with professionally guided experiences to help achieve their goals.

Today’s clients need a mix of virtual, group and personalized training. Expanding our professional portfolios by putting more than one product on our shelves can enable us to meet a broader range of consumer needs while boosting our professional and business prospects.

Before you decide to add products to your portfolio, make sure you understand the skills you’ll need. Just because a product looks lucrative doesn’t necessarily mean that every personal trainer should jump in or that group exercise instructors should stay out. Indeed, just because it’s a free product in the main studio doesn’t mean it’s naturally suited for a group ex instructor and not for a trainer. We’re all fitness professionals who can offer one or more of these products.

Ultimately, we have to meet people where they are from a risk and financial perspective—serving the right option at the right time with the right professional. Making that happen won’t be easy, but perhaps a good place to start is to begin focusing less on hierarchy, seniority or popularity, and more on matching specific skillsets and talents with the customers who need them.

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**Small-Group Training Should Feel More Like Traditional, One-on-One Training But With Extra Layers of Community, Accountability and Fun.**
With the rise in popularity of mixed martial arts, the fitness industry has seen a simultaneous increase in MMA conditioning techniques being used by fitness professionals. While most of your clients won’t be in a cage fight anytime soon, that doesn’t mean you can’t condition them with techniques similar to those used by combat athletes.

First, though the movements will be new, the format will be familiar to them: The high-intensity interval training workouts used by MMA fighters closely parallel the Power Level workouts from NASM’s Optimum Performance Training™ model. Second, as is true of other Power Level HIIT workouts, MMA-based HIIT programs provide a range of health benefits for participants beyond the cardiovascular (more on that later).

Also, exercisers who have tried “striking conditioning” (punching and kicking air drills) find it challenging, fun and productive (see “Member Reactions” at the end of this article).

Having the ability to create workouts that include OPT power training as well as striking conditioning will add tremendous value to any fitness professional’s business. Clientele interested in this type of training will benefit from working with a fitness professional who progresses them through the different levels of the OPT model to prepare them for the demands of MMA-style power training.

In this article, we will explore how to combine the principles and practices of NASM’s OPT model with striking training—and how this one-two punch can provide unique benefits to a wide range of clients.

OPT Phase 5 and MMA-Style Training

To review, the Power Level is the summit of NASM’s OPT model, and it consists of only one phase—Phase 5: Power. As always, clients should first be progressed through the first two levels of the OPT model—Stabilization and Strength—which are made up of 4 phases total (see figure). The gains made in these levels provide a solid foundation on which to begin the Power Level, Phase 5.
The Power Phase of training focuses on producing movements with higher levels of force at a higher velocity. This is accomplished by recruiting more motor units and doing so more quickly (each motor unit being one neuron and the muscle fibers it innervates). The ability to move quickly and explosively is essential for most sports, including MMA fighting. But power also plays an important role in everyday life. For example, in the course of someone’s daily activities, they may have to sprint to make it somewhere on time, or they may make a misstep on an uneven sidewalk and have to quickly regain their balance. Another reason it’s essential to add power training into a client’s fitness program: A decrease in power translates into a loss of performance. Once individuals stop training, they can see their overall power decrease almost as quickly as they had gained it (Gregory 2012).

Specific Benefits of HIIT-MMA-Power Workouts

HIIT workouts provide unique health benefits, especially once the participant has properly progressed through the Stabilization and Strength Levels of the OPT model. HIIT workouts are correlated to an increase in cardiovascular performance and higher caloric expenditure since the participant will reach higher heart rate training zones during the workout. In addition, Power Level HIIT workouts will make the participant more explosive and powerful (Mangine 2015). These combined effects have made this type of training extremely popular, as expending high amounts of calories, increasing cardiovascular fitness and improving power output are goals common to all types of fitness participants.

For the striking athlete at any level, though, these cardiovascular and power enhancements are absolutely essential. Professional striking athletes, such as elite boxers or mixed martial artists, must train explosively to address a crucial component of the sport. The ability of a striker to produce high levels of rotational power of the hips and trunk will translate into an increase in extremity speed of their upper- and lower-body strikes. Further, increasing the speed at which their arms and legs can move will give them the ability to execute a strike at a much higher speed, while delivering a more forceful blow. In mixed martial arts, proper technique is important, but if a strike is delivered too late or too weakly, it will be ineffective.

Two other important benefits that are seen from striking drills can be an increase in flexibility and improvements in balance—both of which are also necessary in the ring and in everyday life. Flexibility of the thoracic spine, hips, groin and hamstrings (regions of the body that tend to become restricted, leading to an increased chance of injury), will reflect dramatic improvements in range of motion (ROM) when strikes are thrown with proper form and technique. Striking requires rapid rotation of the thoracic spine and hips in multiple planes of motion, which is advantageous to those who work out using primarily exercises based in the sagittal plane.

In addition, dynamic balance is greatly challenged as participants throw strikes with increased speed. During the different strikes, a high level of balance will be required to deliver higher levels of force. This is especially true when kicking and driving the knee upward (see workout) because one foot will be off the ground for a period of time. There can also be an increase in coordination and cognitive ability as striking will require the participant to react to the instructor’s cues while remembering the particular strike combinations.

Striking Conditioning and Other Sports

The benefits derived from MMA-style training within the Power Level of the OPT model have tremendous carryover to other sports. When ROM is limited in the hips, thoracic spine, and/or shoulders, the muscles that athletes use in throwing, swinging and kicking will not be able to load maximally, thus limiting their ability to produce power. When this occurs, there will be a decreased ability to accelerate a limb and/or an implement, such as a
Sample Striking and Power Hybrid

**The Following Program**
is an example of a workout created using the NASM OPT Power Level of training and the Everlast F.I.T. 360 program. Please note that the warm-up involves some stabilization activities to ensure that the stabilization mechanisms are activated prior to placing high levels of explosive and dynamic power throughout the body.

If done one time, this workout allows for 15 minutes of high-intensity work. More rounds may easily be added if time allows or the client can handle higher levels of work. It is recommended that this workout be done 2 times per week for beginners and 3–4 times a week for more-advanced exercise enthusiasts. These workouts should not occur on back-to-back days, and the individual should feel fully recovered before repeating the workout.

**Step 1: Self-Myofascial Release**
Foam roll each muscle complex. Hold pressure on tender spots for about 30 seconds.

- Calves (Gastrocnemius/Soleus)
- Iliotibial (IT) Band
- Thoracic Spine
- Latissimus Dorsi

**Step 2: Active-Isolated Stretching**
Move through each stretch, holding for 1–2 seconds, 10 reps per side, 1–2 sets.

- Active Gastrocnemius Stretch With Pronation and Supination
- Active Kneeling Hip Flexor Stretch
- Active Latissimus Dorsi Stretch
**Workout**

**STEP 3: GET DYNAMIC**

**Single-Leg Balance and Reach**
10 reps/leg, holding each reach for 1 second.

**Prisoner Squats**
12 reps (quicker tempo)
Maintain control at all times.

**STEP 4: GET MOVING MMA-STYLE**

Each exercise should be done for 30 seconds, followed by 30 seconds of rest. Each round should be followed by 60 seconds of rest.

This is a sample MMA-themed HIIT drill. To avoid injury and maximize effectiveness, these moves should be done using proper form at all times. If participants’ form is suffering, they should be instructed to slow their striking to the speed at which they are able to maintain proper form. The exception here is the “speed” drills, in which the moves should be done as quickly as possible, while maintaining form that is as decent as possible. (See “A Primer” at right for explanations of the moves listed below.)

**ROUND 1**

- Body-Weight Speed Squats
- Jab-Cross Speed Combination
- Jumping Jacks
- Cross-Hook-Cross
- Jab-Knee

**ROUND 2**

- Jab-Cross-Knee-Front Kick
- Speed Pushups
- Burpees
- Jab-Jab-Cross-Hook-Cross
- Jump Squats

**ROUND 3**

- Jab-Cross-Hook-Uppercut
- Switch Steps
- Jab-Front Kick-Knee
- Seal Jacks
- Cross-Hook-Cross-Knee

However, when an individual participates in striking conditioning and power training, they will gain the ability to produce more force simply because they have learned to properly rotate their hips and spine, producing more potential rotational power in the opposite direction. This can be linked to the stretch shortening cycle, which is when a muscle is rapidly loaded, or put into a stretched position, it will be able to produce more force in the opposite direction during the release. (It may help to think of the muscle group as a rubber band being stretched and let go.)

Because proper striking form absolutely requires engaging the hips, spine and shoulders, athletes who use striking conditioning will increase their ROM in these areas, which can benefit them during the throws, swings and other movements required in their sport.

**A Primer on MMA-Style Workout Moves**

The information provided below is intended to clarify the workout moves so the reader can best understand what this workout might look like. It is important for fitness professionals to gain proper training in striking before teaching these moves to clients. Here are some key terms to know.

**STANCE:** In striking drills, knees should be slightly bent, weight should be resting lightly (feet should not be planted). Step forward with one foot so the feet are at a 45-degree angle to the “front” of the exerciser. The front/lead arm is used for jabs and the rear arm for cross punches.

**COMBINATIONS:** This is when several striking moves are done in a sequence. In combinations, the side of the body that is used generally alternates, except with respect to a jab (which is always done with the front arm) and cross (which is always done with the back arm). So, if the combination is jab-cross-uppercut, the jab and uppercut would be done with the same arm.

**JAB:** Straight punch with lead arm.

**CROSS:** Straight punch with rear arm.

**HOOK:** Lateral punch with elbow bent to roughly 90 degrees. (Aim your punch at chin level as if striking an imaginary opponent’s jaw.)
When a new exercise mode comes into vogue, it can be an exciting! Who doesn’t want to inject some fun and variety into their workout program? But as a fitness professional, it’s crucial for you to make sure that a new trend is both safe and effective before introducing it to clients. The NASM Certified Personal Trainer program presents fitness professionals with the tools and knowledge needed to evaluate popular new workouts using science, not just popular opinion. According to the NASM-CPT text NASM Essentials of Personal Fitness Training (2017): “In order for a result to be scientifically sound it must be valid, reliable, and repeatable. A new form of exercise may allegedly produce significant results, but if it is not supported by scientific research, it becomes a questionable trend.”

The NASM-CPT program familiarizes fitness professionals with NASM’s Optimum Performance Training™ model (see figure), which enables clients to be progressed safely through three levels of training—Stabilization, Strength and Power—in any type of workout format. It’s important to take the time to do this, no matter how excited someone is about a new workout craze. “Sometimes trainers and clients want to rush into power training. This may lead to burnout and injury due to the client’s lack of strength and stability. Therefore, the trainer should use appropriate caution and communication to ensure that the client is fully prepared for the demands of the Power Level (2017).” In short, clients should not be going full-out at a boot camp or kickboxing class without being properly assessed and, if needed, progressed.

The systematic and integrative OPT™ model progresses clients safely and effectively.

**UPPERCUT:** Punch that comes up from side at waist level, aiming for underside of imaginary opponent’s chin.

**FRONT KICK:** Kick that would be used to kick directly straight in front of you. Begin in Single-Leg Balance position (see Step 3), then snap the lower leg out and back quickly.

**KNEE:** Used to deliver an upwards strike to the opponent’s body. Knee should be pointed (bent to an angle smaller than 45 degrees).

**SWITCH STEPS:** This is switching your stance while bouncing on the balls of both feet. Keeping both feet about shoulder-width apart, start with the left foot leading. Then bounce up and turn your torso (without changing your leg positions) so that you land with your right foot forward. You’ll be quickly switching your stance with every bounce.

**SEAL JACKS:** These are like jumping jacks, but your arms will move horizontally to the front of you (like a seal clapping its fins), rather than over your head.

**Why Do Fitness Professionals Need to Learn Proper Form?**

As with any other fitness technique, the success of each individual and the program as a whole is dependent upon the ability and knowledge of the instructor. As individuals participate in power training, there is an increased risk of injury due to the explosiveness of the moves and the advanced techniques needed to properly execute the exercises and combinations. For this reason, it is imperative that every fitness professional search out the proper training for themselves prior to introducing new techniques to their clients. In the case of striking conditioning, fitness professionals who do not have a traditional background in striking must first learn how to properly throw (and later teach) the most common punches, kicks, knees and elbows. They must also learn the proper methods of holding pads.
calling out combinations and correcting participants’ form. To assist instructors in their education, Everlast has designed the F.I.T. 360 program, which is an NASM-approved CEU course (www.everlast.com/fitcerts). In addition to learning striking techniques, participants of the F.I.T. 360 program learn proper coaching techniques for different class sizes, as well as how to put together appropriate striking combinations. You may also want to consider looking into the NASM MMA Conditioning Specialization (MMACS), which offers a downloadable programming and course manual, as well as an online exercise library. Learn more at www.nasm.org/mmacs.

**Member Reactions to Striking Conditioning**

As a martial arts enthusiast, I love using striking drills in the gym for cardio, dynamic flexibility, coordination training, stress management, calorie burning and simply just for fun. They also allow me to introduce my love of the martial arts to people who may never choose to enter a karate studio.

As mentioned before, perhaps one of the most compelling reasons for a fitness professional to learn how to teach striking conditioning is this: Members love it! In February 2017, I initiated the Everlast F.I.T. 360 striking program at Mizner Country Club, in Delray Beach, Florida, and it has been a huge success. The F.I.T. 360 workout has been a great addition to our regular programming and has added a new sense of excitement for our members. Every class is full, and members continue to ask for additional classes. Fortunately, we will be doing a fitness center expansion in the very near future, and space has been dedicated to accommodate additional striking conditioning classes!

The most interesting thing about the program is how diverse the attendees are. We have men and women of all ages participating in and thoroughly enjoying this type of training. The members who have taken these classes are telling other clients (and instructors) how fun the workout is and how effective it has been in improving their cardiovascular fitness as well as their golf and tennis games. Some members have also begun asking about scheduling private one-on-one striking conditioning lessons with an instructor. The workout continues to rise in popularity. So, to say it has been a “hit” would be an understatement.

**REFERENCES**


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Hydro Power: The Allure of Water Workouts

FROM SHAKING YOUR MERMAID TAIL TO DOING BURPEES ON A FLOATING PLATFORM, NEW WATER FITNESS PROGRAMS OFFER SOMETHING FOR ATHLETES OF EVERY AGE, ABILITY AND FITNESS LEVEL.

BY SHIRLEY ARCHER, JD, MA

Step up to the pool deck and take note: The swimming pool has been transformed into an all-purpose fitness center with new programming, and manufacturers are embracing the opportunity by providing new tools for every interest and ability level. With Speedo USA rolling out aquatic fitness programs in partnership with Life Time®, it’s clear that interest in water fitness is on the rise. And this curiosity is not limited to elite athletes and watersport enthusiasts. Aquatic fitness programs for families, older adults, dance fitness fans, and devotees of mind-body fusion are also gaining global popularity.

Today’s water exercise programs are effective for weekly workouts, cross-training, performance enhancement, rehab and recovery, and they also offer much-needed variety and fun for members in search of something new.

If you haven’t yet tested the waters, now is the perfect time to learn more. Whether you’re a fitness professional who wants to catch the water fitness wave, or a facility owner or manager interested in optimizing pool use and offering new programming, it’s good business to be aware of some of the trends that are making a splash with exercisers. But first, let’s take a look at the unique perks of aquatic exercise.

Why Work Out in Water?

To understand the special appeal of aquatic training, it helps to examine the science of water and how it relates to exercise. Specifically, four water-related properties have been shown to enhance athletic performance and improve physical function. These are buoyancy, hydrostatic pressure, viscosity and thermodynamics.

BUOYANCY. This is the upward thrust of water acting on immersed bodies; it reduces the effects of gravity. In water at xiphoid level, gravity decreases approximately 60%. In neck-deep water, total body weight may be reduced by 90%. For exercisers, buoyancy means less impact on joints. It also provides resistance opposite that of

BECAUSE OF THE UNIQUE PROPERTIES OF WATER, AQUATIC FITNESS PROGRAMS CHALLENGE MUSCLES DIFFERENTLY AND REDUCE IMPACT ON JOINTS.
Gravity, which can lead to more-balanced total-body conditioning.

**HYDROSTATIC PRESSURE.** This is the pressure that water exerts on all surface areas beneath the water. This multidirectional pressure compresses the chest, making breathing more difficult. This is one reason why people need to adapt to water-based training; even if they are already fit, they will need to develop stronger assistive breathing muscles before increasing intensity over time. In addition, the compressive forces of water result in a lower heart rate (irrespective of breathing) because the water “massages” the body, which assists circulation. This means that the heart does not have to work as hard in water to pump blood at a level equivalent in intensity on land. Therefore, a land-based training heart rate does not translate into equal training intensity in water. Instead, using the rating of perceived exertion to monitor intensity during water fitness workouts is reliable and recommended. The “massage” of water also stimulates the lymphatic system, which may be one reason why water workouts are so often used during recovery.

**VISCOITY.** This refers to water’s density. Water is approximately 800 times denser than air, and any movement in water generates resistance in all directions. Movement speed and surface area both affect the degree of resistance. These variables can be manipulated during water workouts to modify training intensities for progression or regression.

**THERMODYNAMICS.** This property involves the flow of heat. Water transfers heat away from the body 25 times faster than air. This affects heart rate and oxygen consumption. For higher-intensity workouts, cool water temperatures (64.4–77 degrees Fahrenheit) result in lower heart rates than do warmer temperatures in the 86–95.9 F range (Nagle, Sanders & Franklin 2015). This is another reason to use RPE, not heart rate, to gauge intensity.

It’s important for fitness professionals to educate new participants about the differences and challenges of exercising in water. Exercisers will need to build endurance as they adapt to water-based conditioning activities. Also, they should understand RPE and how it helps measure intensity. And, of course, you’ll want to explain the advantages of water workouts; see “How Aquatic Training Boosts Sports Performance” for specifics.

### Water Workouts Serving Niche Markets

As in health club and studio programs, the trend in pool-based fitness offerings reflects diversity. Various levels of classes serve a wide range of participants, including elite and recreational athletes, healthy people who are new to training, fit individuals who want to stay in shape, and people who have health concerns or are in rehab. Age groups served include everyone from kids to teens, families, and middle-aged and older adults of all ability levels. And manufacturers are stepping up to the opportunity by providing new tools for every aquatic interest. Read on for some expert insights into a few popular and emerging programs.

### How Aquatic Training Boosts Sports Performance

Many elite athletes are using the pool to complement land training. Mark Verstegen, president and founder of EXOS and a developer of the Speedo Fit aquatic training programs, notes the following benefits of aquatic training for those interested in improving sports performance:

- Less impact on muscles and joints due to reduced gravity
- Slower movement with more precision and improved coordination due to water’s resistance
- Consistent resistance with all ranges of motion
- Maximization of every contraction while reducing eccentric load
- Less soreness
- Compression for better circulation and faster recovery
Everyone in the Pool!

**HOW TO ATTRACT NEW PARTICIPANTS TO YOUR WATER FITNESS PROGRAMS.**

An increasing number of people are trying aquatic training for the first time and finding that they like it. Here are some expert tips on how to introduce participants to the benefits of water-fitness programs and increase participation.

- **>> Share stories and testimonials from members who have found that water training improved their running or ultra-endurance performance.**
- **>> Use Instagram and Facebook to promote programs, feature pictures, and explain how water training improves strength, endurance, power, recovery and other training aspects.**
- **>> Offer land-and-water promotional classes such as a fitness club “tri-challenge” that includes yoga, indoor cycling and a water fitness class.**
- **>> Integrate a water fitness component into a specialty training class for an upcoming 10K, marathon, mud run or other event.**
- **>> Combine land and water training, as in the EXOS-designed Speedo Fit classes, where half of the participants stay on deck to do moves like squats and pushups, while the other half jumps into the pool to do high-intensity aquatic moves, then the groups switch.**
- **>> Educate, educate, educate. People don’t realize the benefits of water training. Share the latest research highlights on how water training can enhance daily life, overall fitness and sports performance.**

**DEEP-WATER TRAINING**

Many people use deep-water running as part of Ironman® or ultra-endurance event training, according to Melis “Mel” Edwards, MS, group fitness instructor and co-author of *Deep End of the Pool Workouts: No-Impact Interval Training and Strength Exercises*. “Athletic teams may be using water [training] like a secret weapon,” says Edwards. “The 2002 U.S. Olympic women’s hockey coach, Maria Hutskis, used the pool to train the women’s team [and they] went on to win that year. Some NBA teams are using it….” Years ago, I worked with the San Jose Sharks hockey team. I think deep-water interval training is ready to go mainstream, especially because of the major surge in high-impact, intense sports such as ultrarunning and CrossFit and the uptick of injuries associated with overtraining and high-intensity activities.” Deep-water fitness tends to attract men and athletes who are looking to impact athletic performance on land. Aquatic fitness classes tend to attract a younger crowd. Offerings include deep-water Tabata, aquatic boot camp, and deep-water high-intensity interval training. Irene Lewis-McCormick, MS, head coach at Orangetheory Fitness in Ames, Iowa, and an aqua fitness presenter, teaches Aqua Bootcamp Circuit, or ABC. She explains: “It’s a fixed format with options to change movement patterns. It consists of 3–5 minutes of a cardio warm-up…. Next, the class is divided into 3–5 stations with different themes such as noodles suspended, hand buoys grounded, [and] body-weight rebounding. Class members move from station to station, at each for about 3 minutes. Then, we move to the center and do a choreographed cardio song again. This is repeated for 3–5 rounds and concludes with stretching and range-of-motion exercises.”

**WATER DANCE CLASSES**

Like dance-inspired workouts on land, classes like Aqua Barre and Aqua Zumba® are most popular among women and appeal to all ages. One of the newer dance-inspired programs is Acquapole®, created by Monica Spagnuolo and Stefania Manfredi in Italy. The Acquapole program allows participants to enjoy pole dancing with the resistance and the support of the water. Benefits include improvements in toning, flexibility and core control. Acquapole started in Europe, but it is spreading in North America.

**MERMAID FITNESS**

The most widely available mermaid program is AquaMermaid, created by Marielle Chartier Hénault, and headquartered in Montreal, Canada. AquaMermaid is a licensed program that includes instructor training, equipment, and business and marketing support. In addition to teaching fitness classes, instructors can provide entertainment at aquariums, resorts and private events, as well as host parties for kids and bachelorettes. For example, AquaMermaid is offered at The Phoenician in Scottsdale, Arizona, as a seasonal draw for resort guests. Though any age and gender can participate, the main demographic is kids 7–13 years and adults 25–35 years.

Nora Kaitis, owner of AquaMermaid Chicago, says, “We incorporate a lot of synchronized swimming and put moves together into a routine. It’s a great workout, especially for the core, using a monofin and tail, and the exercises can be adapted for people who can’t swim by using noodles and staying in shallow water. Mermaids are having a moment now. Hollywood has three movies slated, so interest is likely to grow.” To underscore mermaid popularity, Hénault notes that 50,000 mermaid tails are sold each month in the United States.
concentration. Because it’s wider than a surfboard, it can be used with traditional exercises like squats, lunges and burpees. The AquaBase is currently used for FloatFit HIIT and FloatFit YOGA classes, which launched in Europe and are now available in America at the TMPL Gym in New York City.

**THE ACQUAPOLE ACCESSORIES.** The Acquapole doesn’t always stand alone. It can be equipped with a boxing bag, T-bar, or resistance strap. These add-ons enable participants to do aquatic boxing and kickboxing exercises, additional upper-body exercises such as pullups, and tethered drills for high-intensity training.

**THE HYDRORIDER® AQUABIKE.** Indoor aquatic cycling classes are growing in popularity at resorts and fitness facilities. The Hydrorider® company, based in Italy, makes its products using high-grade marine stainless steel. Hydrorider also markets treadmills, training poles and other water fitness equipment.

Ready to Catch the Wave?

With so many new and fun water fitness programs, it can be challenging to decide where to invest training and equipment dollars. Check out new options at conferences and trade shows, and survey your club members for interest. Consider starting with a few pieces of different equipment, and offer circuit training to see what participants prefer. Also, schedule programming to maximize pool usage and appeal to interested members at times that are convenient for them. Today, it’s easier than ever to exercise your creativity and provide exciting water-fitness options. So, go ahead and grab a towel, jump in and get your feet wet!

**SHIRLEY ARCHER, JD, MA,** award-winning certified trainer and author of 15 books, taught water fitness for 20+ years. Reach Shirley at www.shirleyarcher.com, @shirleyarcher (Twitter), @shirleyarcher (Instagram) and @shirley_archer (Pinterest).

**REFERENCES**


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Is “Cutting Weight” Dangerous for Women?

Fitness competitors work hard to be as fit and attractive as possible, which includes paying close attention to their food intake in the months leading up to a competition. Often this means following severely restricted diets with the intent to lose body fat, yet maintain muscle mass.

Recently, researchers in Finland set out to learn whether this type of diet has long-lasting negative effects on female fitness competitors. To do so, they followed 50 women in their mid-20s. Of these, 27 were female fitness-sport competitors dieting for a competition, and 23 acted as weight-stable controls. For 4 months, the 27 competitors reduced their carbohydrate intake while maintaining a high protein intake. They also added sessions of aerobic exercise and performed resistance training. The new regimen led to expected decreases in body weight (12%) and body fat (35–50%). Researchers found that it also resulted in a drop in serum (blood) levels of several hormones, including leptin, triiodothyronine (T3), testosterone and estradiol, as well as an increase in menstrual irregularities.

The intriguing aspect of the study is that most of these changes were reversed during a 3–4 month recovery period. During this time, the competitors increased their energy intake and decreased their aerobic exercise to prestudy levels, and body weight and hormones (except T3 and testosterone) returned to baseline. This news, reported in *Frontiers in Physiology*, may be welcome among female fitness competitors, but only further research will reveal if repeated bouts of this nature have any long-lasting negative effects [2016; 7, 689].
Some Healthy Folks Shun Foods With Health Claims

When researchers from the Agrifood Research and Technology Centre of Aragon, Spain, wanted to study the effect of food labels’ health claims, they set up a mock supermarket and recruited 121 shoppers. These participants were instructed to choose from a variety of breakfast biscuits, including some with no healthy labeling on the packages, and others showing marketing messages such as “high in fiber” and “reduced saturated fat.”

At first glance, it seemed that the shoppers preferred the biscuits with health claims. Yet when the researchers looked more closely at the data, a surprising correlation was discovered. Of the 121 shoppers, 26% were identified as “nutritional claim avoiders.” Of even more interest, they shared many characteristics: They were mostly young, university-educated, healthy men who were not usually responsible for household food purchases. Researchers noted that members of this group also had few health problems, so they may not yet value healthy eating.

For fitness professionals who work with clients in this demographic, it may be helpful to emphasize the link between eating healthfully today and staying healthy throughout a full lifespan. But until they’re “sold” on smarter selections, don’t let them take over the household grocery shopping [2017; Nutrients, 9 (2), 132].

Juicy Tips for Amping Up Plant Intake Wisely

“Eating a plant-heavy diet brings many benefits to the table,” says Canada-based dietitian Matthew Kadey, MS, RD, whose article “Peak Season, Peak Performance” in this issue discusses many of the perks associated with easing up on animal-based foods. “But there are a few things you should keep in mind before dousing your morning cereal in almond milk or eating tempeh chili by the bowlful,” he adds. Here are three of Kadey’s reminders for those seeking to amp up their plant-food intake.

LOOK FOR HIDDEN SUGAR. High amounts of sugar can sneak its way into vegetarian-friendly foods, from cereal to nondairy milk and yogurt. Read package labels so you can choose options with the fewest grams of sugar per serving.

EAT CLEAN. You can go a long way toward limiting your exposure to pesticide residue by selecting organic strawberries, spinach, nectarines, apples and other members of the Environmental Working Group’s Dirty Dozen. EWG updates its “Shopper’s Guide to Pesticides in Produce” each year, ranking popular fruits and vegetables based upon their levels of contamination. Visit www.ewg.org for the 2017 rankings of the 51 worst offenders and an explanation of its testing procedures.

READ UP ON RECIPES. “It’s easy to slap a steak on the grill and call it a meal. But for most people, it’s more challenging to figure out what to do with a can of kidney beans or a block of tofu,” says Kadey. For this year’s summer reading list, include some plant-focused cookbooks, and trade a few minutes of daily social-media surfing for food-blogs exploration. There, you’ll find recipe inspiration and education on some new cooking techniques. We practice what we preach: The delicious bean-and-grain burger in this month’s recipe came from just such a blog.
With an eye toward educating parents about the adverse effects of food dye, California Senate Bill 504 was recently introduced. The legislation, if passed, would require a warning on all food containing synthetic dyes in order for it to be sold in the Golden State. Citing reports from the Center for Science in the Public Interest about the potential connection of food dyes to a variety of adverse behaviors, state Senator Bob Wieckowski is hoping California can lead the way in legislating this particular protection for kids. As even the FDA has written that “some evidence suggests that certain children may be sensitive” to synthetic dyes, it may be time for anyone who influences children’s food choices to recommend investigating natural dye alternatives.

A second CA Bill (#300), if enacted, will require certain beverages sold in California to carry a warning regarding sugar content. Targeted are drinks that contain 75 calories (or more) of added sugar per 12-ounce serving. The recommended wording: “Drinking beverages with added sugar(s) contributes to obesity, type 2 diabetes and tooth decay.” In a statement, California State Senate Majority Leader Bill Monning said that the warning is needed because “California continues to see a rise in obesity and type 2 diabetes among its residents.” He referred to the strong and compelling scientific evidence that clearly shows the link between these preventable health conditions and sugary beverages. Though it would seem like an easy vote, Monning’s previous effort in 2014 fell short, so there’s no guarantee that this will pass.

Politics aside, it’s wise to read the nutrition labels on all sugary drinks to check for quantities of added sugars [Accessed Apr 21, 2017. www.foodnavigator-usa.com].

Speak Slowly and Chew Your... Ice Cream

Recently, New York City startup Lezzetli Mediterranean Ice Cream (www.lezzetliicecream.com) has created a sweet treat that has the “feeling of biting into an almost frozen marshmallow” before melting in your mouth. Inspired by the Turkish dessert dondurma, this chewy ice cream comes in unique flavors such as chios vanilla, spiced date, tart cherry and chocolate orange blossom. Most are 200 calories or less per serving because the company uses natural plant fibers as the stabilizer instead of eggs. This also helps account for the lower total fat count per serving, as compared to premium ice creams (10–11 grams vs. 15–22 g), and none of those grams are trans fat.

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Top Choices for Lowering Blood Pressure

FOR LOWERING BLOOD PRESSURE, the American Heart Association recommends 40 minutes of moderate-to-vigorous-intensity activity 3 or 4 times per week. Encouraging clients in that arena is no sweat for fitness professionals. Impacting their diet may be another matter. Fortunately, there are a few food and beverage selections that help lower BP naturally—and are palatable to most people. Here, Santa Barbara-based registered dietitian Christina Williams serves up insights on some of the best:

**BEET JUICE.** The benefits of this beverage can be attributed to the nitrates that beets contain. When the body converts them to nitric oxide, the blood vessels dilate, lowering blood pressure.

**BLUEBERRIES.** These fruit jewels contain flavonoids, specifically anthocyanins—antioxidants that give the fruit their red/purple hues. Anthocyanins help prevent blood vessels from developing a buildup of plaque, which would increase blood pressure.

**DARK CHOCOLATE.** This one will make most people happy. Flavanol-rich cacao aids in dilating the blood vessels. (Select dark chocolate with a cacao content of 70% or higher.)

**GROUND FLAXSEED.** Skip the supplements; these are most beneficial in ground food form. These tiny but powerful seeds are high in alpha-linoleic acid (an omega-3 fatty acid), lignans and fiber, and create an anti-inflammatory effect on the body.

More Parents May Want to Monitor Their Kids’...

With an estimated 10% of all children in Western countries on the spectrum of liver disease, fitness professionals who work with children and adolescents affected by obesity may want to take note of a report in the *Journal of Hepatology* [2017; 66 (5), 1031–36]. Helping parents learn to limit their kids’ fructose intake could go a long way toward protecting their liver.

In the study, the research team assessed daily fructose consumption in 271 children and adolescents (mean age 12.5) diagnosed with obesity. The research team found that about 38% of the youth had an aggressive form of non-alcoholic fatty liver disease (NAFLD) called non-alcoholic steatohepatitis (NASH). And 47% of those NASH students also had high serum uric acid (UA) concentrations. (UA was high in about 30% of subjects who did not have NASH.) Further statistical analysis confirmed a link between UA concentration and fructose consumption and NASH, with an additional association between fructose consumption and an excess of UA in the blood (hyperuricemia). Valerio Nobili, MD, chief of the Hepatometabolic Unit Liver Diseases Lab in Rome, states, “It is plausible that dietary fructose intake and uric acid concentrations are potential risk factors for liver disease progression in NAFLD.”

Parents may want to learn more about how to read labels to discover which foods are high in fructose. These are a few categories in which some (but not all) can be offenders.

- Breakfast cereals and bars
- Canned fruits (ex. applesauce, pears)
- Dried fruit (ex. dates, raisins)
- Syrups (ex. honey, maple syrup)
- Sugary beverages (ex. juices, sodas, sports drinks)
- Condiments with added sugar (ex. ketchup, barbecue sauce)
WHOLE GRAIN/HIGH-FIBER CEREALS. These nutrient-dense foods contain fiber, potassium, magnesium, folate, iron and selenium. High-fiber foods help you feel full longer, which reduces calorie intake and aids in weight control—an important factor in blood pressure.

One final note from Williams: “I recommend that all [clients with hypertension] make the switch from regular to decaf coffee. Caffeine is known to increase blood pressure in any individual, hypertensive or not.” For this change, it may be easier to start slow, mixing half decaf with regular coffee to get used to the change.

Fructose Intake

Many of kids’ favorite summer foods are havens for hidden (and not so hidden) fructose.

Terms and Conditions: NAFLD and NASH

When excessive amounts of fat build up in the liver, it’s called non-alcoholic fatty liver disease (NAFLD), and a shocking 10–20% of the general pediatric population is affected by this condition. NAFLD, which is strongly linked to obesity, can develop into non-alcoholic steatohepatitis (NASH). NASH can lead to necrosis (cell death), fibrosis (scarring) and cirrhosis (severe scarring). Obesity is the most significant risk factor for childhood NAFLD, and most diagnoses occur around 12 years of age (2016; International Journal of Molecular Sciences, 17 (6), 947).

Recipe: BBQ Kidney Beans & Quinoa Burgers

Barbecue season is here, and Debbie Woodruff—vegan chef, running coach, personal trainer and blogger at coachdebbieruns.com—is ready with her recipe for these flavorful veggie burgers. What she likes about this version is the smoky flavor and spicy taste, as well as the ease of preparation. In fact, it takes just 15 minutes of prep work and another 10 minutes to cook them. And for those who cook for picky eaters, Woodruff mentions that “these burgers are a great way to sneak some fresh veggies in.” We’re all for that!

1 C kidney beans, drained and rinsed
1/4 C prepared quinoa
1/4 C vegan bread crumbs
1 T chopped mushrooms
1 T chopped zucchini
1 T chopped yellow squash
1 T chopped onion
1 serrano chili, seeded and chopped
1 t liquid smoke
1/4 t cumin
1/2 t garlic powder
1/2 t salt
1/2 t cayenne

Combine the ingredients in a food processor or heavy-duty blender. Process until well-mixed, but leave some texture to the beans and veggies. If it is too thick, add about 1 T water, but be careful; add too much water, and your burger won’t hold together. Divide into 2–4 portions and form into patties. These can be grilled, broiled or fried. Cook until browned on both sides and heated through.

Source: coachdebbieruns.com/bbq-kidney-bean-and-quinoa-burgers-vegan-recipe/

ALEXANDRA WILLIAMS, MA, is a writer, editor, travel photographer, model and lecturer at UC Santa Barbara. A vegetarian, she dreams of baking the perfect loaf of rosemary sourdough bread.
Peak Garden Season, Peak Performance

LOCAL PRODUCE IS ALL THE RAGE IN SUMMER, AND WITH GOOD REASON. UPPING YOUR INTAKE OFFERS PLENTY OF PERKS FOR A HEALTHIER BODY, WALLET AND PLANET.

BY MATTHEW KADEY, MS, RD

There is a lot to adore about summertime, but what foodies rejoice about most is the bounty of fresh fruits and vegetables available from local gardens and markets. These edible plants bring lively flavors and a nutrient payload to summer meals. In fact, summer offers the perfect opportunity to consider leaving those meatatarian days behind and embrace a diet focused more on plant-based foods like beans, dark greens and ultra-sweet seasonal berries, and less on animal-based foods such as red meat, poultry and cheese. Even the government has given the thumbs-up to the plant-based trend. The Dietary Guidelines Advisory Committee (DPHP 2015) has stated “a diet higher in plant-based foods, such as vegetables, fruits, whole grains, legumes, nuts, and seeds, and lower in calories and animal-based foods is more health promoting and is associated with less environmental impact than is the current U.S diet.”

Now, we’re not saying you have to go “cold Tofurky” and say sayonara to meat altogether. But here are a few of the numerous perks to enjoying all the delicious summer plant foods you can stomach.

A Longer Life
Piling your plate high with fruits and vegetables can help you enjoy more birthday celebrations (Gallagher 2017). “Plant-based diets based on eating mostly whole foods tend to supply higher amounts of fiber, vitamins, minerals, healthy fats and phytochemicals, all of which play a role in disease prevention,” says Sharon Palmer, RDN, author of Plant-Powered for Life. Indeed, a massive review of 95 different studies involving 2 million people published in the International Journal of Epidemiology found that eating just 200 grams of fruits and vegetables daily is associated with a 16% reduced risk of heart disease, an 18% lower risk of stroke, a 4% drop in the chances of developing cancer and a 15% reduced risk of premature death (Aune 2017). A daily tally of just 2 cups spinach, ½ cup blueberries, 1 small carrot and a sun-kissed peach is enough for you to nail this quota. The researchers
found an even greater disease-thwarting benefit by eating 800 g of fruits and veggies each day. Further, there is a raft of research showing that adhering to the Mediterranean style of eating, which emphasizes plant-based whole foods, can go a long way in slashing heart disease risk (Tektonidou et al. 2015; Widmer et al. 2015; Abellán Alemany et al. 2016). And a separate 2017 investigation determined that a flexitarian diet—one that prioritizes planet-based foods, with meats playing a smaller role—can slash the risk for high blood pressure, diabetes and other health woes (Derbyshire 2017).

**A Leaner Physique**

Some research suggests that swapping T-bone for tofu more often appears to be an effective method for helping people stay on good terms with the scale. Case in point: A 2016 review of studies conducted by investigators at Harvard found that people who are assigned to vegetarian diet groups often lose significantly more weight than those assigned to nonvegetarian diet groups (Huang et al. 2016). “A plant-based diet can lower waistlines while also richer in wholesome, natural foods that deliver more nutrients and hunger-fighting fiber to aid in weight loss,” says sports dietitian and Ironman® competitor Marni Sumbal, MS, RD, CSSD. Another theory is that a plant-heavy diet that includes higher amounts of indigestible carbs—including resistant starch—can alter the microbiome landscape in the gut in a way that promotes fat loss.

To reap even greater waistline-trimming results, you should eat those summer-fresh fruits and vegetables while they’re raw. Research published in the *Proceedings of the National Academy of Sciences* postulates that cooking food increases the amount of calories our bodies absorb from it by performing some of the digestive process for us (Carmody, Weintraub & Wrangham 2011). So by crunching your way through uncooked heirloom carrots, you’ll give your digestive tract more of a calorie-burning workout. Raw fruits and vegetables can also have higher amounts of resistant starch, a type of carb the body does not absorb for calories.

**A Healthier Wallet**

Eating more beans and vegetables can plant more money in your pocket. According to findings of a 2012 *Journal of Hunger and Environmental Nutrition* study (Flynn & Schiff), a plant-based, extra-virgin olive oil diet can cost about $750 less per year than a more meat-and-dairy-heavy diet based on the United States Department of Agriculture MyPlate. Meat is often the most expensive item in a grocery cart, and high intakes can crowd out vegetables and other nutrient-dense, less-expensive plant foods. The biggest savings comes from growing some of your own grub or buying foods from local sources (see “Why Eat Local?”) when their array of

**Ease Into a Higher Intake**

Upping your intake of plant foods and the fiber they contain can come with some gassy side-effects. If you’re not accustomed to a high-fiber diet, be sure that when you add items like beans and lentils, you start with small amounts at a time. The body will eventually adjust.
showed that vegetarian diets (Soret et al. 2014). And a 2014 study published in The American Journal of Clinical Nutrition showed that vegetarian diets result in almost one-third less greenhouse gas emissions compared to nonvegetarian diets. Not ready to ditch meat and dairy entirely? Even eating a semivegetarian diet was associated with environmental perks. In fact, Environmental Working Group says if each American skipped eating meat and cheese just 1 day a week for a year, it would be tantamount to pulling 7.6 million cars off the road. Suddenly, Meatless Mondays seem more appetizing.

A Happier Planet
For the sake of Mother Nature, it’s wise to replace some of the industrial meat on your plate with plant foods. “That’s because animal agriculture is very resource-intensive, including the use of large amounts of fossil fuels, land and water,” says Palmer. Experts from the United Nations Food and Agriculture Organization say that raising cattle for burgers and steaks is generating more global-warming greenhouse gases—including methane-emitting flatulence and the energy needed to grow the grains for feed—than often-vilified transportation (U.N. 2006). And a 2014 study published in The American Journal of Clinical Nutrition showed that vegetarian diets offerings are most abundant.

As a bonus, buying locally grown produce can also boost your community’s economy. One report to the Maine Legislature suggested that shifting just 1% of the state’s household expenditures to direct-from-farm purchases could increase income of Maine farmers by as much as 5% (Gandee 2002).

A Day’s Worth of Protein…From Plants

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<th>Protein Power Plants</th>
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<td><strong>It’s not just gym talk, it’s true: Active people do need more protein than couch potatoes.</strong> Modern research says that number is 1.2 to 1.4 grams per kilogram of body weight for endurance athletes and about 1.7 g/kg for people focused on resistance training. And yes, with some strategic planning, it’s possible to build bigger and stronger muscles on plant protein. “A well-balanced plant-based diet can easily meet the carbohydrate, protein, fat and micronutrient needs of athletes,” says sports dietitian and ironman competitor Marni Sumbal, MS, RD, CSSD. “Taking pride in meal prep and cooking allows for more nutrient dense options including seasonal vegetables to be included in a plant-heavy diet geared towards performance,” she adds.</td>
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<td><strong>Enjoying all the foods at right on a given day will provide a 150-pound person with enough plant protein needed to support strength training.</strong></td>
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<td>peanut butter</td>
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<td>edamame</td>
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<td>soymilk</td>
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<td>dry steel-cut oats</td>
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<td>cooked quinoa</td>
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<td>plant protein powder</td>
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A Happier Planet


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WHAT IS THE 3/7 PROTOCOL?
The 3/7 Protocol is a series of 5 sets of an exercise in which the reps are increased incrementally from 3 to 7 (thus, its name) while using the same weight. A recovery period of 15 seconds or less is taken between each of the 5 sets.

In other words, you’d do a set of 3 reps, recover for 15 seconds, do a set of 4 reps, recover for 15 seconds and so on. Essentially, then, over the span of 5 sets, you’d do a total of 25 reps while taking no more than a total of 1 minute of recovery.

In one study, 38 male subjects (ages 18–26) were assigned to one of three groups: the 3/7 Protocol, 4 sets of 6 reps or 8 sets of 6 reps. All subjects trained two times per week for 8 weeks, performing the bench press (with a Smith machine) using 70% of their 1-repetition maximum (1-RM). Between each set, the group that used the 3/7 Protocol took 15 seconds of recovery, while the groups that used the other two protocols took 2.5 minutes.

The group that did 8 sets of 6 reps (48 reps total) produced greater gains in maximum strength than the group that did the 3/7 Protocol, while improvements in maximum force and power were similar. Both the 3/7 Protocol group and the 8-sets-of-6-reps group showed better results than the group that did 4 sets of 6 reps.

In sum, the researchers found that the 3/7 Protocol was effective and efficient—and that the athletes who used it obtained favorable results with a much lower volume of training.


DOES A FREE-WEIGHT EXERCISE ACTIVATE MUSCLES DIFFERENTLY THAN A MACHINE EXERCISE?
In one study, 12 subjects (average age 21.8) were randomly assigned to perform three exercises—bench press, shoulder (overhead) press and close-grip bench press—with a barbell and, separately, with a Smith machine. During each exercise session, the researchers collected electromyographic (EMG) data for the pectoralis major, anterior deltoid, triceps and biceps.

The study found that doing the three exercises with a barbell using a 10-repetition maximum load produced no significant differences in muscle activity compared with doing the same routine on a Smith machine. In other words, the involvement of the chest, shoulders and upper arms was similar regardless of whether the exercises were done with free weights or a machine.

A muscle doesn’t “know” whether the source of resistance is a barbell, a machine or a cinder block. It’s no surprise, then, that the same exercises activate the same muscles when done with barbells as when done with a machine.


CAN SPICY FOODS BE EFFECTIVE IN WEIGHT MANAGEMENT?
Although the notion that spicy foods can help in weight management might sound like something in a supermarket tabloid, the idea has some intriguing possibilities.

For one thing, spicy foods can increase metabolic rate by raising body temperature. The greatest increase in body temperature is triggered by capsaicin, a molecule that’s found in chili peppers; it’s what makes hot peppers hot. It’s also the active ingredient in pepper spray.

Keep in mind, however, that the thermogenic effect of capsaicin on metabolic rate is temporary—and small. Remember, too, that eating any food will increase your metabolic rate. The reason: The body uses calories to digest, absorb and transport food. This thermic effect of food—referred to scientifically as “specific dynamic action”—accounts for roughly 10% of the body’s daily caloric intake.

But the real benefit of eating spicy foods is that it seems to curb appetite. Research indicates that spicy foods produce an increase in satiety and a decrease in caloric intake. Taken together, an increase in caloric output (however slight) and a decrease in caloric intake would help in weight management.

One caution: Spicy foods can cause gastrointestinal distress, so they should be avoided by people who have ulcers or chronic heartburn or who were instructed by their doctor to do so.

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