

american FITNESS

COVID-19
SOLUTIONS
ISSUE
COVID-19

RAMPING UP
AFTER
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GROUP
BALANCE

CEU CORNER:
MUSCLE CLOCKS

RANDY HETRICK
A ROAD MAP
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ON THE COVER

34 RESOURCEFUL AS A COYOTE. TENACIOUS AS A CACTUS. Randy Hetrick created a global training brand with a “never quit” mindset.
BY SHIRLEY ARCHER, JD, MA

COVER PHOTO
BY LAURA REOCH



PHOTO: LAURA REOCH



52



12

RESEARCH, INDUSTRY NEWS, BUSINESS TIPS

- 07** TRAINING EDGE: INDUSTRY NEWS, INSIGHTS & TOOLS
BY LAURA QUAGLIO
- 20** COVID-19 AND THE HYBRID MODEL FOR FITNESS FACILITIES
BY DANA MILKIE
- 70** Q+A: YOU ASK, WE ANSWER
BY TONY NUÑEZ, PHD

FEATURES

- 24** TIME FOR MUSCLE CLOCKS
CEU CORNER: Understanding these internal timekeepers can set your clients on a better path to success.
BY AMY ASHMORE, PHD
- 42** SUCCESSFUL PANDEMIC PIVOTS
BY PAMELA LIGHT, MA

PERSONAL TRAINING

- 12** THE VALUE OF CORRECTIVE EXERCISE
BY KEN MILLER, MS
- 49** POST-PANDEMIC RETURN-TO-TRAINING AND THE NASM OPT™ MODEL
BY KINSEY MAHAFFEY, MPH

GROUP EXERCISE

- 16** SAFE PASSAGES: GROUP FITNESS STUDIO HYGIENE
BY ANGELA YOCHUM, MED
- 52** BALANCE TRAINING BENEFITS
BY MELISSA WEIGELT, MS

NUTRITION

- 55** FOOD NEWS & FACTS
BY ANNE WARREN
- 62** 7 TIPS FOR EATING WELL ON A BUDGET
BY ABBIE GELLMAN, MS, RD, CDN

RESTORATIVE MOVEMENT

- 67** EXERCISE AND PTSD
BY PORTIA PAGE

AFAA-NASM NEWS & VIEWS

- 04** CONNECT
- 05** PRESIDENT'S MESSAGE



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LAURIE MCCARTNEY, PRESIDENT

TAKE FIVE

CHECK OUT FIVE OF
OUR FAVORITE HIGHLIGHTS
FROM THIS ISSUE!

24 CEU CORNER: MUSCLE CLOCKS AND THE VALUE OF SYNCHRONIZED TRAINING
Time your training for best results.

34 CREATING A GLOBAL TRAINING BRAND AND A "LIVING" PRODUCT
TRX® founder Randy Hetrick, MBA, drives his career with a transformative vision.

42 A FIT RESPONSE: LESSONS LEARNED FROM THE GYM SHUTDOWN OF 2020
Fitness professionals share their stories, surprises and successes.

49 THE COMEBACK CLIENT: HOW TO TWEAK THE NASM OPT™ MODEL FOR RETURN-TO-TRAINING
Assess from a fresh perspective.

52 INTEGRATING BALANCE INTO GROUP EXERCISE
Teach off-center movements to help participants train for life.

A TIME OF TRANSFORMATION

Welcome to the season of change. Now is the time to get ready for the coming tidal wave of New Year's resolutions by preparing yourself with fresh perspectives on how to help your clients transform their lives. This issue is loaded with bold new ideas and insights that will help you achieve your personal and professional goals.

Randy Hetrick, MBA, Optima 2020 keynote speaker and the subject of our cover story (page 34), talks about the unique journey he took in creating his revolutionary brand, TRX®. At each step along the way, Hetrick found ways to build on his experience and the lessons he learned. We can all find inspiration in his strategies and apply them to our own journeys.

Reflecting on the pandemic, NASM and AFAA pros share valuable anecdotes on how they handled the shutdown from many different angles (page 42). These real-world voices offer useful, timely tips on the shift to virtual training and how to pivot with a purpose during these challenging times. In a few wise words, Angie Miller, MS, a Master Instructor for NASM and AFAA, touches on how she coped: "Health, fitness and wellness are the backbone of what builds resilience."

In "The Comeback Client: How to Tweak the NASM OPT™ Model for Return-to-Training" (page 49), Kinsey Mahaffey, MPH, explores how to apply the NASM Optimum Performance Training™ model to clients who are returning from quarantine. An NASM Master Instructor, Mahaffey underscores the importance of carefully reassessing clients and meeting them where they are. Thankfully, the OPT model provides the perfect structure for ramping up to pre-quarantine markers.

In our CEU Corner, "Muscle Clocks and the Value of Synchronized Training" (page 24), author Amy Ashmore, PhD, explores exciting, groundbreaking research about muscle clocks and how to apply the concept safely and strategically to your exercise programs. For example, because muscle clocks tend to respond best to continuous, rhythmic movement, resistance training should be carefully planned to provide consistent cues.

Group exercise instructors looking to include more balance in their classes will appreciate the Melissa Weigelt, MS, article on fun ways to integrate cardio, strength and flexibility into the mix (page 52). This column offers several creative ideas.

In a year filled with unexpected twists and turns, our focus remains fixed on *you*. We are here to provide the knowledge and tools you need to support the amazing work you do. As always, we invite you to connect with us and share how your hard work and skills are making a difference.

Yours in health,

Laurie McCartney
President - Global Fitness & Wellness Solutions



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Training Edge [INDUSTRY NEWS, INSIGHTS & TOOLS]

Moving Forward: A Fitness Pioneer's Pandemic-Inspired Best Practices

"My whole schtick when I opened in 2013 was to provide the fitness industry's first one-on-one personal training that's done in a group setting," says Donny Day, NASM-CPT, owner of Peak Zone Fitness in Lake Highlands, Texas. Pre-pandemic, his workout classes held up to 24 members, with each person receiving individualized medical testing, vitals tracking, motivational coaching, nutrition counseling and workout parameters (such as tempo, weight load and difficulty). Then, on a Monday night, Day caught wind of the governor's shutdown order.



"I sent out an email right away and said, 'Don't worry about it. I'll have a workout for y'all tomorrow,'" he says. The next morning, Day was live-streaming on Facebook, and he hasn't stopped innovating ever since. Below, he shares some of the approaches that helped him retain most of his members, add new ones and serve them all in half the time.

Don't feel the need to go live.

Soon after going online, Day switched to prerecorded videos to provide higher quality (and to minimize mistakes). The sessions still have the feeling of a live class because members get to follow along with someone they actually *know*.

Move onboarding online. New members used to come in for a 2-hour consultation, but now they receive an email questionnaire instead. A trainer's

time is better spent creating and explaining individualized programming than doing paperwork, Day says.

Save time on assessments. Thanks to his video library, Day is able to shut down the club for a week (twice a year) for client assessments without interrupting training. (He used to do assessments year-round.) He has also taught clients how to self-assess on a regular basis by taking photos, doing simple exercise tests or taking measurements.

Offer equipment rentals. During the shutdown, Day sent home dumbbells, medicine balls, mats and more—on a donation-only basis. This helped him retain members, including ones who didn't use what they borrowed. He is working with a third-party vendor to continue this popular service.

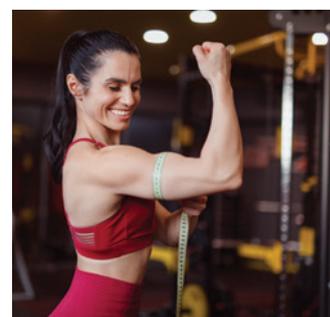
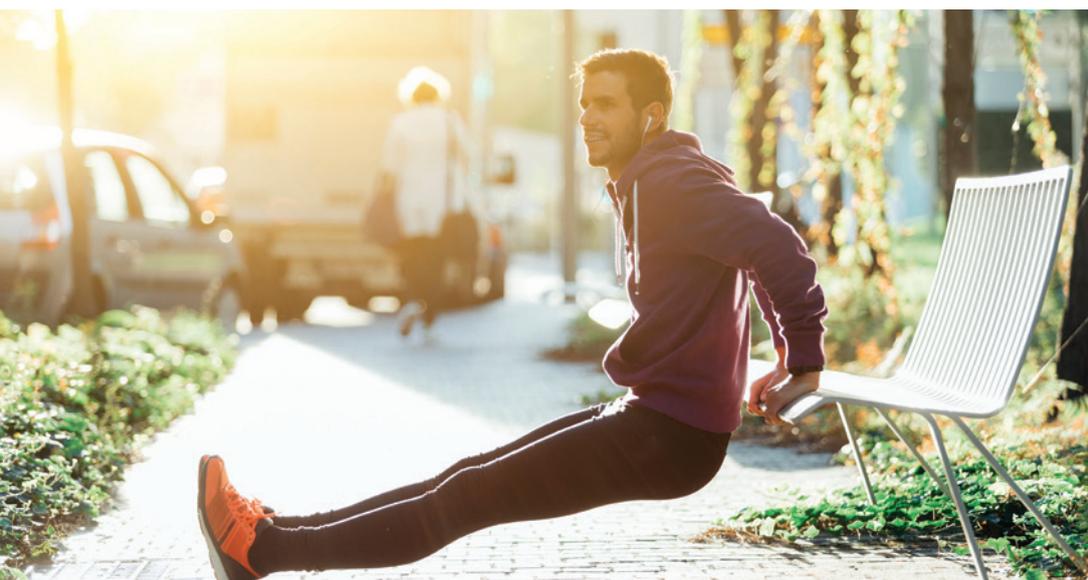
Challenge the status quo. In addition to creating a 56-day COVID-19 fitness challenge for members, Day created a 21-day version for the community. This, too, was customized—according to each person's fitness level, goals and home equipment. By using existing videos and nutrition materials, Day could keep costs low while attracting new business.

"My plan was to start doing online training in 2 years, but [COVID-19] forced my hand," he says. "We did lose a ton of revenue, but overall, I feel pretty blessed because now I have the ability to train people all over the world."



FORM FIX-UP WITH MIKE FANTIGRASSI

3 TIPS TO “TRI” FOR BETTER “ARM BALANCE”



A WORD ABOUT “WINGS”

Many clients ask what they can do about saggy upper arms. The culprit is usually excess skin and too little muscle, says Mike Fantigrassi, NASM-CPT and Master Instructor. “For example, a female who’s 50 and used to have ‘toned’ arms may have lost muscle mass—which happens every year after age 30—so the skin is looser in that area,” he says. “In that case, doing strength training can help those muscles return to the size they were when the client was in her 20s.” The result? The skin fills out a bit and the arm becomes better defined, all of which gets the client closer to the desired aesthetic.

We love watching our biceps flex during a set of curls, but it’s tough to see triceps in action, even with a mirror nearby. As a result, novice exercisers may largely ignore these muscles, even though they make up two-thirds of the upper arm. Giving triceps equal time in the gym can result in a better-balanced physique for clients, whether the goal is toning, strengthening or making serious gains in size. Here, Mike Fantigrassi, NASM-CPT and Master Instructor, shares some ideas for amping up any arm program:

Be flexible with phases. Even if clients are in Phase I: Stabilization for most moves, they may be able to use Phase III: Hypertrophy protocols for their arm work. (A seated biceps curl will deliver more arm benefits than a single-leg standing move.) If appropriate, consider using heavier

weights, greater intensity, faster (moderate) tempo, more sets and less rest between sets. You can even introduce drop sets if clients are ready.

If arms are a priority, work them early and often. Tackle them early in a workout session, so clients can really push themselves. You can also program an extra day of arm work: Small muscle groups recover faster than large ones, so you can train arms three times a week, with rest days in between.

Pre-fatigue the muscles. To take a tip from bodybuilders, offer supersets that alternate between an isolation exercise and a compound move. For biceps, this might be biceps curls then pullups; for triceps it could be triceps pressdowns then neutral-grip chest presses with elbows close to the torso.



Assign Yardwork as “Homework”

Plant care burns loads of calories! Here are two comparisons that might surprise you. (Note: Calculations are based on a 5-foot-10-inch, 154-pound man.)

Source: choosemyplate.gov/resources/physical-activity-calories-burn.

light gardening	330 cal/hr	heavy yardwork/ chopping wood	440 cal/hr
light weight training	220 cal/hr	vigorous weight training	440 cal/hr

Should You Coordinate Training With the Menstrual Cycle?

		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		



For years, researchers have explored how the menstrual cycle affects athletic performance. The consensus? There is none. That may be, in part, because symptoms differ so much

from woman to woman. “Just as some women experience horrible cramps and others don’t, some women experience increased fatigue during exercise, while others carry on as usual,” says Maria Luque, PhD,

certified personal trainer and a faculty member at Trident University in Cypress, California. “I always ask female clients to use a journal to track their motivation and energy so they can tell if their cycle is impacting their workouts.”

American Fitness asked Luque for a quick primer on what to know—and do—based on that information.

When is performance most likely at its peak?

Though hormone levels fluctuate every day of the month, progesterone and estrogen levels are lowest during the first 14 days of the cycle (the follicular phase), which begins with menses and ends with ovulation. This is generally when a female’s athletic performance is at its peak.

When does performance tend to suffer?

It’s the next 14 days (the luteal phase) that can cause problems. During this time, concentrations of estrogen and progesterone rise. This can lead to irritability, low energy,

bloating, sleep difficulties and other “PMS” symptoms. These changes can directly affect workout performance by raising body temperature and making it harder to regulate. Recovery can also be affected, because estrogen inhibits anabolic stimuli (making it harder to build muscle), while progesterone promotes protein catabolism (breakdown).

How might programming change during this phase?

The luteal phase is *not* the time to program a high-intensity or long-duration workout. It will fail on two fronts: (1) Clients won’t be able to accomplish it, and (2) the emotional distress this causes could be worse than the physical setback itself.

Instead, use this time for mindful, low-intensity mobility and/or balance sessions—and even some rest days. That way, clients will be well-recovered when their energy and motivation return.



A BEDTIME STORY FOR CLIENTS

Going to bed even 30 minutes later than usual can result in a higher resting heart rate, beginning during sleep and extending into the next day, says a study published in *npj Digital Medicine* (2020; 3 [29]). This is bad news: A higher RHR can negatively affect overall cardiovascular health—and the next morning’s workout. (Effects wear off by the following night.) Just another reason to talk to clients about establishing a healthy sleep routine, which they can reset when they change their clocks.

Beat the Body's "Gravitostat" With a Weighted Vest

Contrary to previous beliefs, the hormone leptin is not the body's only regulator of fat mass. In *EClinicalMedicine*, published by *The Lancet*, Swedish researchers explained their research on the gravitostat, a "loading dependent homeostatic regulation of body weight and fat mass." In short, these scientists believe that an energy balance system in the lower extremities provides feedback to the brain to help regulate body weight. But when we spend a lot of time sitting, it tricks the mechanism into thinking we're "lighter," so we are compelled to eat more (2020; 22 [100338]).

The solution in this study was to have 69 people with a BMI of 30–35 wear a weighted vest for 8 hours per day for 3 weeks. Members of the control group wore a vest weighing 1 kilogram (2.2 pounds), while other participants donned a garment weighing 11 kg (24 pounds).

By study's end, the control group had shed just two-thirds of a pound, while the heavily vested group had lost about 3.5 pounds. Even better: The pounds lost were fat, not muscle. The researchers recommend doing further study, including into whether the fat lost was subcutaneous or the more dangerous visceral kind that gloms onto the internal organs.



Using Activity Trackers to Predict—and Promote—Longevity

Using accelerometer data from 548 well-functioning adults ages 65 and older, researchers at Johns Hopkins Bloomberg School of Public Health discovered that participants who engaged in fragmented physical activity (in bouts of less than 5 minutes) were at greater risk for death from all causes than were those whose activity typically lasted 5 minutes or more (*JAMA Network Open*, 2019; 2 [10], e1912352).

Researchers hope this information may inspire physicians to monitor patients' activity with

wearables, particularly as they reach ages where adults tend to become more sedentary. "A doctor seeing a patient transitioning into a more fragmented activity pattern and a more sedentary state might initiate a prescription for a tailored physical activity regimen," says lead study author Amal Wanigatunga, PhD. "I think that type of clinical application, where we aim to wield exercise formally as medicine, is where the study of activity fragmentation can take us."



Early this year, Michael Scott Emery, MD, FACC, and colleagues sought to tackle one of the many mysteries of COVID-19: When is it safe for recovered patients to return to exercise?

In their expert analysis, published in *The American*

Journal of Cardiology, these researchers noted that intense or vigorous exercise is not recommended during active infection because of the risk of myocarditis (inflammation of the heart muscle). This condition can cause heart dysfunction,

irregular heartbeat and even death (see "Exercise and Athletics in the COVID-19 Pandemic Era," acc.org).

Recreational exercisers who are cleared by their healthcare team can begin building up to their usual program 2 weeks after a



How to Make Money Training Clients Online: A Multimedia Mini Course

A survey of 1,000 fitness club users, conducted in April by Harrison Co. (an investment bank), produced an interesting statistic: 40% of respondents had exercised at home for the first time ever because of COVID-19 restrictions.

Those who wind up preferring a home-based workout will have a particular need for guidance to ensure that safety, form, assessments, progress and adaptations are still part of the plan. To make sure our certified personal trainers are ready to serve these homebodies effectively, NASM created a new mini course called “Fundamentals of Virtual Coaching.” In just a few hours, you can work through the following multimedia materials and earn a Certificate of Completion:

✓ **5 In-Depth Lessons:** Introduction to Working with Clients Online, Setting Up Your Space, Online Fitness Pro-

- gram Design, Virtual Coaching Business Essentials and Bonus Resources
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 - ✓ **24-Minute Podcast Episode:** How to Virtually Train Clients in a COVID-19 World
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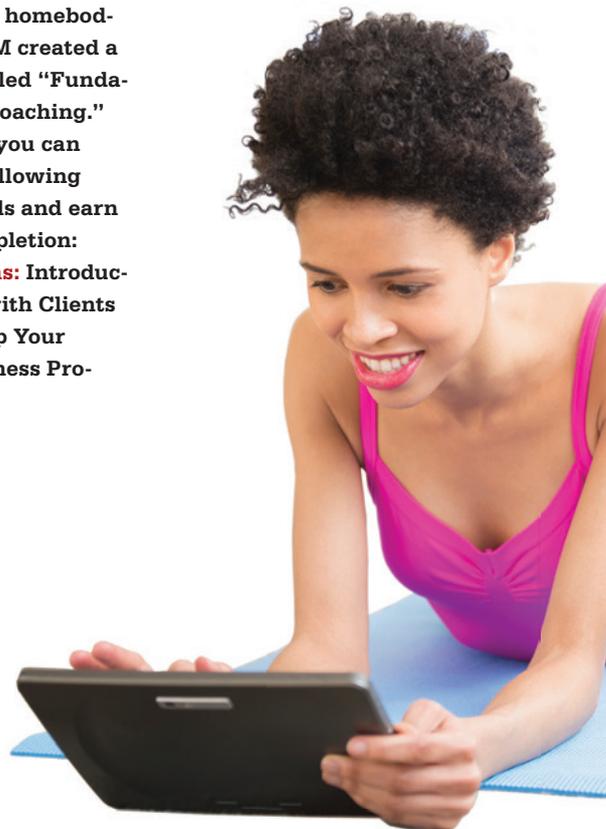
COVID-19 RECOVERY: CONSIDERATIONS FOR ELITE ATHLETES

positive test result, if they've been asymptomatic, or 2 weeks after symptom resolution in other cases. Elite or competitive athletes need to be a bit more cautious, though. They may require additional tests, such as an ECG and an MRI, before

resuming their usual routines.

Trainers should work closely with a client's healthcare team to determine the safe upper limit of exercise and identify other concerns before creating and progressing a program. A review of

Chapter 16 in the *NASM Essentials of Personal Fitness Training* (6th ed., 2016) may be helpful to trainers who do not typically work with populations with compromised health.



.....
LAURA QUAGLIO has been a writer for the *National Academy of Sports Medicine* since 2013. Her favorite physical activity formats include karate, vinyasa flow yoga and every type of group exercise class.



FIT FOR COMPETITION: THE VALUE OF CORRECTIVE EXERCISE

All competitive athletes focus on strength and power in their programs. Adding a dose of corrective exercise can give your clients an edge by improving stability, endurance, recovery, resilience, movement efficiency and more.

BY KEN MILLER, MS

Like most areas of physical exercise, sports performance training has evolved over the years. As new modalities have proven their worth through research and real-world experience, strength and conditioning (S&C) or performance-based coaches have embraced and integrated these methods into their clients' programming. Such modalities have ranged from power lifts and Olympic lifts (and their respective variations) to equipment-based programs and functional body-weight exercises.

Unfortunately, that list does not include corrective exercise (CEx), which still suffers an undeserved stigma in the field of S&C. For many performance-based athletes, the perception is that diverting time to CEx (and therefore away from training for strength and power) is detrimental to performance. This could not be further from the truth.

Stabilization, which is a key component of CEx, is the foundation on which strength and power are built. CEx promotes structural integrity and movement efficiency, which can help elite athletes minimize their risk for muscular and joint stress and, therefore, injury. If athletes do become injured, a CEx program can allow them to continue to participate in a modified way (under the guidance of a medical team)—while also facilitating a faster and more complete recovery. CEx can even help injured athletes return to

competition with greater durability and resilience than they had before.

To “correctly” apply the principles of CEx, the performance coach must gain a thorough understanding of muscle imbal-

THE NASM OPT™ MODEL



ances and their impact on movement. What follows is a primer on CEx and a look at the science and strategies that make it a valuable addition to the NASM Optimum Performance Training™ model—and to any elite athlete's program.

How CEx Works

Corrective exercise is an individualized, assessment-based strategy for using flexibility and exercise techniques to improve movement by addressing muscle imbalances. A simple overhead squat assessment often

When stabilization is no longer emphasized in workouts, one's ability to maintain postural endurance can decrease.

This makes way for synergistic dominance and more pronounced compensation patterns to emerge during sport, play or conditioning sessions.



may use that level of programming before starting a stabilization level program. They can also return athletes to CEx programming during each week, month or year of training, as needed.

For example, as athletes progress through the OPT model, moving into Phases 3–5, their ability to stabilize will naturally decrease over time. That’s because increasing force production, strength and speed means performing exercises that are more explosive and dynamic. When stabilization is no longer emphasized in workouts, one’s ability to maintain postural endurance can decrease. This makes way for synergistic dominance and more pronounced compensation patterns to emerge during sport, play or conditioning sessions. “Undulating” or “hybrid” workout cycles are often used to prevent this, with athletes cycling back to earlier phases of the OPT model every few months, as shown on page 14.

Incorporating CEx into a program based on the NASM OPT model can help injured athletes recover and return to sport, but it can also help uninjured athletes maintain (or reintroduce) structural integrity and movement efficiency (see “Corrective Exercise Continuum,” below, for more).

Triple Threat: Factors That Impact CEx

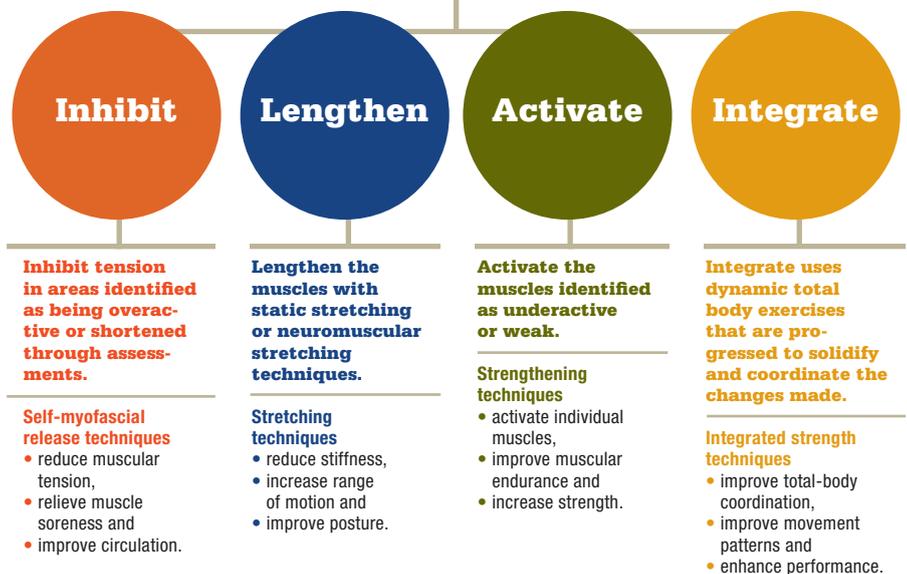
Adding CEx to an athlete’s sports performance program can take many forms, but

provides enough information to generate a person’s CEx program. However, adding other movement or joint-specific assessments may provide more detail, allowing the performance coach to emphasize particular areas of dysfunction in the athlete’s program. As the athlete regularly executes these exercises with minimal compensation, the body acclimates to improved movement patterns; this relieves physical stress and diminishes observable malalignments in the kinetic chain. All of this adds up to a stronger foundation upon which to build strength, power and endurance.

How CEx Works With the NASM OPT™ Model

Corrective exercise is designed to complement and support both performance enhancement and the OPT model. Performance coaches who are educated in corrective exercise, including assessments and program design,

Corrective Exercise Continuum



in each case three main factors influence effective implementation. These factors are **time**, **equipment** and **environment**. As you can see below and in the chart on page 15, these factors are interdependent and must therefore be considered collectively.

Some questions to ask the athlete:

- How many times per week will you be able to do CEx?
- How many minutes can you devote at these times?
- Where will you be at these times?
- What equipment will be available to you at this time and location?
- Would you like to obtain more equipment, such as larger home-gym equipment and small, portable tools?

TIME

Workout schedules vary from person to person. Some clients may be able to train on only a limited number of days each week but will have time for longer workouts on those days. Others may be able to train on more weekdays but in smaller time slots. Adding CEx to an already demanding schedule may require some creativity—and when an athlete is “free” may determine what equipment he or she can access.

Some specific times to consider:

- before, during or after a dedicated workout session (with coach present)
- before or after a workout (without coach present)
- during work breaks (short bouts of time)

- as a break from seated/static position during recreational time (e.g., reading or watching TV)
- when traveling for work or sport
- on an “off” day in the training schedule (CEx can be done at home or at a fitness facility)
- before or after a competition or an event

EQUIPMENT

Dependence on specific equipment to successfully complete a corrective exercise program will have a role in when and where the program can be done—and vice versa. A program that requires a step or cable machine may be difficult to do outside of the typical health club or well-equipped home gym. When traveling, athletes may want to take portable items or do body-weight training—or they can check online to see what is available at their hotel fitness facilities.



Sample Program: CEx and OPT (Monthly & Weekly)

A sample 3-month program with CEx may look like this:

	MONTH 1	MONTH 2	MONTH 3
Corrective Exercise	✘		
PHASE 1: Stabilization Endurance	✘		
PHASE 2: Strength Endurance		✘	
PHASE 3: Hypertrophy			
PHASE 4: Maximal Strength			✘
PHASE 5: Power		✘	✘

Some months show multiple training phases. These multiple phases will be completed only during those calendar months. Example: As the first month is broken down further, the weekly schedule might look like this:

	WEEK 1	WEEK 2	WEEK 3	WEEK 4
Corrective Exercise	✘	✘	✘	
PHASE 1: Stabilization Endurance			✘	✘

If athletes cannot always perform a CEx program in the same location, it may be helpful to offer modifications that will enable them to execute the program anywhere, without missing a beat.

Sample Program: Corrective Exercise Execution Plan (Variations)

Here is a sample program for adding CEx to an NASM OPT™ model workout, including the execution plan. It provides options for the client working out at home alone, in a gym with a partner or at a fitness facility at a hotel (both solo and with a partner).

WORKOUT	PHASE	DURATION (IN MINUTES)	TIME	EQUIPMENT	ENVIRONMENT
1	Corrective Exercise (long program)	30	morning (before work)	percussion massage device, mini bands	in home garage, working alone
2	Phase 3: Hypertrophy	60	after work (before dinner)	foam roller, barbell, dumbbells, cable machine	at a fitness facility, working with a partner
3A	Corrective Exercise (short program)	15	morning (before breakfast meeting)	foam roller, stability ball	hotel fitness facility, working alone
3B	Phase 2: Strength Endurance (with cooldown)	45	after completing 3a	cable machine, dumbbells	hotel fitness facility, working with a partner

Some equipment that can be used anywhere:

- self-myofascial release tools (including small, vibrating tools, percussion massage devices and larger options, like foam rollers)
- mini bands and other resistance bands
- Gliding™ discs
- stability balls

ENVIRONMENT

If athletes cannot always perform a CEx program in the same location, it may be helpful to offer modifications that will enable them to execute the program anywhere, without equipment.

Some locations they can consider:

- in their usual fitness or training facility
- while traveling—in a hotel room, hotel gym or the facility available for their competition/event
- on the sidelines of a court or field or in the warmup area (as on a golf course)
- at the workplace—in an office, break-room or outdoor area/nearby park
- at home (in a gym setting or simply a spare room or basement)

Another factor to consider, which is often related to timing or environment, is who (if anyone) will be participating in or facilitating the workout:

- the athlete (working alone)
- the athlete with a sports coach or trainer
- the athlete with a workout partner (who may be an elite athlete or a loved one)



Talking with a client about all these constraints—*prior to* designing a CEx program—can help you ensure it will be a realistic and worthwhile plan.

Draw Up a Program to Paint a Clear Picture

Putting together a schedule like the one on page 14 will help athletes see how you intend a program to be executed. This will elicit valuable feedback for you and allow your clients to ask questions or request modifications that can help them implement the programming in an unusual circumstance. For example, an athlete who will be traveling in the first month of the program may have to take extra steps to plan for the routine during that time.

The True Value of Corrective Exercise

Movement for sport does not just mean “move strong and move fast.” For the lifelong athlete, it most importantly means “move *well*.”

Sports performance training and corrective exercise go hand in hand. The question a sports performance coach has to ask is, “Am I trying to develop this athlete to perform better for this one year (or this one season)—or am I trying to get this athlete to perform better for life?” The best answer for that set of questions is “both.” Athletes who can move better recover better. And if they are better recovered, their bodies will be in a better state to perform for the next workout, practice session or competition.



.....
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UPGRADING GROUP FITNESS STUDIO HYGIENE

Review your safety and cleanliness checklists before welcoming participants back into your classes.

BY ANGELA YOCHUM, MED

Your brick-and-mortar group fitness program probably took a major hit with the pandemic lockdown. As a result, you had to learn new health and safety protocols and procedures for yourself and your participants. COVID-19 certainly changed the way we teach, and many issues are still up in the air. Wherever your facility is and regardless of local guidelines and protocols, you can take preventive measures to help participants feel safe and welcome.

Ultimately, during stressful times like these, your focus should be on retaining, not increasing, membership. “We are in a retention phase,” says Tricia Murphy Madden, Seattle, co-creator of Barre Above®. “Be the solution.” Being part of the solution in this case means inspiring confidence with a proactive COVID-19 hygiene reassessment. So, your first task is to review your safety procedures for group fitness; then, you can get people moving again.

Group Fitness Program Practices

Start by looking at both the logistics of your physical group fitness space and your class schedule. If you’re the group fitness director, gather information from staff. If you’re an instructor, look to leadership to begin the assessment process. Based on the Centers for Disease Control and Prevention guidelines, the following concerns need to be addressed:

SPACE LOGISTICS

SOCIAL DISTANCING. Are you adhering to the CDC’s recommendation to keep at least 6 feet between people in the room? Have you determined your entering/exiting procedures? Is the floor marked to allow 36 square feet per person? Measure the space, divide by 36 and place obvious markers (or “dots”) on the floor. Ensure that equipment is placed a minimum of 6 feet apart throughout the fitness space.

CLEANING AND DISINFECTING. Are you adhering to the CDC’s guidance for cleaning and disinfecting the workplace? Make sure the following aspects are clear to everyone:

- Establish general cleaning practices for before and after classes.
- Determine the best cleaning practices for specialized equipment—indoor



- bikes, chairs for seniors, step benches, dumbbells/barbells, etc.—or limit their usage.
- Be sure you have enough commercial-grade cleaner.
- Provide touchless hand sanitizers (and/or wipes) and make them readily available. Consistently refill supplies.
- Remove floor fans to prevent circulating infected air.
- Offer disposable masks and/or gloves for any staff member or participant who requests them.
- Share your hygiene guidelines and procedures with all staff and members through a variety of platforms, including social media, email, texts/phone calls, fliers, etc.

- Post signage about how to stop the spread of COVID-19. Many pre-made posters are free and available for download from industry education and certification companies.

CLASS SCHEDULE AND EQUIPMENT CONSIDERATIONS

Don't overlook the details of scheduling and equipment maintenance. Keep the following in mind:

- Cap classes at a room capacity that ensures people meet social distancing requirements. Check whether the capping process is working or needs to be adjusted.
- Allot 20–30 minutes between classes for thorough sanitization of equipment, room ventilation and transition time

for participants. Adjust the official schedule to reflect this transition time.

- Require participants to bring their own mats for all floor-work. Make sure people bring their own props for mat-based classes, such as yoga and barre.
- Teach classes that require minimal to no equipment, to limit touch points.
- Communicate class schedule considerations to all staff and members through a variety of platforms, including social media, email, texts/phone calls, fliers, etc.

FITNESS PROFESSIONAL PRACTICES

To comply with your facility's safety procedures, there are a few additional things you can do for yourself. For example, consider your "instructor bag," which typically contains all the items you need to teach a class. This can be a tote, backpack, large purse, etc. As part of your COVID-19 reassessment practice, think about transforming your standard instructor bag into a "coronavirus survival bag."

A standard bag typically includes items like these:

- a water bottle, snacks, protein bars, performance-enhancing drinks
- personal hygiene products: mints, toothbrush, deodorant, body spray, baby wipes, makeup, tampons, hair ties, lint roller, etc.
- instructional tools, such as choreography notes, the class lesson plan, etc.

Are you adhering to the CDC's recommendation to keep at least 6 feet between people in the room? Have you determined your entering/exiting procedures? Is the floor marked to allow 36 square feet per person?



Participant Practices

Participants who attend in-studio classes at this time likely don't feel high anxiety about germs, or they wouldn't show up at all. However, they still want to be reassured that the exercise environment is a safe space. To maintain their confidence, review the following:

- Ensure that participants know exactly what's expected of them: protocols for entering/exiting the space, cleaning procedures, equipment they might need to provide themselves and any sign-up procedures.
- Alert participants if locker rooms, showers, tanning beds, etc., are closed.
- Clearly communicate participant expectations and procedures to all staff and members via a variety of communication platforms.

- a pen and notebook to take notes and write down participants' names
- format-specific music on your phone, iPod, laptop, tablet, etc.
- your own microphone windscreen
- your own microphone belt (and an entire microphone headset system, if you own one)
- an Apple dongle adapter if you use an iPhone 8 or newer model, plus any other adapters you need to play music
- your own Bluetooth speaker and interval timer

An upgraded coronavirus survival instructor bag includes everything from your standard bag, plus additional items:

- hand sanitizer and/or sanitizing wipes
- personal protection equipment (PPE), such as a face mask, shield or covering, and disposable gloves
- your own small equipment—yoga mat and props, small dumbbells, tubing and sliding discs—and any other lightweight equipment you would use to teach class

Add Value to Your Programming

Now, more than ever, class participants want to experience value. In addition to reevaluating your hygiene practices, extend a sense of “more” in your membership packages by offering additional services:

STREAM LIVE CLASSES. Add a webcam to your current fitness space and livestream your classes, especially for the active-aging population. “I think there are a few components that are changing the forward-going approach,” says Murphy Madden. “Many states may have significant restrictions on immune-suppressed populations of 65 and older. In addition to that, a huge part of your membership base will be reluctant to come in, even without restrictions.” Livestreamed classes will add safety while maintaining a connection to your fitness facility.

PROVIDE OUTDOOR CLASSES. Offer classes “without walls” if you have enough space and the weather permits. These classes give participants the safety net they desire, while still allowing them to exercise in a group setting. “Creative cardio solutions could be your survival kit to allow people to still work out with your club,” says Murphy Madden.

PROMOTE A SENSE OF COMMUNITY. Generate activities that bring people together in person and/or online. Try weight loss challenges, wellness contests and/or a daily webinar, all of which contribute to building community and brand loyalty.

Help your brick-and-mortar fitness classes remain healthy by being part of the solution—reassess, readjust and implement necessary practices. Taking these proactive measures to keep people healthy will pay off as members retain faith and confidence in your brand.



ANGELA YOCHUM, MEd, has nearly two decades of experience as both an ACE-certified group fitness instructor and director and an English and physical education teacher. She earned her master's degree in education from Portland State University and continues to fight for higher standards in group fitness. She founded GFIT Education LLC to provide instructors with more live opportunities for continuing education.

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HOW COVID-19 ACCELERATED THE HYBRID MODEL

Embrace a new way to do business, keep people moving and cater to the health seeker.

BY DANA MILKIE

The fitness industry, like many others, has been turned upside down by the pandemic. Government-mandated shutdowns were a harsh new reality for which many were unprepared. However, the “new normal” has opened a door for fitness providers to push the boundaries of what they can deliver. For years, fitness facilities have operated with similar models. Owners have relied on physical locations to grow and sustain their businesses. That all changed with COVID-19. The coronavirus showed us that the physical gym floor is not enough and the road to health is not a straight line that runs through treadmills.

Read on to find out how health and fitness owners and operators must leverage a new, hybrid model where facilities remain at the core of the member’s experience and digital technology further enables fitness beyond four walls.

Where We’ve Been

Prior to the pandemic, the industry’s top priority was helping gym-goers reach peak physical appearance, and operators catered to this motivation. Less emphasis was placed on the effect that fitness had on overall health and immunity. Too often, the messaging to members was “How do you want to look?” instead of “How do you want to feel?”

From an operational standpoint, health clubs have historically underprioritized technology as a tool to advance their impact on members. Fitness facilities have consistently adhered to a standard format, with members paying monthly fees for access to facilities with similar equipment and programming. Because this approach satisfied many, there was little desire to introduce member touch points beyond the gym.

Additionally, health clubs have continued to compete against—rather than embrace—the “next best thing.” While many members prefer the comfort of the gym floor, others pursue boutique classes, outdoor activities and more. However,



rarely have operators leveraged digital technology as part of their strategy—and that's been an oversight.

An Impacted Industry

COVID-19 has sparked a shift in member mindsets. Gym-goers have been challenged to think about their health more holistically. Instead of just considering appearance, they are now mindful of how fitness affects lifestyle, mental health and, perhaps most importantly, overall immunity. This seismic shift has created a new member category: the health seeker.

To best cater to this member's mindset, priorities must change. When the closures took place, for example, the question was no longer, "How do I compete against other clubs, studios, home gyms and outdoor activities?" but rather, "How do I extend the gym community to reach members in their homes?" Owners were challenged to



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deliver a virtual experience that guaranteed members would return once stay-at-home orders were lifted. Furthermore, with re-opening in mind, owners needed to plan for members' safety. These developments allowed new priorities to rise to the surface.

As a result, the shutdown has accelerated the shift toward digital transformation. While technologies have always been available, businesses have opted to forgo them and continue with traditional gym equipment. Now, owners realize they no longer have a choice.

Introducing the Hybrid Model

With all that said, one thing is clear: Relying on the traditional gym floor as the only vehicle for fitness is an outdated notion. It's time for fitness facilities to move into a new era. Enter the hybrid model. From an industry perspective, this puts the gym floor at the center of a hub-and-spoke model and then leverages other exercise avenues (at-home workouts, outdoor activities and virtual classes) and digital solutions to help members better understand, track and control their fitness journeys.

How do gyms adopt the hybrid model? Managers and owners have been increasingly aware that digitizing the gym floor is important. When nonessential businesses closed, it was a worrying time for

brick-and-mortar services. To survive, health and fitness facilities had to innovate quickly by moving online. Owners needed to understand and accept that technology was critical—and then implement a digital strategy as swiftly as possible.

Now, it's time to take the lessons gleaned from these innovations, combine those lessons with current facility offerings, and continue giving existing and new members an experience that delivers results in tune with changing expectations.

So, what does this mean for *your* business?

- First, acknowledge that the pandemic has completely altered the fitness industry landscape. People are concentrating on their holistic well-being above aesthetics. Consumers are now health seekers looking to improve immunity and quality of life. As an owner, you must adjust your business model and mission to cater to these member needs.
- Create a comprehensive omnichannel experience for members by implementing mobile apps, smart device integrations, livestream content, social media, technology-driven equipment and more. Ultimately, this will allow you to maintain and strengthen relationships with your community both in the physical gym and at home.

- Let go of seeing industry peers as competitors. Embrace the roles that all experts play in the new health-seeker mindset. The “hub-and-spoke” hybrid model allows gyms to work in tandem with other forms of exercise by acting as the main anchor to enable members to meet their health and immunity goals.
- Focus on a blend of in-person and digital services while incorporating community-based initiatives that remind members that at-home workouts are meant to augment, not replace, their in-facility experience.

A Reason to Return

For health and fitness industry professionals, it is imperative to move away from the mindset of “Build it and they will come.” Traditionally, the belief was that if gyms offered the right mix of equipment, pro-

When the closures took place, the question was no longer, “How do I compete against other clubs, studios, home gyms and outdoor activities?” but rather, “How do I extend the gym community to reach members in their homes?”

gramming and amenities at the right value, nothing would stop people from walking into the facility. This has clearly changed in the past few months.

We have seen that online fitness is an acceptable alternative. However, health facilities must continue to offer resources that remind members about tangible and community-oriented aspects of the gym that they may be missing. It is vital to give people a reason to return by establishing yourself as the core of their solution to better health.

Embrace change at this time. Look to digital solutions for strategic support, rather than fierce competition, and prepare your business to be nimble in an ever-changing world.



DANA MILKIE
has spent many years in the fitness industry and is EGYM Digital Solutions’ vice president for North America.

Hybrid Model Examples

Here are just a few ways to transition to a hybrid model that will attract health seekers:

- Offer smartphone check-ins.
- Livestream all classes or at least a selection.
- Install “smart” equipment that integrates with other apps.
- Provide online courses that cover a variety of health and wellness topics.
- Offer virtual personal training in addition to in-person and small-group sessions.





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Muscle Clocks and the Value of Synchronized Training

By spending a hot second or two studying muscle clocks today, you can help clients make the most of every minute of their workouts.

BY AMY ASHMORE, PHD

Many exercisers and athletes prefer to train at the same time every day. They may suggest a variety of reasons for this: That's when they feel most awake, least hungry, most focused or least stressed. They may even say it seems *easier* to work out at a consistent hour. They're probably right: But the reason is not merely psychological. It's biological, too. And it all begins with something that *everyone* has but *most* have never heard of: a collection of muscle clocks.

Muscle clocks are internal timekeepers that reside in muscles in the body, in much the same way that the master circadian clock resides in the brain. While the master clock monitors and regulates the rhythms of the body as a whole, muscle clocks are primarily responsible for synchronizing daily muscle activity with the rest of the body and the environment surrounding it. When skeletal muscles, biological systems and environmental events are synchronized, a rhythm is established that benefits the entire body, influencing sports and fitness performance, disease prevention, and overall health (Mayeuf-Louchart, Staels & Duez 2015).



The purpose of all internal clocks, including muscle clocks, is to use information about the timing of events inside and outside of the body to align the body with the environment on a 24-hour schedule.

Learning what makes muscle clocks tick, both on a cellular level and systemwide, can help you understand the basis for synchronized training. Here, you will find an overview of the biology of muscle clocks and the programming principles—including biometrical similarity and intermittent rest—that are based on them, as well as sample programs illustrating their use.

By considering these factors when creating programming, you can help clients reap more benefits from each exercise session, while also improving overall health and disease prevention in the long term.

WHY MUSCLE CLOCKS ARE KEY

Because body mass is over 40% muscle, this type of tissue has a powerful influence over the body. Additionally, there are more than 600 skeletal muscles, and each one has its own clock; therefore, there are more than 600 independent muscle clocks in the body.

Every 24-hour period, these muscle clocks work to synchronize skeletal muscle activity to the master clock located in the brain. Furthermore, muscle clocks work to align daily muscle activity with natural body cycles (like fluctuations in hormone levels and body temperature); with other organs and systems in the body (affecting the digestive system, liver and eating habits, for example); and with external environmental events (like day and night changes in light levels). Muscle clocks also communicate among themselves and with other clocks in the musculoskeletal system, including tendon and ligament clocks.

It is important to note that although the master clock in the brain exerts direct control over muscle clocks, these clocks do not exert direct control over the master clock; however, via exercise (as shown later), muscle clocks do indirectly influence the master clock.

HOW MUSCLE CLOCKS COMMUNICATE

Synchronization of muscles and body systems occurs through a complex system of communication at the cellular level.

Muscle clocks are actually genes, also termed **transcription factors**, made up of proteins that help regulate muscle function. When skeletal muscles contract repeatedly (as during exercise), they release **myokines**, a type of protein specific to muscles. Other body systems (including the master clock) recognize myokines as a signal that muscles are working. It is through this release-and-recognition pattern that skeletal muscles and other body systems communicate and, ultimately,

become synchronized during and after exercise to maximize performance and health benefits. The key to understanding how muscle clocks can optimize health and fitness is to recognize how they rely on timing.

WHY FITNESS TIMING MATTERS TO MUSCLES

The purpose of all internal clocks, including muscle clocks, is to use information about the timing of events inside and outside of the body to align the body with the environment on a 24-hour schedule. Sticking to a regular workout schedule generates a circadian rhythm that prepares muscles and other body systems for daily activity and rest times each day.

Timing in fitness and sports refers to more than the time of day when exercise takes place. It also has to do with adhering to a regular exercise schedule that is in alignment with changes that naturally occur in the body and muscles daily. These changes include fluctuations in hormone levels and muscle pliability, as well as time-of-day variations in oxygen utilization and levels of biochemical substrates (molecules acted on by enzymes) that are specific to muscle performance peak.

When myokines are released during exercise, they do more than provide information about immediate muscle activity; they also relay timing cues that help the body know when a muscle is active relative to the time of day. When exercise is done systematically—providing repeated, scheduled skeletal muscle contractions at the same time daily—the body learns when to expect exercise (versus rest) each day. This allows muscle clocks to do their jobs to improve muscle performance, synchronize muscles to other body systems, and increase health and fitness (Mayeuf-Louchart, Staels & Duez 2015).

WHAT RESEARCH SAYS ABOUT MUSCLE CLOCKS

Although muscle clocks were discovered in the early 2000s, developing the ability to create exercise programs based on them is a recent endeavor. Here are details on two studies that have provided strong evidence of the impact of workout timing. The first focuses on the time of day when exercise occurs, and the second illustrates the benefits of sticking to a regular schedule.

WHAT HAPPENS AFTER ONE WORKOUT

In a small study conducted this year, Tanaka et al. (2020) examined the effects of exercise on the level and timing of clock gene expression in **leukocytes**, a type of blood cell that expresses key proteins that regulate muscle metabolism. For this research, 11 young men ages 20–30 were assigned to three different groups: a

morning exercise group, an afternoon exercise group and a control group that did not exercise. Each exercise group performed a single bout of exercise on a bicycle ergometer at 60% of VO_{2max} for 1 hour at either 7 a.m. (morning exercise) or 4 p.m. (afternoon exercise). The subjects were defined as physically active but were not habitually trained athletes.

For all study groups, blood samples were collected on the day of the exercise bout at seven different times: 6 a.m., 9 a.m., noon, 3 p.m., 6 p.m., 9 p.m. and 11 p.m. A final blood sample was collected at 6 a.m. the next morning to show 24-hour changes in muscle clock gene expression. Specifically, researchers looked at the levels of two proteins that relate to the body's clocks and daily rhythms: **ARNT-like protein 1 (BMAL1)** and **cryptochrome 1 protein (CRY1)**.

Subjects in the no-workout group did not show changes in the behavior of muscle clock proteins; however, the exercise groups showed a general trend of muscle clock proteins altering their behavior during exercise, suggesting that exercise affects muscle clock functioning. This is congruent with a previous study on rodents that involved muscle clock response to scheduled exercise (Wolff & Esser 2012). Here are additional details from the Tanaka et al. study:

First, researchers found that BMAL1 increased after exercise in both the morning and the afternoon. This is important because BMAL1 regulates muscle clocks. When BMAL1 is rendered ineffective, the muscle clocks' natural rhythm is knocked out, too.

CARDIO TIMING AND MUSCLE CLOCK PROTEINS

This table describes the behavior of two key muscle clock proteins—ARNT-like protein 1 (BMAL1) and cryptochrome 1 protein (CRY1) during cardiovascular exercise.

Muscle Clock Protein	Effect of Morning Exercise	Effect of Afternoon Exercise
ARNT-like protein 1 (BMAL1)	increased	increased
cryptochrome 1 protein (CRY1)	increased	no change

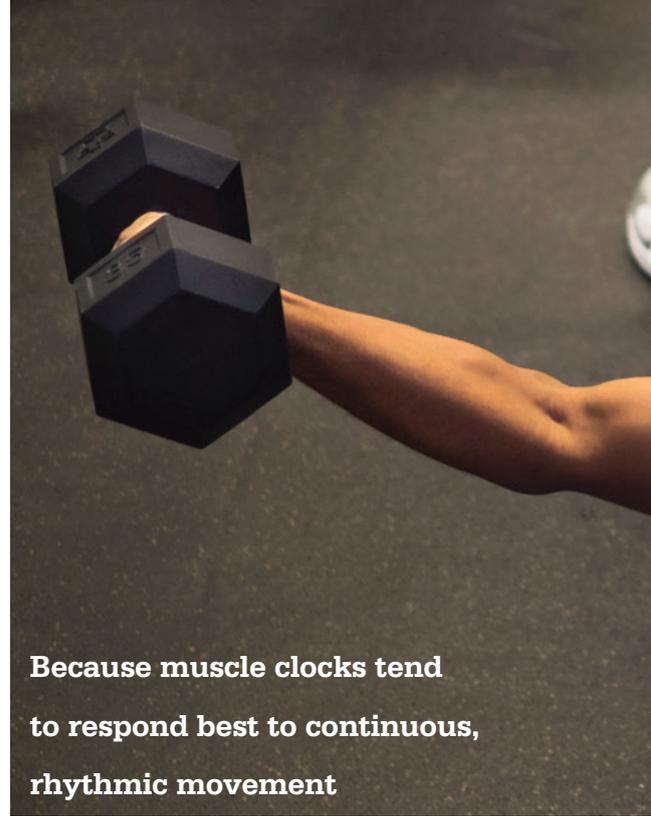
The point is that both muscle clock proteins respond to morning exercise, while only one responds to afternoon exercise. This finding suggests that for synchronizing themselves to other body systems, muscle clocks are more susceptible to the influences of morning exercise.

Source: Adapted from Tanaka et al. 2020.

What this data shows is that muscle clock proteins recognize and respond to exercise. The finding that BMAL1 is activated during exercise demonstrates that muscle clocks are learning when to expect exercise to occur each day.

In this same study, researchers found that CRY1 also increased with morning exercise, but not with exercise in the afternoon. CRY1 is another protein that controls body clocks and daily 24-hour rhythms. This finding indicates that muscles are more susceptible to exercise timing suggestions in the morning than in the afternoon. Because both BMAL1 and CRY1 were higher after the 7 a.m. workout, it appears that muscle clocks are more likely to respond and adapt to a regularly scheduled morning exercise routine.

The researchers also looked at how the timing of workouts affected the **acrophase** (or peak of cycle) of BMAL1 expression. Not surprisingly, BMAL1 levels peaked earlier in the morning for the 7 a.m. exercise group and later in the afternoon for the 4 p.m. exercise group. This shows that the timing of exercise shifted the timing of the release of muscle clock proteins. Because muscle clocks and other biological clocks are in constant communication, this means exercise timing



Because muscle clocks tend to respond best to continuous, rhythmic movement

(such as elliptical training), resistance training should be carefully programmed to provide the consistent cues that muscle clocks look for.

ADDITIONAL VARIABLES THAT INFLUENCE “OPTIMAL” TIMING

In a 2020 study focused on the potential benefits of time-restricted eating, Parr, Heilbronn & Hawley explored how these might compare with and/or complement the benefits of exercise interventions. As part of the discussion, they noted that timing exercise to “maximize health benefits” can be a challenge, because outcomes are also affected by other variables, including the person’s current health status (e.g., cardiovascular disease or type 2 diabetes) and existing biorhythms (e.g., sleep-wake cycle timing). For example, someone looking to lower blood sugar may benefit from engaging in cardiovascular exercise in the afternoon or evening, as this is when research has shown that physical activity improves glycemic control.

Fitness professionals must further consider the *feasibility* of the timing suggestions in their programs. For clients who work from 9 a.m. to 5 p.m., the sample cycling program on page 32 (with 10–11 a.m. workouts) may be impossible to follow. However, shifting the timing to 7–8 a.m. each day could be workable, enabling people to still benefit from the muscle clock behavior associated with morning workouts.

Even if particular clients cannot benefit from all of the information in this article, they will likely be able to incorporate some of the suggestions successfully. For example, it is relatively simple to encourage clients to stop taking weekends off and instead follow the recommendation on intermittent rest. By making even minor tweaks like these, you can help clients get one step closer to reaching their personal goals.

affects the circadian clock and the body as a whole.

Finally, as this study involved just one bout of exercise, it suggests that a single workout session can modify muscle clocks—and, thus, other biological clocks—and help to synchronize circadian rhythms in humans.

WHAT HAPPENS AFTER REPEATED SCHEDULED WORKOUTS

Although not discussed in the 2020 study, researchers Chaix and Panda (2019) theorized that repeated bouts of exercise (done at the same time each day) would produce a stronger effect on muscle clocks and that this, in turn, would have a more positive effect on whole-body system synchronization. Their conclusion: Following a regularly scheduled exercise program would likely lead to greater improvements in fitness and sports outcomes, as well as increased overall health and disease prevention.

To illustrate the specific effects of repeated bouts of exercise, Murphy et al. (2014) examined the ability of muscles in schedule-trained race horses to anticipate upcoming exercise sessions. This was done by measuring **uncoupling protein 3 (UCP3)**, a factor critical to the synthesis of ATP into energy. (This mitochondrial



protein is also known to possess a circadian rhythm that bridges the gap between muscle clocks and muscle function.)

Researchers took repeated measurements of UCP3 before the horses performed their regularly scheduled training. The data showed that the peak expression of UCP3 preceded this training. That indicates that the horses' muscles had learned to anticipate the scheduled exercise and, as a direct result, their bodies began to prep for it by generating extra UCP3 early enough to allow the horses to enter the exercise session well-prepared to meet its physical demands.

These findings support the notion that muscles can learn to anticipate exercise based on time of day. Simply put: When exercise happens repeatedly on a set schedule, muscles begin to expect it. As a result, about 30 minutes before an anticipated workout session, the body will “switch on” the physiological processes associated with muscle performance outcomes (Ashmore 2020).

When taken together, the research on time-related responses of BMAL1, CRY1 and UPC3 makes a strong argument that muscles benefit from a regular exercise schedule, which in turn benefits the entire body through synchronization.

WHAT TO CONSIDER WHEN CREATING A SYNCHRONIZED PROGRAM

Synchronization of the muscles and body systems is made possible by thoughtful and strategic exercise programming. To function properly, muscle clocks rely on consistent cues from their environment about the timing of daily events, including exercise (Schroeder & Esser 2013); therefore, the better an exercise program

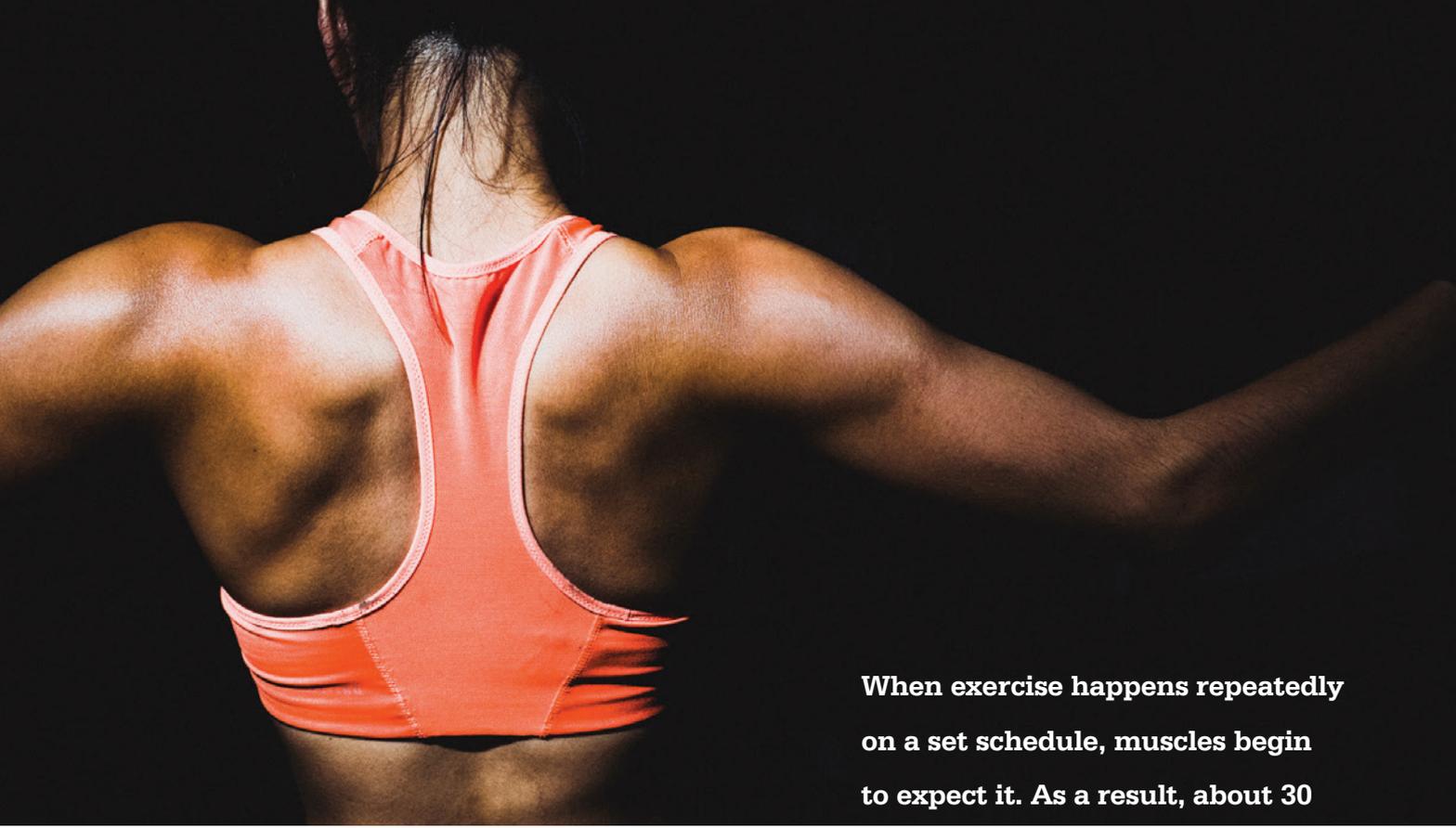
is synchronized to natural body cycles, the more effective it will be.

When it comes to programming exercise, the cues that muscle clocks look for are time of day of exercise, type of exercise and activity-rest durations. Using these three key programming variables strategically is the key to maximizing benefits, based on our current knowledge about muscle clocks.

WHEN TO SCHEDULE CARDIOVASCULAR TRAINING

The time of day when exercise is performed is critically important to its effectiveness. Based on the Tanaka et al. study, doing cardiovascular exercise at different times of the day influences human muscle clocks in different ways. Although both morning and afternoon exercise bouts have been shown to increase activity for one type of muscle clock protein (BMAL1), morning exercise seems to be preferred because it promotes changes in *two* types of key proteins (BMAL1 and CRY1). This demonstrates that exercised muscles synchronize to other body systems more effectively in the morning. The resultant data indicates that for overall health and general fitness and sports goals, morning exercise would be the better choice—at least for cardiovascular exercise or, more specifically, cycling. However, the “best” time to exercise is not so cut-and-dried.

The relationship between time of day and overall efficacy of exercise gets more complicated when we consider substrates that fluctuate on a 24-hour basis, such as oxygen and other metabolites associated with exercise performance. For example, how the body uses oxygen varies throughout the day—and from one day to the next. When oxygen uptake is the sole factor under consideration, exercise performance is better late in the day.



When exercise happens repeatedly on a set schedule, muscles begin to expect it. As a result, about 30 minutes before an anticipated workout session, the body will “switch on” the physiological processes associated with muscle performance outcomes.

One study showed that when 12 people were asked to jog at a low-to-moderate intensity at different times of day, oxygen uptake was more efficient in the evening. However, high-intensity training did not show a time-of-day preference (Gabriel & Zierath 2019).

Another study (Sato et al. 2019) found a preference for metabolic activity, including fat utilization, in the late morning. This indicates that if weight loss is the goal, morning exercise may be a better fit. However, this study was done with mice, so additional research in this area is needed with human subjects.

There is still a lot to be discovered about the optimal time of day to exercise, but given where the research stands now—and the direction it appears to be headed per circadian functioning—late-morning cardiovascular training seems to be the emerging favorite for synchronizing metabolism and other body systems. It is important to note, however, that this does not discredit the value of exercise at other times of day, nor does it discount additional modes of exercise, like resistance training, as effective ways to achieve desired results.

BIOMECHANICAL-SIMILARITY TRAINING USING PAIRED JOINTS

This is an example of a resistance training program that focuses on paired joints—specifically the shoulder and shoulder girdle.

Sample Program for Shoulder and Shoulder Girdle Joint

Exercise	Reps	Resistance	Rest (between sets)
front dumbbell raise	6–12	65%–85% of 1-RM	10 seconds to 2 minutes
shoulder shrug	6–12	65%–85% of 1-RM	10 seconds to 2 minutes
front dumbbell raise	6–12	65%–85% of 1-RM	10 seconds to 2 minutes
shoulder shrug	6–12	65%–85% of 1-RM	10 seconds to 2 minutes
front dumbbell raise	6–12	65%–85% of 1-RM	10 seconds to 2 minutes
shoulder shrug	6–12	65%–85% of 1-RM	10 seconds to 2 minutes

WHEN TO SCHEDULE RESISTANCE TRAINING

As discussed, muscle clocks seem to respond well to the rhythmic movement associated with cardiovascular exercises like jogging, elliptical training and cycling. However, resistance training can also provide muscle clocks with invaluable cues about exercise timing.

During resistance training, myokines are released (just as they are during cardiovascular exercise), signaling the rest of the body that exercise is happening. Key hormones—including testosterone, human growth hormone, cortisol and lactate (aka lactic acid)—are also released during this type of workout. All of these hormones affect the local muscle environment and

signal ongoing exercise to muscle clocks and other body systems.

Because muscle clocks tend to respond best to continuous, rhythmic movement (such as elliptical training), resistance training should be carefully programmed to provide the consistent cues that muscle clocks look for. The suggested method for doing this is to plan progressions based on **biomechanical similarity**, defined as the degree to which two exercises are alike. With biomechanical similarity, exercise-specific timing cues about the type of exercise are provided to muscle clocks based on the primary joints used and muscles trained (Ashmore 2020).

For example, a supine glute bridge and a deadlift both involve hip extension; therefore, they use similar joints and muscle actions. Thus, these exercises are biomechanically similar. In another example, a leg press and a back squat both use the quadriceps, hamstrings and gluteus maximus as the primary movers; therefore, these exercises use the same joints and muscles and are biomechanically similar.

A best practice is to use biomechanically similar exercises within a resistance training session to maximize the efficacy of the cues delivered to muscle clocks; these cues include which muscles are working and what type of exercise is being done. Suggestions for creating a program using this approach include building workouts around the same muscle groups (for example hip abductors and adductors) or building workouts around paired joints (like shoulder and shoulder girdle joints). This aids synchronization by sending consistent cues about the type of exercise that is occurring and when it is happening.

It is also worth noting that the suggested time of day for resistance training is different than it is for cardiovascular exercise, in particular if the training's *intent* is muscle strength and power development. It's at around 4 p.m. that body temperature peaks and muscles are at their most pliable. This time also marks the end of testosterone's peak in the daily cycle. For these reasons, many people prefer this time of day for resistance training.

WHEN TO SCHEDULE REST AND RECOVERY

Like all body systems, muscle clocks rely on a consistent 24-hour daily on-off schedule. Whereas the master clock in the brain primarily responds to day-night and awake-asleep cycles, muscle clocks monitor activity-rest cycles over each 24-hour period. Because of this, exercise-rest schedules should reinforce a 24-hour schedule.

Intermittent rest refers to the timing of rest over a 24-hour period; it is done to align rest/recovery days

with the muscle clocks' need for a 24-hour schedule. The concept of intermittent rest is adapted from the idea of intermittent fasting, which proposes alternating periods of eating and not eating (fasting). For example, a person might break a 24-hour day into two periods: a 14-hour period of fasting and a 10-hour window of time in which eating can occur. (The specific timing in this example is not important; it is just meant to illustrate the concept itself.)

BIOMECHANICAL-SIMILARITY TRAINING USING MUSCLE GROUPS: UPPER BODY

This is an example of a resistance training program that focuses on working muscles from the same muscle group—specifically the triceps.

Sample Program for the Triceps

Exercise	Reps	Resistance	Rest (between sets)
triceps kickback	6–12	65%–85% of 1-RM	10 seconds to 2 minutes
triceps overhead press	6–12	65%–85% of 1-RM	10 seconds to 2 minutes
triceps kickback	6–12	65%–85% of 1-RM	10 seconds to 2 minutes
triceps overhead press	6–12	65%–85% of 1-RM	10 seconds to 2 minutes
triceps kickback	6–12	65%–85% of 1-RM	10 seconds to 2 minutes
triceps overhead press	6–12	65%–85% of 1-RM	10 seconds to 2 minutes

BIOMECHANICAL-SIMILARITY TRAINING USING MUSCLE GROUPS: LOWER BODY

This is an example of a resistance training program that focuses on working muscle groups from the same area of the body.

Sample Program for the Legs

Exercise	Reps	Resistance	Rest (between sets)
back squat	6–12	65%–85% of 1-RM	10 seconds to 2 minutes
leg press	6–12	65%–85% of 1-RM	10 seconds to 2 minutes
back squat	6–12	65%–85% of 1-RM	10 seconds to 2 minutes
leg press	6–12	65%–85% of 1-RM	10 seconds to 2 minutes
back squat	6–12	65%–85% of 1-RM	10 seconds to 2 minutes
leg press	6–12	65%–85% of 1-RM	10 seconds to 2 minutes

Intermittent rest is built on the premise of alternating periods of exercising and not exercising (resting). While intermittent fasting is typically expressed in hours, intermittent-rest training is based on 24-hour cycles. It suggests that each week should include 5 days of training interspersed with 2 nonconsecutive days of rest (Ashmore 2020).

It is important to note that this schedule is contrary to the popular approach of training every weekday and taking the weekend off. The rationale behind an intermittent-rest schedule is that the master clock in the brain synchronizes all clocks to a 24-hour schedule, and this resets every 24 hours. Therefore, all body clocks, including those located in the musculoskeletal system, are looking for 24-hour schedules and rhythms to sync to. Taking the weekend off—or training on Friday evening and not again until Monday evening—confuses the body’s 24-hour clocks. In fact, too much consecutive time off can lead to desynchronization.

WHY TIME IS OF THE ESSENCE

Since the discovery of muscle clocks, the ability to synchronize muscle systems to other biological sys-

tems—through carefully timed programming—has emerged as a powerful tool for fitness professionals and athletes alike. While this is a relatively new area of study, you don’t have to wait another minute to implement the findings discussed here and set your clients on the fast track to success. By utilizing existing knowledge of time-based training—identifying the best time of day to exercise, utilizing concepts like biomechanical similarity and intermittent rest, and synchronizing muscles to other naturally occurring daily cycles—you can help clients achieve their fitness and wellness goals.



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AMY ASHMORE, PHD, is a former faculty member at Florida State University and was the program director for sports sciences at the American Military University. She is the author of *Timing Resistance Training: Programming the Muscle Clock for Optimal Performance* (Human Kinetics 2020).

References for this article available online at blog.nasm.org.

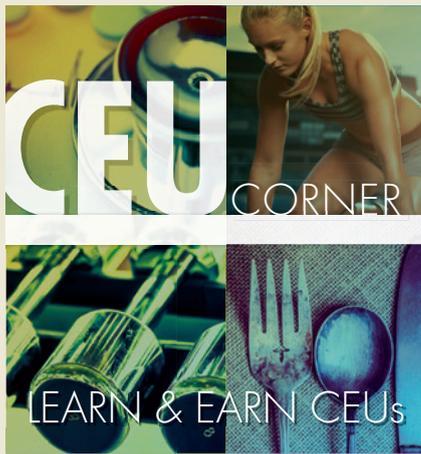
CARDIOVASCULAR TRAINING BASED ON MUSCLE CLOCK BEHAVIOR

This is a sample week of cardiovascular training based on muscle clock behavior, including the principle of intermittent rest. The suggested time of day is based on clock behavior and metabolic characteristics in the mid-to-late morning.

Day	Exercise	Intensity	Volume	Time of Day
Monday	cycling	low to moderate	up to 60 minutes	10–11 a.m.
Tuesday	rest	n/a	n/a	n/a
Wednesday	cycling	low to moderate	up to 60 minutes	10–11 a.m.
Thursday	vinyasa flow	n/a	n/a	10–11 a.m.
Friday	cycling	low to moderate	up to 60 minutes	10–11 a.m.
Saturday	rest	n/a	n/a	n/a
Sunday	cycling	low to moderate	up to 60 minutes	10–11 a.m.

Programming notes:

1. Any continuous, rhythmic cardiovascular exercise can be substituted for cycling.
2. Intensity and volume should be modified to best suit the individual.
3. Rest days are programmed based on intermittent-rest principles (2 nonconsecutive days).
4. Yoga is scheduled on Thursday to ensure only 2 days of rest within the week.



CEU QUIZ: Muscle Clocks and the Value of Synchronized Training

LEARNING OUTCOMES: After reading the article, you will be able to:

1. Identify what muscle clocks are, how they work and how they relate to effective exercise program design.
2. Explain the relationship between scheduled exercise, muscle clocks and synchronization to other body systems.
3. Summarize research findings about muscle clocks and the role of scheduled exercise on performance outcomes.
4. Apply research findings about muscle clocks to develop effective exercise sessions and programs.
5. Use common exercise programming variables related to muscle clocks to design effective exercise sessions and programs.

1. What is the role of muscle clocks in the human body?

- a. control the body's master circadian clock
- b. regulate daily muscle activity in alignment with natural body cycles
- c. operate independently of the master clock in the brain
- d. regulate all musculoskeletal system clocks, including tendon and ligament clocks

2. Which statement is *not* true about muscle clocks?

- a. They directly influence the master clock in the brain.
- b. They help muscles to play a role in synchronizing the entire body.
- c. They look for cues that relay information about 24-hour cycles.
- d. They are influenced by the master clock in the brain.

3. Myokines are muscle-specific proteins that are released _____ to help muscle clocks communicate with other muscles and other body systems.

- a. only during resistance training
- b. only during cardiovascular training
- c. during resistance training and cardiovascular training
- d. only during rest and recovery

4. To determine the time of day, muscle clocks use all the following as cues *except* _____.

- a. night-day cycles
- b. fluctuating hormone levels
- c. exercise scheduling
- d. exercise intensity

5. Leukocytes are a type of _____.

- a. gene
- b. hormone
- c. blood cell
- d. muscle fiber

6. In a 2020 study by Tanaka et al., exercise participants performed a single bout of cardiovascular exercise at ____ % of VO₂max for ____ minutes.

- a. 40, 20
- b. 60, 60
- c. 75, 60
- d. 85, 20

7. Tanaka et al. showed that the protein _____ was influenced by morning exercise but not afternoon exercise.

- a. BMAL1
- b. leukocyte
- c. CRY1
- d. UPC3

8. The acrophase of a 24-hour cycle is the _____.

- a. lowest point
- b. peak
- c. point of transition or change
- d. flattening of the curve

9. Based solely on the behavior of muscle clock proteins, the suggested best time of day for cardiovascular training is _____.

- a. in the morning
- b. in the afternoon
- c. before dinner
- d. in the evening

10. In a 2014 study by Murphy et al., UCP3 levels measured before scheduled exercise demonstrated the ability of muscles to _____.

- a. anabolize
- b. catabolize
- c. resist changes in pliability
- d. anticipate an upcoming exercise session

11. During _____ training, levels of testosterone, human growth hormone, cortisol and lactate provide important cues for muscle clocks.

- a. cardiovascular
- b. continuous, rhythmic
- c. resistance
- d. elliptical

12. Biomechanical similarity can be defined as _____.

- a. the degree to which two exercises are alike
- b. agonist-antagonist muscle functioning
- c. the degree to which the prime movers are used during an exercise
- d. continuous, rhythmic movement

13. The most important principle in biomechanical-similarity programming involves selecting pairs of exercises that primarily involve similar _____ and/or _____.

- a. intensity, volume
- b. load, equipment
- c. muscles, load
- d. joints, muscles

14. Which exercise pair is an example of biomechanical similarity?

- a. front squat and triceps pushdown
- b. squat and leg press
- c. glute bridge and plank
- d. lunge and biceps curl

15. In exercise programming based on intermittent rest, each week of training is broken up by days of rest on _____.

- a. 3 nonconsecutive days
- b. 2 consecutive days (e.g., the weekend)
- c. 2 nonconsecutive days
- d. 2 or 3 consecutive days, as needed for recovery

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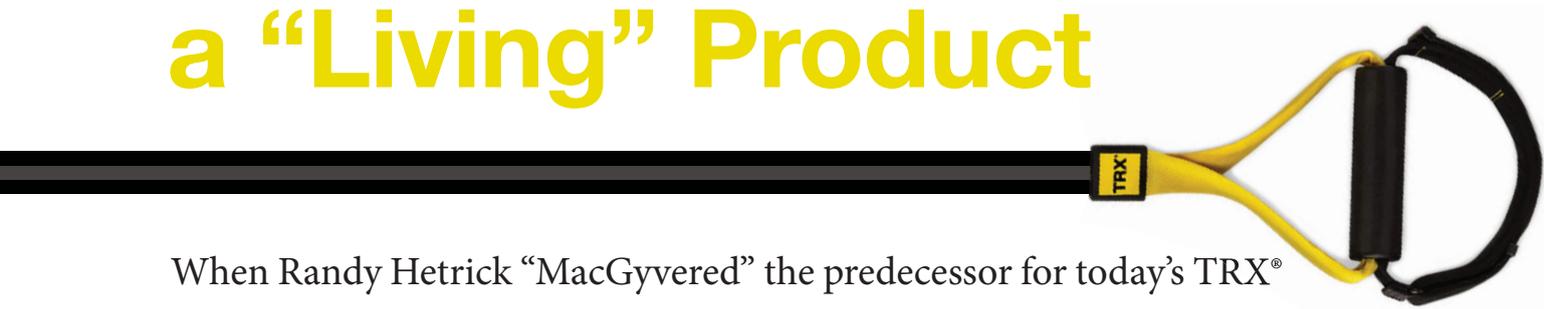


PHOTO: LAURA REECH

TRX® founder Randy Hetrick, MBA, former Navy SEAL and entrepreneur, drives his career with a transformative vision of functional training and the fitness industry.

BY SHIRLEY ARCHER, JD, MA

Creating a Global Training Brand and a “Living” Product



When Randy Hetrick “MacGyvered” the predecessor for today’s TRX® Suspension Trainer™ while serving as a Navy SEAL officer in 1997, he had no idea he was creating an entirely new fitness methodology—Suspension Training®. He sparked what would become a global training brand. “If there were more people like Randy Hetrick in the fitness business, the industry would be in a completely different place,” says Gunnar Peterson, head strength & conditioning coach for the LA Lakers, a 25-year industry veteran, and owner of Gunnar Peterson Studios in Beverly Hills, California. “Randy is changing the business landscape.”

Based in San Francisco, Hetrick is a fitness industry visionary and pioneer, creator of the TRX Suspension Trainer, holder of more than 30 patents and founder of TRX, one of the world’s leading training brands. “He takes what’s good from everything he comes across and makes it even better,” says Peterson. “And he cares about every person, from the individual trainer to the multiclub owner. To Randy, people matter.”



“Randy is a special entrepreneur who invented a completely new perspective on training and equipment. He’s painted gyms all over the globe yellow and black as the gold standard. Brand is not just a color or logo—it’s the impact you have, measured by your ability to authentically back it up. Randy is the real deal. I am so lucky to have had his friendship throughout my own journey with UA.”

—Kevin Plank, chairman and founder of Under Armour®

Hetrick’s parents instilled in him principles of hard work, discipline and service to others, combined with a belief in himself and his ideas. He drew inspiration from the positivity and kindness of his mother. “She always made me believe I could become the best at whatever I chose to do, and she taught me to be inclusive and to respect all people,” says Hetrick. He adds that his father gave him “a killer work ethic”—an “old-school grinder work ethic” that made him tough.

Hetrick embraced these values and added to them. From his experience as a college rowing athlete at the University of Southern California to his leadership role as a Navy SEAL squadron commander at the SEALs elite Special Missions

Unit, all roads converged to produce a globally recognized fitness brand with more than \$70 million in annual revenue.

Today, he continues to be both a role model and a fitness industry powerhouse. His entrepreneurial journey and the concomitant TRX brand evolution show the power of putting aspiration, attainment, inclusivity and excellence into action. Hetrick’s limitless energy and enthusiasm for transforming the fitness industry are broadening the market, improving revenue opportunities and expanding ways to impact as many lives as possible.

The Entrepreneurial Journey

Hetrick’s ability to actualize his vision of creating a global brand over a 15-year period is attributable to multiple factors, but primarily to his knack for assembling great teams and his stubborn determination. “A winner is just a loser who tried one more time,” he says. “I’m certainly not the world’s smartest guy or its best leader, but I am as resourceful as a coyote and as tenacious as a cactus plant. I simply never quit.”

2001: SERENDIPITY AND ENVISIONING A PRODUCT

Hetrick did not set out to invent a product, create a training category or even go into the fitness business. Simply, he was quick to innovate, see opportunities and follow through. In 1997, while serving as a Navy SEALs commander on a mission in Southeast Asia, he wanted to train his climbing muscles. With limited options, he innovated. The original concept included a jiu jitsu belt, stitched together





PROFESSIONAL EDUCATION IS A KEY COMPONENT OF THE TRX® BRAND.

PHOTO: TRX TRAINING

like a “Y” with some webbing from a parachute harness. The idea was to “capture” body weight for much-needed strength training in the field. Hetrick shared his concept with teammates, who loved its practicality and effectiveness.

In 2001, Hetrick applied and was admitted to the Stanford University MBA program, again with no intention of creating a TRX empire. Together with a friend—a former Stanford football athlete—Hetrick brought his unique device to the training center, where it caught the eye of various team coaches. He was quickly inundated with requests for his product (of which he had none) from coaching pros in multiple sports, and this sudden demand prompted an aha! moment. Instead of accepting the typical consulting

job between his first and second years at business school, he spent the summer prototyping and researching supply chains.

During his second year of business school, Hetrick learned as much about entrepreneurship as possible. Based on his early experiences, he offers this tip to young entrepreneurs: “Cultivate a great group of advisers, each with deep experience in a relevant business area. There are too many things to know to try to figure it all out on one’s own.” See “Tips for Young Entrepreneurs,” page 41 for more.

2003–2004: STARTING A BUSINESS

After graduating in 2003, Hetrick took the leap to make his business a reality. He worked full time to secure funding, create inventory, build a team, set up office space,

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Don’t miss Randy Hetrick’s keynote, “The Climb: Branding, Belief and Building the Career of Your Dreams.” Hetrick will share personal and professional insights on how to apply simple principles from the science of branding to your life and career.

Learn more and register today at nasmoptima.com.

TRX® for Every Body

Aligned with its inclusive vision to bring fitness to the untrained masses, TRX is growing its consumer audience through online class offerings and social media campaigns, including TRX ON DEMAND, which offers direct-to-consumer streaming and video-on-demand content. Consistent with its values of aspiration and attainability, TRX ran social media campaigns, #TRXforANYBODY and #TRXatHOME, showcasing the global popularity among people of all ages and ability levels. Hetrick believes that growing the fitness market is a win-win-win for everybody.

establish inventory storage and build a sales system. He created marketing collateral, approached angel investors for seed financing (and was successful), and in 2004 was ready to incorporate. Using SWAT team connections through military colleagues, he found a Hong Kong-based manufacturer, ordered his first lot and was in business. His initial concept was to promote the tool to consumers as a way to stay fit while traveling.

The 2004 IDEA® World Fitness Convention in San Diego marked the first public launch. “From a 10-foot booth at the back of the trade show next to the toilets, we sold out of every unit we had in stock. Trainers really loved it.” This was another

aha! moment. “That’s when I realized that this was not just a retail product, as I had originally envisioned, but it would also work in the commercial space.” It’s also when Hetrick met Fraser Quelch, whom he approached to create an educational course for trainers.

With this relationship, TRX—as both a product provider and an education provider—burst onto the scene. Within 6 months, Quelch created the first course. “I still have the manual with grainy photos from my studio, exhibiting my very own spectacular graphic design abilities,” Quelch says with a smile. On a more serious note, he adds: “In the early days, it felt that Randy and I were the only ones who



Hetrick’s “Secrets of Success”

Hetrick believes each individual needs to create his or her own definition of success, which includes “impact on others, personal happiness, recognition, financial accomplishment and lifestyle.” He identifies three keys to his own success:

TEAMWORK. Create and maintain a great team and team culture. The SEALs teach that success is entirely dependent on these factors.

CHARACTER. Build a team with people of integrity and accountability who share your vision. Specialized skills can be taught; good character cannot.

DETERMINATION. Be tenacious as hell. Never quit, no matter what. While there’s a lot of delight, there is also a lot of thankless, heavy lifting.

An entrepreneur’s mindset is critical, Hetrick adds. “All organizations, not just startups, need entrepreneurs. Entrepreneurs lead with vision and direction, they delegate—otherwise it’s impossible to scale—and they bring optimism and cheerleading to the vision. Entrepreneurs convince people that nothing can become something and that tomorrow can be made even better than today. You must believe in your idea.”

truly believed in the potential of TRX.” Part of the initial challenge, says Hetrick, is that investors couldn’t understand how a product could fit in both the retail *and* commercial sides of the fitness industry. That perception would change.

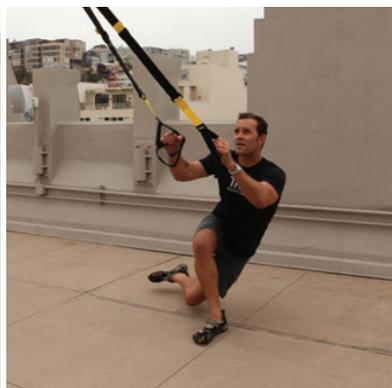
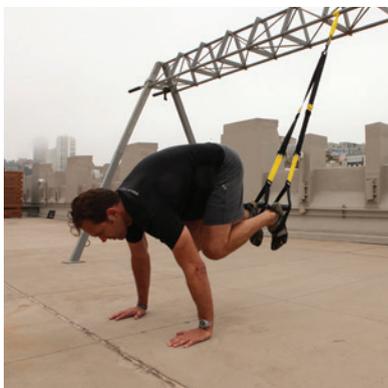
2005–2013: BUILDING A FUNCTIONAL FITNESS BRAND

By the end of 2005, TRX had rolled out its combination of training product and education to the market without its principals realizing they were laying the foundation for a comprehensive functional training brand. Momentum grew as more trainers, consumers and facility owners learned about

Through a series of light-bulb moments, TRX expanded its product line while staying true to its vision to partner with training professionals and build great businesses. “A club owner approached me to buy a rack from our booth at an IHRSA trade show,” says Hetrick about one of his ancillary ventures. “We had created a suspension frame—which looks like a modular swing set—to showcase the straps to multiple people. The club owner wanted to buy the frame to display in the center of his gym floor so that others could watch people work out while they trained. We sold our sales rack—the very first sale of a body-weight training rack.” This transaction fueled a new gym

“Boulder Crest Foundation has been the beneficiary of Randy Hetrick’s vision, generosity, sense of service and tireless dedication to his brothers and sisters in arms. Randy’s generosity and leadership have enabled Boulder Crest to help thousands of struggling combat veterans . . . reconnect to themselves and those they love and care for and live the great lives they deserve. Randy embodies the military ethic of leaving no one behind, and for that, our nation’s warriors, and all of us at Boulder Crest, owe him a deep debt of gratitude.”

—Ken Falke, chairman and founder, U.S. Navy (Retired), Boulder Crest Foundation, an organization that supports combat veterans, first responders and their families, bouldercrest.org/



PHOTOS: TRX TRAINING

and loved the product. In 2007, Hetrick drew on his years of military experience as a source of inspiration to expand into programming. The U.S. Marine Corps adopted TRX FORCE® as a military training program. Consistent with his commitment to inclusivity, he developed more programming to serve people of different abilities and interests—from elite athletes to people in rehab or prehab, those new to training, and those returning after years of inactivity. “If you’re human,” Hetrick says, “our straps love you.”

staple: the functional training station. It also stimulated the creation of TRX group exercise classes, since the rack supported multiple straps.

As TRX grew, Hetrick remained responsive to customer needs. Due to demand for “one-stop shopping” from customers who owned clubs and other athletic facilities, TRX expanded its products to include a broader range of functional training tools for the now essential functional training station. Today,



Pandemic Response

When the pandemic lockdown hit, TRX® supported fitness pros and extended its brand. “We flipped our professional education courses from live to “*Virtually Live*,” delivered by our Master Trainers on Zoom, and we made them free to fitness pros worldwide who wanted to become TRX-qualified trainers but hadn’t or couldn’t afford to do so. We delivered more than 40 courses, qualified nearly 25,000 new training pros and gave them free CECs to maintain basic certifications. It added up to more than \$4 million dollars of free education in just under 4 months.”

Not only was TRX able to support its trainers and club partners during a difficult time, but the company also added an entirely new capability to its education platform that unlocked a new way to scale its education. “It’s always possible for an old dog to learn new tricks if he’s inquisitive and willing,” says Hetrick.

“While the pandemic has been rough on the commercial fitness industry, the demand for health, mental and physical wellness and the longevity of function is most certainly not going away. I’m very optimistic about the future of fitness and the many opportunities that we in the industry will continue to have to ‘do great while doing good.’”

the TRX product line includes the TRX RIP® Trainer, a variety of medicine balls, battle ropes, Kevlar® weighted products, recovery tools, apparel and more.

As a result of these efforts and more, within 5 years TRX had more than a million users in over 60 countries. In 2011, *Inc.* magazine named TRX as one of Inc’s 500 Fastest Growing Companies and *Outside* magazine named it as one of the Best Places to Work. By 2014, in its ninth year of operations, TRX was generating nearly \$50 million in annual revenue.

Hetrick’s vision is for TRX to become the world’s first great training brand. “Training means different things to different people. It’s that holistic triangle that starts with an innovative tool, then animates that tool with education *and* programming. We want to create the first living product that can change over time and support the delivery of results—to constantly keep it alive. That approach is unique.”

Supporting Trainers to Create Profitable Businesses

For its next evolution, TRX is using technology to partner with fit pros to build great businesses and deliver health and fitness benefits worldwide. September saw the launch of TRX CORE membership—a collection of platforms, processes, rights, privileges and community engagement designed to support fitness professionals as they manage their training businesses.

“A major challenge for trainers is they can’t scale themselves or make enough money, which is really the same thing,” says Hetrick. “For a monthly fee, the platform provides a suite of technology systems and services, including lead generation, to help consumers find pros.” The app will connect interested purchasers to nearby qualified trainers, facilitating booking. “The next horizon for TRX is to help trainers build profitable,

“Randy Hetrick is the epitome of grit and determination! He’s been a great partner. I’ve been proud to be a part of the TRX® team for more than 15 years. What he and the TRX team have created is remarkable, not just from the products themselves but also from a content and certification perspective. The Suspension Trainer™ is a must-have for any person who is enthusiastic about fitness. It’s been a real difference-maker for me as part of my workout regimen throughout my career.”

—Drew Brees, NFL quarterback and angel investor

PHOTO: TRX TRAINING



sustainable businesses that offer a realistic pathway to . . . long-term net worth for themselves and their families.”

TRX has trained more than 350,000 fitness pros to date and has recently partnered with NASM. Hetrick is confident that the relationship with NASM and its certified professionals, “who are always at the top of the heap of functional training,” will continue to expand the fitness market. TRX training available to the NASM community will include not only the education and programming that is already widely available but also the entire functional movement-based curriculum. TRX will appear in the NASM EDGE app, and NASM will be a regular contributor to the TRX CORE community.

Going for the Triple Win

Hetrick is an inspirational role model who walks the

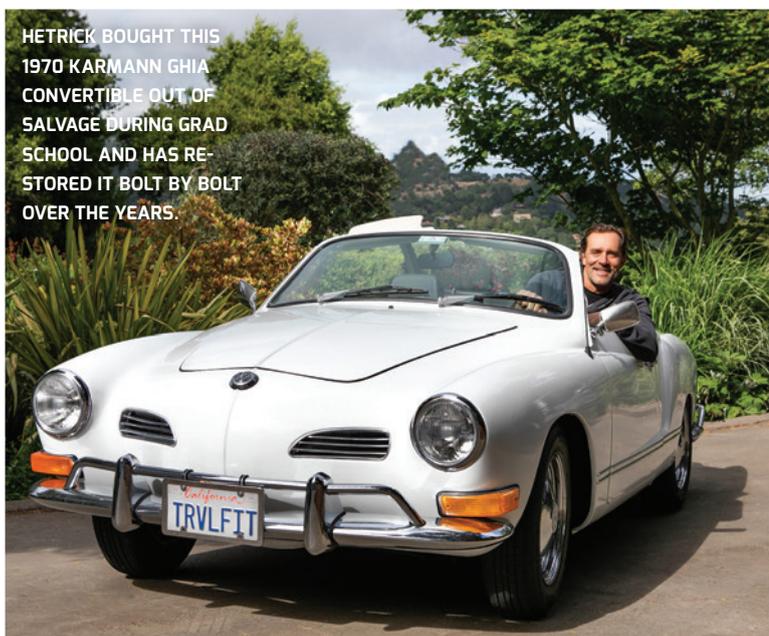
talk, thinks outside the box and consistently leads others to be their best. His vision seeks the triple win—providing the best resources for trainers to serve and reach clients, giving consumers access to trainers and products to optimize health and fitness, and continuing to grow TRX and do its work—doing good by doing well. Hetrick has this advice for aspiring fitness entrepreneurs:

“Make sure that your product or service solves a real problem and addresses a real need. It’s not about whether you *can* do something; it’s about whether you *should* do *that* thing. The hardest type of business to get off the ground is one that is, as the saying goes, ‘a solution in search of a problem.’ When you create an elegant solution to a broadly perceived need, customers pull your product into the market. Otherwise, you’ll be like Sisyphus, forever trying to roll your big rock up the hill—and any time you stop pushing, it rolls back down to where it began.”

Hetrick is a stellar example of taking his own advice.

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SHIRLEY ARCHER, JD, MA,
award-winning certified trainer and best-selling

author of 16 books, blends evidence-based research and traditional wisdom to redefine pathways for optimal aging. Reach her at shirleyarcher.com, @shirleyarcher (Twitter), @shirleyarcher (Instagram) and @shirley_archer (Pinterest).



HETRICK BOUGHT THIS 1970 KARMANN GHIA CONVERTIBLE OUT OF SALVAGE DURING GRAD SCHOOL AND HAS RESTORED IT BOLT BY BOLT OVER THE YEARS.

PHOTO: LAURA RECOCH

Tips for Young Entrepreneurs

Hetrick encourages entrepreneurs to seek advice when starting a business. “A great advisory group can help an entrepreneur [steer clear of] making avoidable, costly and potentially fatal errors,” he says. “Typical expertise areas include budgeting and fundraising; accounting; branding; supply chain; team recruitment, retention, management; legal; and sales.”

Hetrick shares the following wisdom:

- Make sure that your product or service solves an actual problem.
- Run a profitable business from day one.
- Surround yourself with great people who know more than you do—and listen to them.



A FIT RESPONSE:



Fitness professionals share their stories, surprises and successes—along with the best practices that have emerged from their need to pivot during the pandemic.

BY PAMELA LIGHT, MA



LESSONS LEARNED FROM THE GYM SHUTDOWN OF 2020

Fitness professionals are no strangers to battling unseen barriers to fitness. For decades, we have helped our clients overcome scheduling issues, flagging motivation, less-than-supportive spouses, preexisting health conditions and more. But the words “unprecedented times” have gotten a lot of use lately for a reason: We’ve never before faced a foe quite like COVID-19. And just a few months after this volatile virus touched down on American soil, our industry—built on the promotion of health and wellness—all but ground to a halt.

“I remember sitting down several times to write a letter to our members,” recalls Steve Bergeron, co-owner of AMP Fitness in Boston. “It went from ‘we’re going to limit sessions’ to ‘we’re going to be closing our doors’ in a matter of a weekend.” By St. Patrick’s Day, he was officially kicked out of his own gym.

Bergeron was not alone: Across the nation, masses of fitness professionals—who had once spent their days constantly on the move—were suddenly stuck at home with nothing to do and no one to coach. Gyms, once seen as epicenters of health, were now viewed as breeding grounds for germs. How would passionate fitness professionals continue to motivate people to improve their strength and wellness?

Fortunately, a huge part of our work has always involved assessing our clients’ unique needs and adapting programs accordingly. In group classes, we offer multiple modifications for various levels and limitations. We address compensations and prevent injuries using corrective exercise principles. We progress and regress clients up and down the NASM Optimum Performance Training™ model, based upon their needs in the moment. We evaluate trends in

fitness and nutrition, poring over the latest exercise science to ensure that our programming continues to be on point.

In short, as fitness professionals we *know* how to pivot. And that's exactly what we did.

While each of us has a unique story of how the quarantine affected our work, we share enough commonalities to learn from one another's early missteps and to build on those lessons. In the spirit of helping us grow and move forward stronger than ever—both individually and as an industry—we gathered the following insights from a diverse panel of group fitness instructors, personal trainers, nutrition coaches and fitness studio owners.

Don't Let Changes Make You Short-change Your Work

Joe Gagner, NASM-CPT, CES, PES, FES, believed 2020 would be his year. His personal training career was at an all-time high, he was leading his facility in fitness sales, and he was on track to hit many of his life goals. When California ordered its gyms to close, he reached out to clients to propose face-to-



Joe Gagner

“I quickly realized that you must shift your beliefs that online personal training is a lower-quality or less valuable product or service. Once I made that mental shift, I was much more comfortable asking for the amount of compensation I felt was fair for my time and effort.”

— Joe Gagner, NASM-CPT, CES, PES, FES

Should You Keep Your Opinions in Your Pocket?

Faced with incredible polarization surrounding the COVID-19 crisis, it can be tempting for fitness professionals to get on a soapbox. Though we may have the best of intentions, this is not always wise from a business standpoint, says Geoff Lecovin, MS, DC, ND, owner of Northwest Integrative Medicine, an integrative sports injury and sports performance practice in Washington state.

Due to his treatment of acute pain, Lecovin was considered an “essential provider” and was able to keep seeing patients throughout the pandemic. He quickly learned that the best way to nurture relationships with his clients was to be a neutral listener. “There has been a lot of misinformation disseminated through social media,” he says. “While I have my opinions, I have opted to stay in the middle and simply listen without judgment.”

He believes this approach remains the best way for health professionals to help. “The public looks to health professionals for advice pertaining to staying healthy and preventing illness. Health professionals should offer evidence-based solutions and, when possible, cite credible sources.”



Geoff Lecovin

face training outside of the club. Days later, stay-at-home orders put an end to that, too.

With nothing but uncertainty to go on, it was hard to discern how to proceed. Would clubs be back in business after 2 weeks? Should he enjoy a little vacation at home with his wife—they were newlyweds—trusting that things would return to normal by month's end?

When Los Angeles County was deemed a COVID-19 “hotspot,” it became clear to Gagner that gyms weren't opening anytime soon. Though he wishes he had acted sooner to begin building his online presence, his slower approach enabled him to grow his client base—and revise his opinion of virtual fitness.

First, Gagner developed some new fee-based options for small-group or personal training via Zoom. Then he reached out to every person he had *ever* trained and began to build a virtual-client list. His greatest lesson? Don't devalue yourself in any medium.

“I quickly realized that you must shift your beliefs that online personal training is a lower-quality or less valuable product or service,” he says. “Once I made that mental shift, I was much more comfortable asking for the amount of compensation I felt was fair for my time and effort.”

Find New Ways to Service Customers

Visit the website for Mark Fisher Fitness, and you will be greeted by a photo of a ripped Fisher wearing a unicorn cutout as a fig leaf. (His tagline: Serious fitness for ridiculous humans.) Not surprisingly, MFF's brick-and-mortar locations in NYC are known for their “Ninja Clubhouse” environment and “radically inclusive” community. When he suddenly found his business in the eye of the COVID-19 storm, Fisher put on his unicorn thinking cap and got to work.

He immediately froze all memberships and, ultimately, offered four online options: MFF's HomeBody, Unicorn Nutrition Coaching, My Broadway Body and Road Warrior—all of which came with virtual high-fives.

Would it be possible to generate the joy and excitement that members experienced during in-studio classes? Fisher wasn't sure at first.

With help from the government stimulus, though, he retained most of his team and began offering livestream classes, keeping them as close as possible to the Mark Fisher experience. Highlights included rest-period challenges on a

messaging platform called Chatbox, regular doses of irreverent and off-color humor, dress-up classes, theme days, and more. To keep his community communing, Fisher also began offering daily live events online for free, covering a wide array of inspired and inspiring topics, including wellness-based meditation and cooking tips, as well as just-for-fun craft sessions, dance parties and cabarets.

Like Gagner, he soon realized that his online plans were not priced right for all of the effort his team was expending. To adjust for this, he created a series of options at various price points to appeal to clients in different financial situations.

He offered a “supporter” rate for members who wanted to support the club at a higher price point and was pleasantly surprised at the number who chose to participate.

Knowing how many were experiencing financial hardship due to COVID-19, he also introduced promo codes for either livestreaming or on-demand workouts or a PDF of “50 workouts in your pocket” that can be done anywhere, using whatever equipment is available.

“What we liked about [having the different subscription options] is it meant we could receive extra help from those who are in a position to support MFF, but on the other end, we wouldn’t let money be a barrier to others,” says Fisher.

Shift Future Plans Into the Present

When the stay-at-home orders were handed down, award-winning coach Alex Isaly had recently started as VP of programming for Xponential Fitness, a California-based company that curates eight brands of boutique studios in 11 countries around the world. These include the self-explanatory modalities of Club Pilates, CycleBar, StretchLab, Pure Barre and YogaSix, as well as Row House (indoor GX rowing), Stride (indoor GX running) and AKT (a multimodal program from celeb trainer Anna Kaiser).

Isaly’s team was poised to launch a digital platform called Xponential Fitness GO, which provides both livestreaming and on-demand classes from each of the brands, as well as additional wellness content for a more holistic health experience. The team quickly put the finishing touches on apps and websites, then rolled them out to members, newly hungry for content at home. The company also started livestreaming classes on



Mark Fisher



Alex Isaly

Learn the Fundamentals of Virtual Coaching

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Find out more at nasm.org/products/fundamentals-of-virtual-coaching.

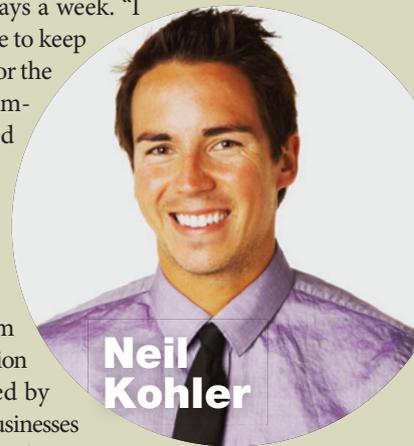
Facebook 8 hours a day, 5 days a week. “I truly believe that we were able to keep the doors open (so to speak) for the franchises to retain their members until the doors reopened (literally),” said Isaly.

Take Advantage of Opportunities—and Grow Them

An interesting result of the gym shutdown was a greater realization of the unique skills possessed by group fitness instructors. For businesses across the country—from big-box gyms to boutique clubs to privately owned single facilities—it was these instructors who rose to the challenge of building real connections in a now-virtual setting through livestreaming classes. For the Los Angeles-based Bay Club, one of those vital virtual team members was Neil Kohler.

Before the crisis, Kohler had been teaching 16 classes per week at five Bay Club gyms and was one of the most beloved instructors at every location. Deciding to teach online was a no-brainer for him. “[Teaching online] gave me something to look forward to each day, plus it brought me into contact with the people I missed seeing in person,” said Kohler.

Although the classes Kohler streamed for the Bay Club were free to anyone wishing to attend, the company continued to pay him. He was teaching far fewer classes than before, however, and that was hurting him financially. When his fans expressed an interest in offering donations for the streaming



Neil Kohler

“This COVID-19 situation may shed light on some of the major flaws in our industry related to employment, pay, benefits, health care and a long list of other professional standards that are unavailable to our fitness community.” —Aileen Sheron

service, Kohler shared his Venmo info on the group page.

“Knowing the value that I bring to the online fitness marketplace, I also included the option for members to donate for the classes I teach that are *not* directly related to Bay Club,” he says. “I feel it is important to be compensated for the value that I bring, and at the same time I really enjoy doing it.”

Provide Extras as Freebies, but Charge for Your Expertise

Having a long-established online fitness and nutrition planning business, Corry Matthews, MS, of Strength and Grace Fitness would have seemed perfectly positioned to capture the attention of new eyes searching for solutions from home. She was surprised to find that this wasn't the case.

“Trainers who were working in gyms—and were suddenly at home—started giving away all their services: free workouts, free nutrition plans, etc.,” says Matthews. “This made it really hard for a company that had always been prevalent online to still offer our same high-quality services. People now wanted more free stuff from us and wanted steep discounts.”

To meet this challenge, Matthews and her partner, Stacia Kelly, began to provide free content that supported their business without giving it away. For example, they recorded “coffee break” discussions in which they talked about mental-health issues and gave tips on dealing with stress.

They also created the 21 Day Detox program, which turned limitations imposed by the quarantine into a tool to help clients make meaningful changes. “[People weren't] going out with friends, at celebrations, barbecues, etc., so working on a program where we eliminate foods and make healthy long-term changes worked,” she says.

Once Matthews began to brainstorm new ways to appeal to a changing marketplace, she was able to channel her energy in the right direction.



Corry Matthews

Use the New Normal as an Assessment Tool for Your Work

As a nutrition consultant and clinical dietitian, California-based Corrine Glazer, RDN, was not surprised that her weight loss clients were less motivated to work out after the gyms closed. “Many had a difficult time with motivation and going to the gym [before COVID-19],” she says. Like Matthews, Glazer hoped that the new normal would help them turn over a new leaf. “My hope was for them to see quarantine in a different [light] and to use this time to focus on themselves,” she says.



Corrine Glazer

One of the unexpected advantages of her new telehealth appointments was that she had fewer cancellations. Clients had fewer conflicts (because life had shut down in other ways, too), and she discovered that virtual

appointments could feel even *more* personal than those that took place in the office.

“[In telehealth,] you are able to meet with a client in their own comfortable area,” she explains. “[And] you have the ability to examine their day-to-day eating habits by having them [use their phone camera to] show you their refrigerator and pantry.” This can prove much more accurate and illuminating than asking a person to recall dietary items during an office visit.

Being far-flung also showed clients how important their support groups and in-person classes truly are. “My clients definitely miss human interaction and the ability to share in each other's stories,” she says.

“A lot of my support groups developed relationships with each other, and having [the groups meet] in person allows them to continue to share that bond.”

Lift Your Staff Up by Uplifting Others

As the weeks passed and the country began to open up, the fear of an empty weight room was foremost in the minds of gym owners. This was especially true of those like Bergeron, because AMP Fitness drew the majority of its clients from the commuter pool. “Many members have informed us that their offices don't plan to open back up—period—which is going to chop off a significant portion of our revenue,” he says. Though Bergeron was able to secure rent deferment for 3 months, he still faces new expenses for sanitizing supplies, social distancing stickers and other COVID-19-related changes required by law. “We're not expecting to bounce back for a while,” he says.

In the meantime, Bergeron and his staff are doing everything in their power to stay positive and keep community alive. This has had heartwarming effects on his clients as well as on him and his staff. In addition to offering online training and semiprivate training sessions, AMP fostered out all their light equipment for



Steve Bergeron

members to use while the gym was closed. They also took “member outreach” to a nonvirtual level with socially distanced visits. In one case, they presented a member with kettlebells and a cake to cheer him up on his birthday. “[We] left them on his doorstep while we sang ‘Happy Birthday’ from the sidewalk,” says Bergeron.



Angie Miller

Let Today’s Reality Lead to a Better Tomorrow

There is no doubt that virtual training is here to stay, says Aileen Sheron, inventor of the Omniball® and a 40-year veteran of the fitness industry. Before the outbreak, she’d made a point to diversify her work in fitness, and she has delivered many articles and lectures on why group fitness instructors need to be more entrepreneurial. “I am sure most fitness professionals are really taking a hard look at our industry with a new perspective,” she says.

One of the most powerful changes that could emerge from this pandemic, she says, is that fitness professionals may finally begin to see the flaws that have always existed.

“For years, I have been [saying] that we have no representation as a community, like a union or a federation. We don’t have powerful leadership to look out for our best interests. Most of us in group exercise are part-time independents, and we don’t get sick leave, vacation pay, insurance, etc.,” she explains. “This COVID-19 situation may shed light on some of the major flaws in our industry related to employment, pay, benefits, health care and a long list of other professional standards that are unavailable to our fitness community.”

Today’s enhanced focus on health and wellness can only serve to support our argument that we deserve these protections just as much as anyone else.

“I think the general public is now more aware than ever before of the importance of living a healthy lifestyle,” says Isaly. “Now is the time for health professionals across *all* practices of health—stress management, sleep management, mental health, exercise and nutrition—to [apply] everything they’ve learned over the years to coach and educate [the public on] the importance of taking the appropriate measures to build and maintain a strong immune system. We are going to need it more than ever, moving forward.”



Aileen Sheron

Building Resilience: A Beautiful Side Effect of Exercise

Gyms provide a world where the health-minded can congregate. Instructors and trainers are the tour guides who welcome and lead people to health in that world. Without fitness professionals, the gym is just a building with weights. With fitness professionals, it is a community.

When the fitness facilities first closed, it was a bit of a heartbreak for many group fitness instructors, who thrive on the high-powered social interaction of large classes. “That’s my happy place where I go to connect communities and share my passion,” says Angie Miller, MS, a Master Instructor for NASM and AFAA. But that was just the first domino to fall. Days later, all of her upcoming in-person NASM workshops and presentations were also canceled. “Then came the cancellation of IDEA® World, where it’s always such an honor to present,” she says.

Like so many others across the nation, Miller accepted the changes and adapted. She began filming video presentations in lieu of workshops, hosting a weekly webinar and helping more people than ever as a licensed clinical mental health counselor. But despite finding her new normal, Miller missed all the energy that comes with in-person meetups.

To build resilience, she relied on journaling, reading, working out in her home studio and talking on the phone with her best female friends. She also made it a point to let herself feel all she feels.

“Health, fitness and wellness are the backbone of what builds resilience,” says Miller. “I believe that I can manage whatever comes my way, and when I need to cry, I cry. I allow myself to experience my emotions, but not to get lost in them.”

“Physical empowerment helps build emotional empowerment and fortitude,” she adds. That means fitness professionals are not only primed to weather any storm; they also are actively priming their clients and members to do the same.



PAMELA LIGHT, MA, is a group fitness instructor and personal trainer in Rancho Palos Verdes, California. She dealt with COVID-19 by streaming classes from her garage via her Facebook group, Pamela’s Light and Fit Community. Her favorite part was that her kids were able to take a break from homeschooling by taking all of her classes—just off-screen, of course!



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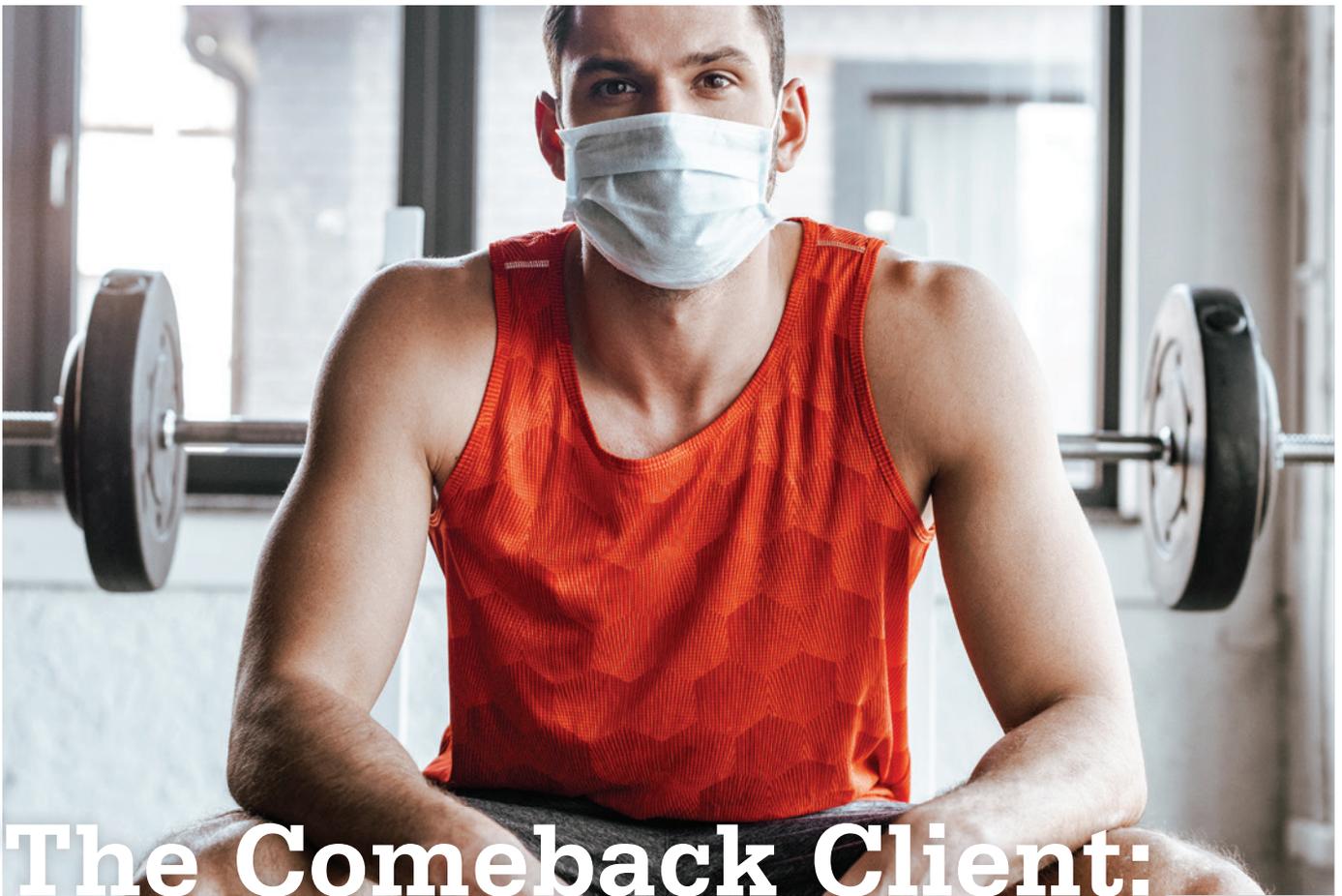
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The Comeback Client:

How to Tweak the NASM OPT™ Model for Return-to-Training

COVID-19 FORCED GYM CLOSURES, WHICH IN TURN DISRUPTED SESSIONS FOR MANY PERSONAL TRAINING CLIENTS. HERE ARE SOME SPECIFIC WAYS THE NASM OPTIMUM PERFORMANCE TRAINING™ MODEL CAN EASE THEIR MINDS AS THEY GRADUALLY RESUME THEIR ROUTINES.

BY KINSEY MAHAFFEY, MPH

I played Division I volleyball in college, and I still remember the dread I felt when it was time to return to the gym after winter break to begin spring training. Each year we'd have 6 weeks to go home and enjoy the holidays. The problem was, many of us didn't adhere to a consistent training routine during that time. Even if we did, we knew that the first day back would be intense: After a 2-hour practice on the volleyball court, we'd hit the weight room to lift for about an hour, then we'd proceed to the track for conditioning.

Needless to say, for the next week we'd all be so sore we couldn't move without grimacing. Even though we wore that pain like a strange badge of honor, those memories of soreness and suffering bubbled up every time spring rolled around.

I imagine that many of our clients feel this type of trepidation at some level after

sheltering in place for many weeks due to COVID-19. Here are some of the thoughts that might run through people's minds:

"Did I lose all of my progress?"

"Will I have to start from scratch?"

"Will I be sore for days after my first workout back at the gym?"

These worries are understandable: Many

clients have experienced a significant lapse in exercise. Forced business closures disrupted gym workouts for most people by 8 weeks or more, with some facilities fluctuating between open and closed depending on changes in case numbers. At best, our clients continued to train with us virtually, likely with limited or no equipment. (Did anyone else have a client grab a gallon of water for "dumbbell" curls?) At worst, they paused training entirely. Others progressed in fits and starts as they tried to juggle home workouts with homework for quarantined kids or distractions from curious pets.

Now, more than ever, it's our job as fitness professionals to ease our clients'

minds and get people back on track, working confidently toward their training goals once again. The question is: How can we use the NASM Optimum Performance Training model to assess where clients are now—and begin to progress them safely and efficiently once more?

Review Their PAR-Q Forms

Communicating well with a client goes a long way during a time of uncertainty. Hopefully, you were able to maintain a line of communication with your clients whether they continued to train with you or not. If you weren't, it's never too late to reach out and ask how they're doing and how you can help them as gyms reopen. If you haven't talked to some clients in a few weeks (or longer), keep in mind that they may not be in a good head space right now, so tread lightly.

When you do manage to connect, your first order of business is to find out what your clients have been up to while sheltering in place and, from there, reassess their

Even though your clients aren't new, it's very possible that their primary objectives have shifted during the shutdown.

That's why it's important to have a conversation with people prior to their return.

goals and priorities. Even though your clients aren't new, it's very possible that their primary objectives have shifted during the shutdown. That's why it's important to talk with clients prior to their return.

Living through a pandemic is a unique experience, so you may find it helpful to look at your clients' PAR-Q forms to see if any answers could be affected by shelter-in-place orders, stress or illness due to the virus. Here are some sample questions that you might ask about a client's goals and workout routine:

- Before COVID-19, your goal was [state their goal(s) here]. Is this still what you would like to work toward? If not, what are your current goals?



- Tell me about your workout routine while you were sheltering in place. If you continued to work out, how many minutes/day and days/week were you active? What types of activities did you do? How intense were those activities on a scale of 1–10? (Urge clients to be honest and remind them that you are not judging their progress but, instead, planning for how to move forward safely!)
- During the shutdown, did you start any new workout routines, like walking, running or biking? Would you like to continue these activities and incorporate them into your new plan?
- What training schedule works best for you right now? Before businesses closed, we were training on X, Y and Z days. Would you like to return to this schedule or adjust it?

These questions are a great way to open the conversation with a client so you both know where that person is starting as the gym reopens. However, knowing what someone has been up to is only one piece of the puzzle.

Not Just a Phase: Different Plans for Different Goals

As many have said about the pandemic, “We're all in the same storm, but we're not all in the same boat.” Not everyone is as shipshape as they were to begin with. For example, clients who were formerly training for an event or making muscle gains may now be more motivated to work on losing their “lockdown pounds.” A select few may have used the time to shift their diet, so they're ready now to focus on performance rather than weight loss.

Below are a few examples from Chapter 14 of *NASM Essentials of Personal Fitness Trainings* (6th ed., 2018, pp. 381–85) that illustrate how different goals influence workout programming, specifically with regard to phases—particularly 2 months after returning to the gym.



Goal	Fat Reduction	General Performance	Hypertrophy
Weeks 1–4	Phase 1	Phase 1	Phase 1
Weeks 5–8	Phase 2	Phase 2	Phase 2
Weeks 9–12	Phase 1	Phases 1, 2 and 5	Phase 3
Weeks 13–16	Phase 2	Phases 2 and 5	Phase 2
Weeks 17–20	Phase 1	Phases 1, 2 and 5	Phase 3
Weeks 21–24	Phase 2	Phases 2 and 5	Phase 4

Redo Their OHSA

When clients were sheltering in place, it's likely their daily movement habits changed—and not always for the better. Many of my clients reported binge-watching shows, reducing their daily step count (because they were not leaving the house) and working for extended hours because, well, what else did they have going on? After

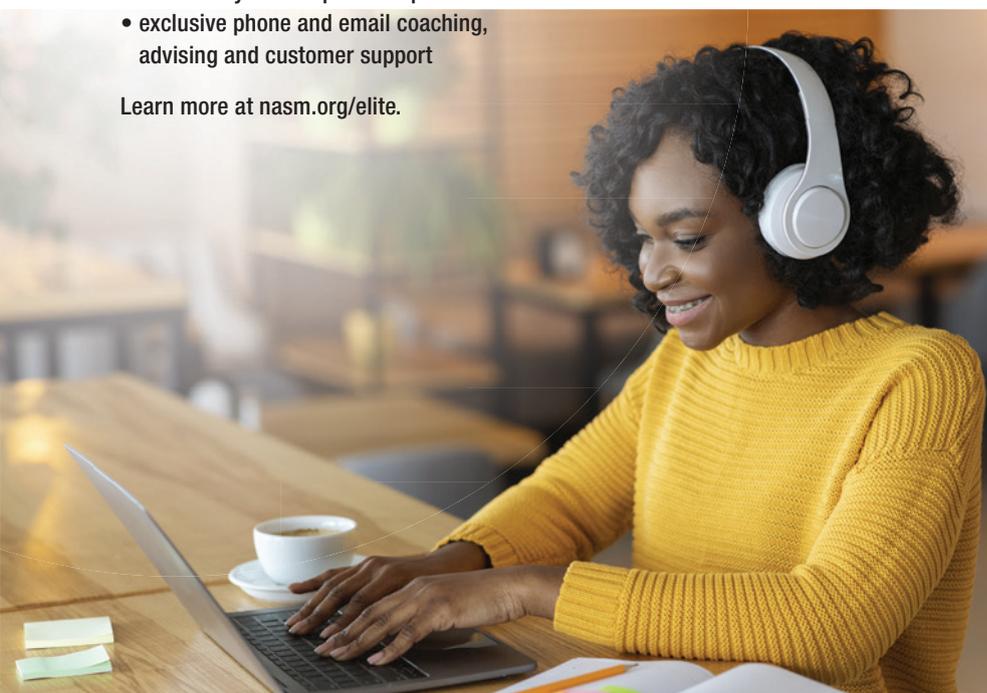
Progress Your Career With Upgrades and Recertifications for Life!

Fitness professionals are known for having a work ethic of constant improvement. It's what makes us succeed as athletes, trainers and businesspeople. It's also what keeps us excited about our field and eager to learn more.

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- NASM's Edge personal trainer app
- free application for one Master Trainer program
- one all-day access pass to Optima 2021 conference
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hearing these reports, I couldn't help but anticipate some movement compensations (hello, shortened calves and hip flexors).

As your clients resume their sessions with you, taking a fresh look at their overhead squat assessment (OHSA) will provide valuable information about which muscles need to be lengthened and which ones need to be strengthened to help clients move better.

Ease in With Phase 1

For most returning clients, Phase 1: Stabilization Endurance will be the best place to start. Not only will you be able to address any movement compensations

you find, but you will help your clients reestablish a solid foundation of fitness by focusing on stability and muscular endurance training.

"What if some clients have been training with me virtually throughout this pandemic? Do these clients have to start in Phase 1, too?" you ask. Great question! As all fitness professionals love to say when asked for advice on another trainer's clients, it depends. If a client had a decently stocked home gym that allowed you to continue to periodize workouts as planned and the client's OHSA results show good movement patterns, then it may be appropriate to continue with the current plan. However,

in most cases, even clients who trained virtually will benefit from starting with a shortened Phase 1 program of just 2 weeks (instead of 4–6 weeks).

Re-Reassess Their OHSA (and Program)

This is the time to look for improvement in previously noted movement compensations.

If clients are not showing progress in this area, you may need to allow more time in Phase 1. It would also be wise to reassess your programming to be sure you're including warmup and resistance training exercises that will improve these compensations.

If clients *are* improving, you can progress them to the next phase that is appropriate for their goals and interests. (Check out the two examples in "Not Just a Phase: Different Plans for Different Goals," page 50.)

A Model for the Ages

Even though our day-to-day life has changed a great deal during this pandemic, how we use the OPT model with a client doesn't change. We begin with assessment. From there, we make a training plan that takes into account the client's goals and OHSA results; choose the phases of the OPT model that match his or her goals and interests; train in each phase for 4 weeks; and then repeat the overhead squat assessment before progressing to the next phase.

If you follow this formula with your clients, they will be sure to succeed. Communicate your plan, reassuring them that you're focused on helping them progress systematically and, most importantly, safely. When they know that your goal isn't to crush them on their first week back, you can help them transform any anxiety about returning to the gym into excitement about getting back to their training routines with you.



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KINSEY MAHAFFEY, MPH, is a Houston-based fitness educator, personal trainer and health coach, and a Master Instructor and Master Trainer for

NASM. She is passionate about helping others cultivate a healthy lifestyle and enjoys educating other fitness professionals who share this view.

Integrating Balance Into Group Exercise

BY TEACHING OFF-CENTER MOVEMENTS, YOU WILL HELP PARTICIPANTS TRAIN FOR ALL ASPECTS OF A HIGHLY FUNCTIONAL LIFE.

BY MELISSA WEIGELT, MS



While your students are enthusiastic about getting stronger and improving their endurance, they may not be aware that, in addition to focusing on strength, cardiovascular conditioning and mobility, they should be including balance training in their workouts. Good balance improves performance and increases body awareness and coordination. Share this with your students and incorporate balance training into your next class.

Balance Training Benefits

There are many benefits to balance training, including (but not limited to) the following:

ATHLETIC PERFORMANCE

The ability to control body position while moving is essential to an athlete's success. Dynamic balance—the ability to change direction without falling—is affected by speed, endurance, flexibility and strength (NASM 2018). When practicing and repeating new skills that enhance balance, the nervous system creates connections that make athletic movements easier to execute, leading to better performance.

ACTIVITIES OF DAILY LIVING

Good balance skills translate to greater ease in daily life. What are your students' performance goals? Participants don't necessarily need or want to be athletes! Perhaps they want to carry groceries, play ball with their kids or walk on uneven terrain. These



tasks all require balance. When people engage in these kinds of activities, the neuromuscular system processes information from the senses and “communicates” body position. Practicing and refining the ability to interpret this information—with basic moves, in a controlled training environment—promotes functional fluency, paving the way for participants to safely enjoy their daily activities.

FALL PREVENTION

The risk of falling is a common concern among older adults. If you instruct seniors, include simple balance challenges in addition to strength and mobility moves. Strengthening the stabilizing muscles that support the joints improves one’s ability to move independently, maintain an upright posture, and more quickly and automatically respond to changes in body position.

Practical Applications

If you’ve tried introducing balance training to your students, you may have found that it is not always well-received. Elizabeth Lenart, owner of Studio E Fitness in Chicopee, Massachusetts, and national program director for Balletone™, suggests starting small. “Selling this concept to

your students is like selling broccoli to your kids,” she says. “Start by sneaking it in. Let them get a taste of it. Once they begin to experience the many benefits, they’ll appreciate the results.”

Gioia Gensini, an AFAA-certified instructor and ACE-certified health coach from Syracuse, New York, agrees. She includes balance in all her classes. “I enjoy integrating balance into the warmup, movement preparation and cooldown portions of my class,” she says. “I do this in a variety of ways, with and without equipment, and utilize all planes of motion. My students have begun to appreciate the functional benefit, whether they’re looking to enhance their athletic performance or trying to maintain their level of daily activity.”

Tap into your creativity to provide your class participants with all the tools they need to improve movement quality, while also focusing on the formats they already know and love. Let’s review how to incorporate balance into popular programming.

HIGH-INTENSITY INTERVAL TRAINING

HIIT includes bouts of challenging cardiovascular exercises that alternate with recovery periods, during which participants simply rest or do a few lower-intensity

movements. Recovery intervals may be the perfect opportunity to introduce body-weight exercises that challenge balance. Try the following moves between cardio cycles during your next HIIT class:

QUADRUPED BALANCE AND SHOULDER TAP

- Begin in quadruped position, hands directly under shoulders and knees beneath hips.
- Turn toes under and lift knees slightly off floor.
- Reach one hand to opposite shoulder and return to starting position. Alternate sides.
- Regression: Keep knees on floor.
- Progression: Do several reps on one side.
- *Alignment tip:* Keep hips level.

SINGLE-LEG ROMANIAN DEADLIFT

- Balance on right leg.
- Hinge from hip while extending left leg. Torso and rear leg are parallel to floor.
- Return to starting position.
- Repeat, other side.
- Regression: Keep rear foot on floor, slightly behind base leg.
- Progression: Reduce tempo.
- *Alignment tip:* Maintain extended spine throughout movement.

CIRCUIT TRAINING

Circuit training involves executing a series of exercises with limited or no rest. Quick and efficient, this format can easily fit into your schedule as a short and challenging “express” class. Offer balance challenges by including unilateral dumbbell exercises. When you load one side of the body, you recruit additional muscles to maintain proper alignment. Try the following options:

UNILATERAL QUADRUPED REAR FLY

- Start in quadruped position, holding dumbbell in R hand.
- Extend L hip so leg is parallel to floor.
- Abduct R arm to shoulder height, elbow slightly bent.
- Return to starting position.
- Complete 8–10 reps.
- Repeat, other side.
- Regression: Reduce range of motion.
- Progression: Start in plank position.
- *Alignment tip:* Keep shoulders level to avoid rotation.

Brush Up on Your Balance

Take your teaching techniques to the next level with NASM's Balance Training Course, offered online. Explore and master more than 100 exercises for optimizing balance and kinetic chain stability. Learn how to assess, build and implement balance-training progressions. Find out more at nasm.org/products/CEU1109006.



SINGLE-ARM BENCH PRESS

- Begin supine on bench, feet flat on floor.
- While holding dumbbell, extend R arm so wrist is directly above R shoulder.
- Lower dumbbell, bring elbow to 45-degree angle from rib cage, wrist over elbow.
- Press back up to starting position.
- Complete 8–10 reps.
- Repeat, other side.
- Regression: Reduce amount of resistance.
- Progression: Begin with feet off floor, knees over hips.
- *Alignment tip:* Resist rotating when lowering dumbbell.

MINDFUL MOVEMENT

In addition to improving mobility and muscular endurance, many yoga poses require muscles to work synergistically to stabilize the body and control movement. Lenart says balancing also requires a strong mental focus. “Our participants really have to stay present,” she says. “There is no way to be on autopilot when working to stabilize the body.” If your students enjoy a mindful approach to reaching their fitness goals, consider including some yoga poses in whatever classes you teach. These additions may be especially appropriate if you work with seniors.

BALANCING MOUNTAIN POSE

- Stand with feet hip-width apart, arms at sides.
- Inhaling, reach arms overhead while lifting heels to balance on forefeet.
- Return to starting position. Repeat 8–10 reps.
- Regression: Hold onto chair to help with stability.
- Progression: Decrease tempo.
- *Alignment tip:* Engage core to maintain neutral spine.

SPINAL BALANCE POSE

- Begin in quadruped position, hands directly under shoulders, knees beneath hips.
- Extend R leg until it's parallel to floor, while lifting L arm to shoulder level, elbow extended.
- Return to starting position.
- Repeat, other side; 8–10 reps.
- Regression: Perform without shoulder flexion.
- Progression: Do several reps on one side; repeat, other side.
- *Alignment tip:* Maintain level hips throughout movement.

EQUIPMENT-BASED CLASS

There are many equipment options to choose from, including balance pads, suspension devices, balance trainers and stability balls.

These tools challenge stabilizing muscles to maintain proper alignment and body position. Gensini recommends providing modifications so that everyone is successful. “When working on an unstable surface, I always start with basic skills that offer more points of contact, then have people work up to more challenging variations when they're ready. Allowing time to get comfortable when working with balance challenges is essential. Once [moves are] familiar, I layer in progressions, such as visual tracking and unilateral moves.”

Here are some basic BOSU® Balance Trainer exercises that will challenge your participants in new ways:

BIASED SQUAT

- Begin standing on dome.
- Step R foot to side and lower into squat position.
- Return to starting position and repeat, L.
- Complete 8–12 reps.
- Regression: Hold weighted bar vertically for additional contact point.
- Progression: Increase ROM.
- *Alignment tip:* Track knees toward toes.

V-SIT WITH BICYCLE

- Start seated on center of dome, hands on either side of hips.
- Lean back slightly. Lift feet so shins are parallel to floor.
- Extend R knee.
- Bring R knee back to starting position while extending L knee.
- Repeat, 8–12 reps.
- Regression: Reduce ROM.
- Progression: Do V-sit with hands off dome.
- *Alignment tip:* Keep spine extended.



MELISSA WEIGELT, MS, is an NASM-certified personal trainer and a vinyasa yoga instructor (RYT 200). As a continuing education provider

for fitness professionals and a BOSU® and SURGE® national master trainer, she enjoys sharing her love of fitness with others. Contact her at Melissa@flowfitnesstraining.com.

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Nutrition [FOOD NEWS & FACTS]

Vitamin D, POC and COVID-19 *The Risk of Deficiency*

Here's another reason to encourage clients to include at least 8 ounces of seafood in their weekly diet: Mackerel, salmon, tuna and other types of fatty fish are some of the best food sources of vitamin D—a nutrient that may help the body battle COVID-19.

Deficiency and the Immune Response

In May 2020, Northwestern University published its analysis of coronavirus patient data from 10 countries, reporting a “strong correlation” between low levels of vitamin D and an overactive immune response known as the “cytokine storm.” This hyperinflammatory condition can cause serious lung damage, potentially leading to severe respiratory distress and even death (doi.org/10.1101/2020.04.08.20058578).

Athletes at Risk

According to the NASM Nutrition Certification textbook, “Of all the micronutrients, vitamin D has the highest rate of deficiency worldwide.” Might you or your clients be among the “D-ficient”? Consider this: A recent study in the journal *Nutrients* looked at vitamin D levels in 20 basketball players at George Mason University (2020; 12 [2], 370). At baseline, more

than half of the participants were found to be deficient, in keeping with findings from a multicountry study of 2,000 athletes. At highest risk for low levels? African Americans and other athletes of color—groups that have also been disproportionately affected by the coronavirus, in terms of both incidence and severity.

Getting Enough Each Day

First, some caveats: The Northwestern University researchers say the relationship between COVID-19 and vitamin D requires further study. And oversupplementation is not advised. According to the National Institutes of Health, the daily Recommended Dietary Allowance for most healthy adults ages 19–70 is 600 IU, with a tolerable upper limit of 4,000 IU per day.

As with any dietary supplement, it's best to consult a physician before adjusting current intake. A simple blood screening can determine how much (if any) is needed. This test may need to be repeated several times a year, since in spring and summer, sun exposure can supply all the vitamin D that some people need.



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Now Trending Blenditarian Meals

Meat-plant blends were among the “top 10 food trends for 2020” predicted by Whole Foods Markets last fall. This was, in part, thanks to The Blended Burger Project, which began 6 years ago with the James Beard Foundation giving accolades to (and sharing recipes of) blenditarian creations made by professional chefs. In 2019, *Bon Appetit* and the Mushroom Council launched a “Home Edition” of the Project for amateur cooks, with a grand prize of \$10,000.

In both cases, the premise is simple: Swap out at least 25% of the ground meat for chopped store-bought mushrooms, then use the blended mixture to build the burger of your dreams. For a sneak peek at the entries, do an Instagram search for #BlendedBurgerContest. (Be prepared for your mouth to start watering!)

Blended Turkey With Avocado Mushroom Burger

Blended burger recipes can be relatively simple (like this one) or incredibly complex (like the chef-created versions, which involve exotic sauces, toppings and buns). You can find both types on blenditarian.com, along with a “mix” of articles on becoming a better blender.

To prepare: Use a food processor to finely chop ½ pound (5–6 medium) cremini mushrooms, ½ small onion and 1 garlic clove. Combine the vegetable mixture with 1 pound lean ground turkey, 1 tsp Mexican seasoning, ½ cup breadcrumbs and 1 egg. Form into 6 patties, place on a baking sheet and refrigerate 1 hour. Cook as desired until internal temperature reaches 160 degrees Fahrenheit.

To serve: Place each patty on a warmed hamburger bun and top with sliced avocado, tomato, red onion and some baby spinach leaves. Add Swiss cheese, pickles and other condiments as desired.

Per patty: 370 calories, 22 grams protein, 37 g carbohydrate, 4 g fiber, 16 g total fat, 4 g saturated fat, 90 milligrams cholesterol.

Not All Plant-Based Diets Promote Heart Health

A recent study of 2,000 Greek adults noted that people who followed a plant-based diet and “frequently” ate sweets, refined grains, potatoes and sugary drinks showed *no* heart-health benefit compared with those whose diet *wasn't* limited to plants. Part of the problem, especially among the women (who ate more often than the men), was that they were choosing unhealthy snacks.

“[It] seems that simply following a plant-based or vegetarian diet is not enough to reduce cardiovascular disease risk,” said Demosthenes Panagiotakos, PhD, the study’s lead author. “It is also important to focus on specific, healthful plant-based food groups.”

The researchers had some good news for those who aren’t ready for a hard stop on their carnivorous habits: Even a *small* reduction can make a significant difference. Men and women who ate only three daily servings of animal products instead of five showed reductions in CVD risk of 25% and 11%, respectively.

The findings were presented at the American College of Cardiology’s Annual Scientific Session Together With World Congress of Cardiology in March 2020.

Editor’s note: To learn more about the different plant-based diets and their place within the dietary spectrum, take the Plant-Based Diets course from the new NASM Nutrition Series. Visit nasm.org/products/online-nutrition-course-plant-based-diets for more information.



COACH’S CORNER WHAT’S YOUR ALCOHOL IQ?

When governors’ orders forced the closing of bars across the U.S., online alcohol sales surged. “This situation with COVID-19 is tailor-made for drinking,” said social work professor John Clapp, PhD, in an April news release from the University of Southern California. “People are coping with kids at home, spouses, social stress, financial stress, work stress and the threat of disease. So, it doesn’t

surprise me at all that we’ve seen a spike in drinking.” At the time, he recommended that people turn to more positive coping strategies (like exercise). But even the most fit-minded Americans may have imbibed a bit more than usual.

What does this mean for health, weight and workout performance? The topic is so complex that the NASM-Certified Nutrition Coach textbook devotes an entire chapter to it. The chapter begins by explaining the unique way the body metabolizes

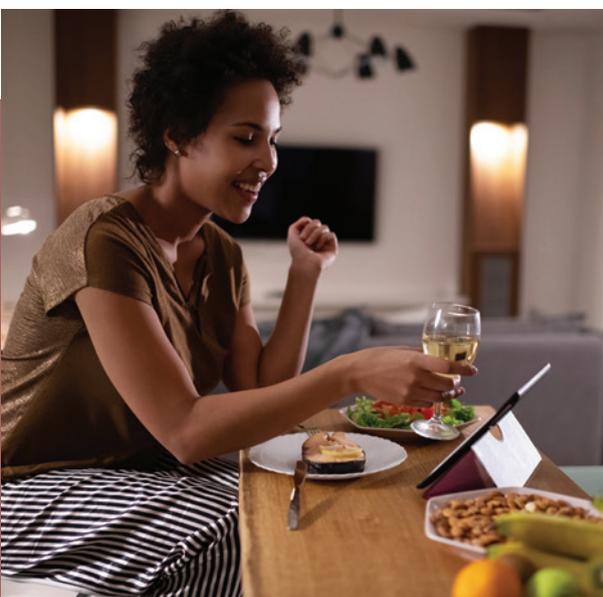


TECH AT THE TABLE: COULD VIDEO GAMES CURB FOOD INTAKE?

In a study published in *The Journal of Nutrition*, 119 college students were observed at two meals. At one, participants were told to eat mini quiches ad libitum while playing a 15-minute memory-based video game. At the other, they were given the same dining directions but no digital distraction (2019; 150 [5], 1324–29). The order in which they completed these assignments was random, with a 1-week washout period in between.

Since mindless eating has long been blamed for boosting calorie intake, the researchers expected that the gaming group would consume more. In fact, the opposite was true: The distracted diners ate *less* quiche, though they weren't very good at estimating their intake. And the group whose first session was "distracted" ate less at the nondistracted meal 2 weeks later.

Study author Carli A. Liguori, MS, RDN, LDN, says this may indicate a difference between *distracted* eating and *mindless* eating. The former involves eating with intention while mentally occupied, while the latter is less deliberate (like powering through a bag of chips in front of the TV).



ethanol (the main type of alcohol in recreational beverages), resulting in the production of acetate. Here, from Lesson 1, is a sample "Coach's Corner" offering insight into how this process can affect body fat.

Coach's Corner: **Alcohol Breakdown and Fat Storage**

"For individuals trying to lose body fat, frequent ethanol consumption is particularly counterproductive. The acetate from ethanol metabolism provides ample acetyl-CoA to the aerobic

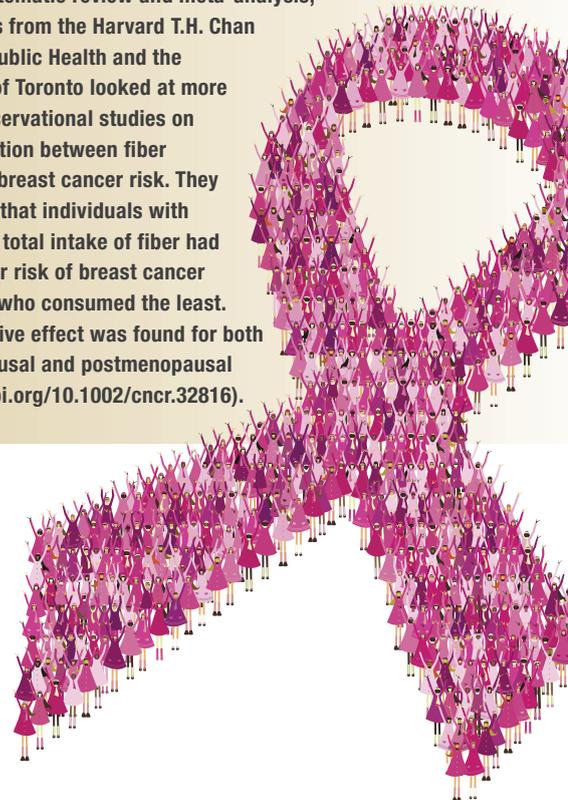
pathways [which is used in the Krebs cycle to produce energy], thus reducing the body's need to utilize its own fat stores [during exercise]. Furthermore, . . . carbohydrates and fats consumed along with the alcoholic beverage will be treated like any other excess calories and be stored for later, creating a two-fold roadblock to optimal body composition management."

To learn more about the CNC program and how to access the complete textbook, visit nasm.org/cnc.

Dietary Fiber Reduces Breast Cancer Risk

October (as always) is Breast Cancer Month. If your favorite 5K has been canceled, you can still raise awareness and promote prevention: Simply encourage people to eat more dietary fiber in the form of fruits, vegetables and whole grains.

In a systematic review and meta-analysis, researchers from the Harvard T.H. Chan School of Public Health and the University of Toronto looked at more than 20 observational studies on the association between fiber intake and breast cancer risk. They discovered that individuals with the highest total intake of fiber had an 8% lower risk of breast cancer than those who consumed the least. The protective effect was found for both premenopausal and postmenopausal cancers (doi.org/10.1002/cncr.32816).



DIRTY AIR, DIABETES AND OBESITY

Fermented and gut-friendly foods like kimchi, sauerkraut and yogurt are a smart addition to almost anyone's diet. But those who live in smoggy locations may want to take particular care to put them on their grocery lists.

Researchers from the University of Colorado Boulder and the University of North Carolina at Charlotte were the first to link air pollution to dangerous changes in the human gut. They obtained fecal samples from 101 young adults in Southern California and compared the samples to data from air-monitoring stations near participants' homes. The study, published in *Environment International*, reported that study subjects who were exposed to high ozone levels showed less diversity of gut bacteria (which has been linked to diabetes and obesity) and greater numbers of *Bacteroides caecimuris* (also associated with obesity). GI problems tended to peak along with the pollution index, as well.



BEYOND LIFTING A Dietary Trick to Reduce Age-Related Muscle Loss

Currently, 0.8 gram per kilogram of body weight (g/kgBW) per day is the Recommended Dietary Allowance for protein for all adults. However, there is emerging evidence that this may be too little to stimulate the maximum protein synthesis (MPS) needed to preserve muscle mass in older populations.

Research published in *Frontiers in Nutrition* looked at eating habits of three adult age groups: young, middle-aged and "old" adults (2019; doi.org/10.3389/fnut.2020.00025). They noted that an intake of 1.0–1.5 g/kgBW/day of protein is "associated with increased muscle mass and strength in old individuals" and that consuming 0.40 g/kgBW of protein in a single meal is necessary for this age group to achieve maximal MPS stimulation. (That is significantly higher than the 0.24 g/kgBW/meal required by younger adults.) Even though all age groups met the daily goal for protein, older participants consumed most of theirs at dinnertime, which may prevent them from achieving maximal MPS after other meals.

Bottom line: In addition to exercise programming, this age group may benefit from your input on how to select high-quality protein sources and why it's important to have a serving at each meal. Keep in mind that some seniors have a limited ability to cook, taste and/or chew, so include some flavorful, quick-prep dishes made with easy-to-eat plant-based proteins.



The Athlete's Plate:

Want to learn how to eat like an Olympic athlete? Check out The Athlete's Plate—a visual tool developed by Nanna Meyer, PhD, RD, associate professor at the University of Colorado, Colorado Springs, and colleagues, in collaboration with the U.S. Olympic Committee's Food and Nutrition Services.

"The Athlete's Plate Nutrition Education Tool is designed to teach athletes and active individuals how to eat and fuel according to training intensity and volume," says Meyer. It offers options for easy, moderate and hard training days—and was recently validated by a study published in the *International Journal of Sport Nutrition and Exercise Metabolism* (2019; 29 [6], 628–35).

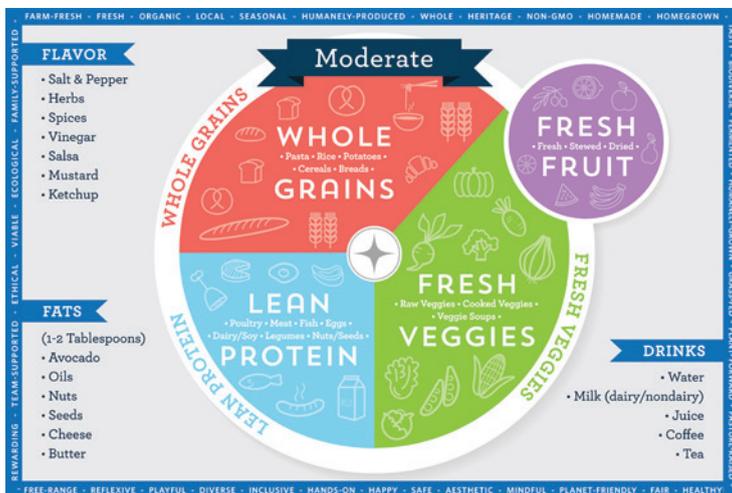
Thanks to the positive response to the first iteration, Meyer has collaborated on the creation of a vegan/vegetarian version, developed by Surabhi



A Visual Tool for All Levels of Training

Airi, MS, as well as a “TrueFood” version, developed by the Daniels Fund Ethics Initiative and the United States Anti-Doping Agency. “The TrueFood Plate engages the user more deeply with their food system,” Meyer explains. “This version is for athletes who aspire to eat with integrity and respect for the planet, animals and people.”

These tools are available as downloadable PDFs at uccs.edu/swell/theathletesplate, uccs.edu/swell/vegetarianvegan-athletesplate and uccs.edu/swell/tfc/resources/athletes. To learn more about the TrueFood Program—and find some great recipes and nutrition guides—visit truesport.org/true-food/.



Reset Kids' Eating Habits After the Shutdown

When school went online due to the pandemic, healthy habits went offline for many kids. Social distancing quashed play dates, and shelf-stable foods (purchased in a panic) tend to be higher in calories and lower in nutritional value.

“There could be long-term consequences for weight gained while children are out of school during the COVID-19 pandemic. Research shows that weight gained over the summer months is maintained during the school year and accrues summer to summer,” said Andrew Rundle, DrPH, in an article on the topic, published by the Columbia University Mailman School of Public Health. The impacts can, in fact, last well into adulthood.

To help turn the tide, take some time to reassess the diets of your young clients and reeducate children on how to eat healthier foods. Also, consider directing parents to the USDA website ChooseMyPlate.gov, where there are tons of tools, recipes and articles on healthy eating. The site includes these simple tips:

- Fill half your plate with fruits and vegetables.
- Try whole grains like oatmeal, whole-wheat bread and brown rice.
- Swap out soda for water or fat-free/low-fat milk.
- Eat sweets less often and in smaller portions.

For other healthy strategies that cater specifically to kids, check out the NASM Youth Exercise Specialization at nasm.org/YES.



ANNE WARREN has written about food and nutrition for magazines, including *Quick and Healthy Cooking* and *Prevention's Guide to Weight Loss*, and for the books *Prevention's Outsmart Diabetes* and *Smart Low-Carb Living*. She lives and cooks in Eastern Pennsylvania.



WOMEN'S HEARTS A NEW MIDLIFE LIFESTYLE = LOWER STROKE RISK

Better late than never: Women can substantially reduce their stroke risk by adopting a healthier lifestyle, even if they wait until midlife to do it: this according to a study published in *Stroke* (2020; 51 [5], 1381–87). Modifications that made a difference included gradually losing weight (if appropriate), not smoking, exercising 30 minutes per day and adopting healthier eating habits. Among these were nixing processed meats, cutting back on alcohol and red meat, and eating more fish, nuts, produce and whole grains.

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Healthy Groceries, Happy Wallet: 7 Tips to Share With Clients

FOLLOWING A SOUND EATING PLAN STARTS IN THE GROCERY STORE. HELP CLIENTS NAVIGATE THE AISLES TO FIND THE ITEMS THAT BEST FIT THEIR BUDGETS AND FUEL THEIR BODIES.

BY ABBIE GELLMAN, MS, RD, CDN

As a fitness professional (and athlete), you know it's not wise to ignore what your clients put on their plates. How people fuel up can seriously affect their results and, in turn, their perception of your program and their success.

Reminding clients to make (and stick to) grocery lists is a good place to begin. But many people new to healthy eating may balk at the prices of things like fresh produce, nuts, and new foods made with plant proteins.

To help clients ease into healthy shopping without breaking the bank, try to work some of these wallet-friendly tips and tricks into your everyday banter (or address them in a more formal talk about nutrition).

Make a Plan—and Stick to It!

While clients may be used to shopping on the fly, you may want to suggest they begin by sitting down and really thinking about what they plan to buy.

Planning out a week's worth of meals may take a bit of effort, but the results are more than worth it. Not only will this allow your clients to plan for leftovers—hello, rotisserie chicken!—but it will keep people from running to the grocery store every few days. That saves time and money and can cut back on the potential to impulse-buy. What's more, clients will be much more

likely to follow a healthy eating plan (and not splurge on a random lunch or dinner) if they've selected meals and snacks ahead of time.

Once those meals are planned out, the next step is to make a grocery list. Remind clients to commit to buying *only* what is on the list. This will give them additional



Sometimes if you head to the farmer's market toward the end of the day, prices are slashed because sellers do not want to haul perishable produce back home.

protection from often-unhealthy impulse buying—good for both wallet and waist. For people who really struggle to keep their cart on track, online grocery shopping may be a better bet, if it's available where they shop.

Now that clients know what they need, it's time to get it and bring it home. Offer a few (or all) of these tips and the rationale behind why they help keep spending in check.

Buy Whole Foods

You can save a lot of money by doing your own prep work in the kitchen! Processing and packaging foods adds expense, plus consider all the marketing dollars put in by the manufacturer. It's the consumers who pay a premium for that time and effort. Another perk of less-processed options: They often come in larger packages, making the "cost per serving" lower.

Invite clients to do a quick comparison in the store: Look at the difference in cost between a 1-pound bag of whole carrots and a 1-pound bag of carrots that are already peeled and sliced. Or how about a block of cheddar versus a bag of shredded cheese? Not only is the cost per serving



A Day of Healthy Eating: Sample Meal Plan & Recipes

To help clients see how easy and affordable healthy eating can be, I invite you to copy and share the suggestions below. *Note:* The videos for these recipes (and more!) can be found on chefabbiegellman.com.

Sample Meal Plan

Meal planning doesn't have to be complex, and neither do healthy recipes! The proof is in the pudding—or in this case, the parfait! Here's a day's worth of dishes that are totally doable for almost anyone:

Breakfast: Savory Oats With Fried Egg. Recipe below.

Lunch: Grain Vegetable Salad With Tuna and Vinaigrette. In a bowl, toss ½ cup chopped vegetables, 1 cup mixed greens and ½ cup cooked brown rice. To make the vinaigrette, whisk together 1 Tbl of olive oil, 1 Tbl of vinegar or citrus juice, and a pinch each of salt and pepper. Toss the dressing with the salad, then top with a 5-ounce can of (drained) tuna.

Snack: Fruit and Nut Butter. Piece of fruit (example: apple or pear) and 2 Tbl nut butter.

Dinner: Lentil Bolognese With Zucchini Noodles. Recipe below.

Snack/Dessert: Easy Yogurt Parfait. Mash ½ cup of plain yogurt with ½ cup fresh berries, then top with 2 Tbl chopped nuts. Optional: Add touch of honey or maple syrup.

Recipes

SAVORY OATS WITH FRIED EGG

This hearty breakfast is a great way to use up leftover vegetables, so don't be afraid to mix and match. Use whatever veggies you like!

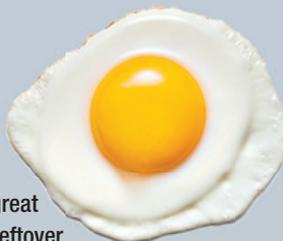
Makes one serving.

- ¾ cup water
- ¼ cup dry quick-cooking steel-cut oats (or ½ cup cooked steel-cut oats or rolled oats)
- pinch of salt
- pinch of pepper
- 2 tsp extra-virgin olive oil, divided
- ¼ cup red pepper, diced
- ¼ cup zucchini, diced
- 2 Tbl onion, diced
- ¼ cup kale, chopped
- 1 large egg

1. Bring water to boil. Add oats, reduce heat to low, and simmer for about 3 minutes, until all liquid is absorbed. Turn off heat and stir in salt and pepper.

2. Heat nonstick pan or skillet over medium-high heat, then add 1 tsp oil. Add vegetables and cook for 2–3 minutes, until softened. Spoon vegetables over cooked oats.

3. Add remaining 1 tsp oil to nonstick pan, then add egg. Cook until egg white is no longer translucent. Serve over oatmeal and vegetables.



LENTIL BOLOGNESE WITH ZUCCHINI NOODLES

Even meat lovers will love this plant-based twist on an old favorite. Feel free to swap in whole-wheat noodles, especially if you have some left over! To make it quicker, use canned cooked lentils (drained) instead of the dried version. Makes four servings.

- 2 Tbl extra-virgin olive oil
- 2 carrots, peeled and diced
- 1 onion, diced
- 1 stalk celery, diced
- ½ tsp salt
- 1 cup dried lentils, rinsed
- 1 (14.5 oz) can diced tomatoes
- 4 cups vegetable broth
- ⅛ tsp black pepper
- 2 Tbl plain Greek yogurt
- 1 Tbl balsamic vinegar
- zucchini noodles (zoodles)

1. Heat soup pot or deep pan over medium heat and add oil. Add carrots, onions, celery and salt. Sauté until translucent or slightly golden, about 8–10 minutes.

2. Add lentils, tomatoes and broth, and bring to a boil. Lower to a simmer and leave until lentils are cooked through, about 25–30 minutes.

3. Mix in pepper, yogurt and vinegar. Continue to simmer until sauce reaches desired thickness.

4. About 3–4 minutes before ready to eat, boil zucchini noodles until desired doneness. To serve, top cooked zoodles with sauce.

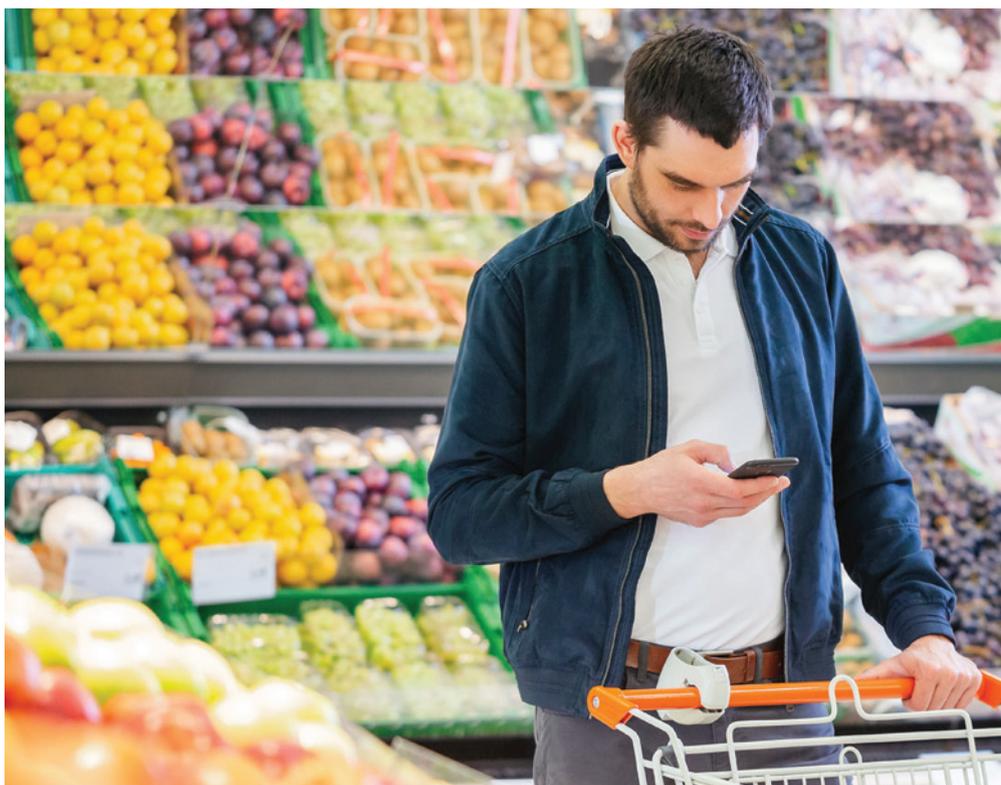
lower, but the whole food will last longer and will often taste better as well.

Buy in Bulk

This is one of the simplest suggestions you can make to clients. Many items—including whole grains, oats, dried legumes, nuts and seeds—can be found in the grocery store’s bulk aisle (although many grocery stores temporarily stopped offering bulk bin items during the pandemic). Buying in this way can definitely decrease grocery bills, because clients can buy only as much as they want, rather than getting a predetermined amount of each item. Another simple tip: Recommend that people use these healthy staples to create their own trail mix. Then, to keep portions in check, they can divide the mix into individual servings using small plastic containers.

Buy in Season

Fresh produce is vital to healthy eating, but the cost can add up quickly. Look to see what is in season at both your grocery store and the local farmer’s market. And here’s a tip: Sometimes if you head to the farmer’s market toward the end of the day, prices are slashed because sellers do not want to haul perishable produce back home. If you end up with a big haul of fruits and vegetables but won’t make it through all of them, you can easily freeze them for up to 6 months, using little bits



along the way. There’s nothing like eating those gorgeous summer berries throughout the fall and winter!

Buy Frozen and Canned Produce

Fresh fruits and vegetables are not the only healthy versions of produce! Frozen and canned items play a role as well. In fact, having these on hand at all times may save

clients a midweek trip to the store (if they forgot an ingredient or ran out of fresh options). That can save time and money and (again) avoid less-than-healthy impulse buys. Frozen fruits and vegetables are picked at their peak and frozen within 24 hours, making them both tasty and nutritious. Canned choices can be healthy, too, if clients are careful to opt for ones with low sodium and no added sugar.

Some ideas for using frozen vegetables: Sauté or roast them, or add them into sauces and stews. Frozen fruit is always great for a smoothie and can be easily used as a topper for pancakes, oatmeal or yogurt (the same is true of the canned version). As for canned or jarred vegetables, artichoke hearts are a delicious side dish when sautéed with olive oil, salt, pepper and lemon juice, and canned beans can amp up the protein and fiber in a grain salad or stew.

Nutrition Education—Tapas-Style: Mini Courses for the Epicurious

Sometimes it’s easier to digest nutrition information in small bites. That’s why the National Academy of Sports Medicine recently launched the NASM Nutrition Series, which offers short 4-lesson courses that are open to fitness professionals and clients alike! (You and your clients can even take these courses simultaneously and discuss the lessons in your sessions.) Each of the digital courses, created by a team of industry experts, includes lessons, a video, visual learning aids, and a course-completion quiz and certificate—all at a cost of only \$49.

Currently on the menu:

- Food Labels and Portion Sizes
- Making Sense of Supplements
- Navigating Diets
- Nutrition Hot Topics and Controversies
- Plant-Based Diets

To learn more about any of these, as well as the extensive NASM Certified Nutrition Coach course for fitness professionals, visit nasm.org/products?Tag=nutrition.



Buy Dried Beans and Legumes

As good sources of plant-based protein, dried beans and legumes (like lentils) are some of the most nutritious and affordable options available at the grocery store. These can be purchased in 1-pound bags or in smaller portions in the bulk section. People who get in the habit of cooking a batch every week come to appreciate the



Planning out a week's worth of meals will keep clients from running to the grocery store every few days. That saves time and money.

never-ending versatility of these foods! Add them to soups, stews and chilis, or throw them into a salad. How about a quick purée with some olive oil, salt, pepper and lemon juice for a bean dip or sandwich spread? And my personal favorite: Roasting beans like chickpeas in the oven makes for a crunchy, savory snack.

Choose Animal Protein Wisely

When buying meat, poultry and seafood, look for cuts that are less expensive, such as chicken thighs versus chicken breasts. Roasting an entire chicken and then using it for the week in a variety of meals is a perfect way to spend less per pound and get the most out of an ingredient for the week. Cheaper cuts of meat, such as beef chuck or pork shoulder, can be thrown into a slow cooker and braised to perfection overnight. A large batch of pulled pork can provide several meals throughout the week and can also be frozen in portions and eaten for the next 3 months.

When choosing seafood, look to the canned aisle or the frozen section. Canned fish, such as tuna and salmon, provides essential fatty acids and nutrients, which are an important part of a healthy diet. Adding tuna to a salad or making salmon cakes is an easy and affordable way to incorporate more seafood into your diet. The freezer

section may also have pre-portioned frozen pieces of fish, such as salmon or cod. These are great to keep in your freezer; they thaw fast and can be cooked stovetop or roasted in the oven fairly quickly.

And don't forget the incredible edible egg! With 6 grams of protein and 13 essential vitamins and minerals per large egg, this delicious ingredient goes a long way. Add a fried egg onto leftover sautéed vegetables, make scrambled-egg tacos, or how about pita pizza with an egg on top? (Also check out the Savory Oats With Fried Egg recipe on page 63.)

Make the Most of Meat Extenders

Meat extenders boost flavor and nutrients and are very economical. Essentially, these ingredients bulk up a meal so that higher-priced items, like meat, can be used in smaller portions. And here's the best part: Lean animal proteins may never taste dry or overcooked again, because these plant-based goodies add and retain moisture. Here are some of my go-to meat extenders:

MUSHROOMS

Mushrooms add umami, which is often characterized as "meatiness." In addition to dietary fiber, mushrooms add a healthy dose of B vitamins, selenium and, in some cases, vitamin D. To try, swap out half the ground meat in a dish with 8–16 ounces of chopped mushrooms. They shrink when cooked, so the amount you want to use is ultimately based on your personal preference. (See page 56 for a burger recipe using a blend of mushrooms and meat.)

LENTILS

Lentils also make for a great meat mix-in. They come in a wide variety of colors and textures, and all of them are a good source of plant-based protein, fiber and iron. Some easy ideas: Add cooked lentils to ground meat in a sauce, chili or stew, or purée them in a food processor and use them in meatballs or meatloaf. (To most closely mimic ground meat, choose the brown variety.)

WHOLE GRAINS AND SEEDS

Adding chia seeds, rolled oats, bulgur or quinoa to meat adds volume and a range of nutrients, including fiber, B vitamins and plant-based protein. Add about 1 cup of cooked whole grains per pound of raw meat. Uncooked rolled oats make a great addition to burgers, while 1 tablespoon of chia seeds mixed with 2½ tablespoons of water is the perfect proportion per pound of raw ground meat.

A Final Thought on "After-Market Value"

For clients who aren't used to having to "use up" fresh foods in a timely manner, this tip is key: Keep an eye on expiration dates! If certain leftovers or produce are on the verge of going bad, encourage clients to think about ways to upcycle them, rather than throwing them out. For example, some types of produce can be frozen or used to make stock, soup, stew or a frittata.

Bottom line: The more you can help clients minimize the impact of healthy eating on their bottom line, the better. They will be more likely to stick with the plan and, in turn, see results sooner and reap even greater benefits than they could from fitness alone. And that will be deliciously satisfying for them *and* for you.



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Exercise and Post-Traumatic Stress Disorder

HOW DOES MOVEMENT TRIGGER AND POTENTIALLY HELP CLIENTS WHO HAVE PTSD?

BY PORTIA PAGE



Since mid-March, most of the country has been dealing with social distancing rules, stay-at-home orders, business closures, overcrowded hospitals and limited health services. Consequently, many people are feeling isolated and lonely and may be hurting emotionally and financially. Even as parts of the world are reopening, the fear of coming into close contact with someone who has the virus is causing many to feel anxious.

As we navigate the latter half of 2020, the far-reaching effects and potential traumas associated with COVID-19 are still unfolding. Few people will be unaffected by the pandemic, and mental health experts expect that post-traumatic stress disorder (PTSD), most commonly associated with combat veterans, may become more commonplace. COVID-19 survivors, in particular, are at high risk for developing PTSD (Xiao et al. 2020).

How can you help clients who need to move, be heard and be seen? This article takes a broad look at PTSD, how exercise can help, and what you as a fitness professional can do, all while remaining within scope of practice.

Note: The information provided is for general education purposes only. Do not

diagnose or attempt to treat a client who you believe may have PTSD. Always refer the person to a qualified healthcare professional.

What Is PTSD?

PTSD is a mental disorder that can develop after a person is exposed to a traumatic event, such as a natural disaster or serious accident; a terrorist act; war/combat; or violent personal assault, such as rape (APA 2020). Symptoms include disturbing thoughts and feelings, dreams related to the event, mental or physical distress due to trauma-related cues, and an increase in the fight-or-flight response.

While symptoms usually begin within the first 3 months after the event, they may not occur until years later, especially if the event is not acknowledged or processed.

Trauma survivors often develop depression, anxiety and mood disorders (APA 2020). Drug and alcohol abuse are also common. Events that often trigger PTSD:

- wartime trauma
- child abuse
- sexual assault or abuse
- physical violence
- threats with a weapon
- fire
- life-threatening illness
- traumatic injury
- kidnapping
- a traumatic accident (e.g., car/airplane crash)
- a natural disaster
- a terrorist attack
- an abrupt, unexpected event like the pandemic

People who lack a strong support system, endure long-term emotional trauma, or have an alcohol or substance-use problem are especially vulnerable to PTSD.

Symptoms of PTSD:

- chronic anxiety
- difficulty falling or staying asleep

PTSD Statistics

There are correlations between combat and PTSD. According to Audoin-Rouzeau & Becker (2014), “One-tenth of mobilised American men were hospitalised for mental disturbances between 1942 and 1945, and after 35 days of uninterrupted combat, 98 percent of them manifested psychiatric disturbances in varying degrees.”

In the wake of the COVID-19 pandemic, GlobalData Healthcare epidemiologists expect a significant increase in the prevalence of PTSD, and the risk is twice as high for women as it is for men. After the severe acute respiratory syndrome (SARS) outbreak in 2003, frontline healthcare workers and self-quarantined people showed symptoms of PTSD (GlobalData Healthcare 2020).

The pandemic has been a significant stressor in the lives of many people, including those not directly affected by COVID-19.

- irritability
- anger and angry outbursts
- panic attacks
- hypervigilance (being constantly on guard for threats)
- excessive startle reflex (a tendency to be easily startled)

Trauma that results in PTSD may occur over a long period of time or as a single event (National Collaborating Centre for Mental Health 2005). Symptoms such as hyperarousal (an abnormal state of heightened anxiety) typically develop as a result of the body’s overreaction to the stress response, which causes biological changes in the brain. Simply remembering a traumatic event can trigger this effect (Center for Substance Abuse Treatment 2014)—even if the threat is gone, the body responds as if it weren’t.

Obstacles to Exercise

During exercise, the heart beats faster, blood pressure increases, there may be shortness of breath, etc. These are all symptoms associated with anxiety. A client who has PTSD

may be deterred from exercising because these reactions are similar to those that occur during an episode. Hyperarousal can persist long after the trauma has passed; this leaves a person feeling overreactive to anything that reminds them of the event (including sights, smells, sounds, or even words or lyrics). For this reason, people who have PTSD may avoid stimulating activities, thereby increasing their risk for physical problems like obesity, heart disease, chronic pain and diabetes.

Other side effects of PTSD—such as depression, excessive drinking, drug use and smoking—compound problems of low motivation and low energy levels, making it more difficult to start or stay with a regular exercise program. Although exercise offers many benefits, its ability to spark hyperarousal can be problematic for people with PTSD. Personal trainers should keep this in mind when structuring a workout.

How Can Exercise Help?

There is evidence that physical health influences mental health, and physical manifestations of psychological stress and trauma can show up as muscle tension, increased heart rate, palpitations, trembling and even pain (Center for Substance Abuse Treatment 2014). With this in mind, it’s even more important to get people moving, as motion is the lotion that “lubricates” the body and can potentially help individuals process the effects of trauma, depression, anxiety and PTSD.

Exercise is therefore a good way to break down barriers for those with PTSD.

However, progress must be slow, gradual and repetitive to avoid overwhelming clients and to create a path toward self-awareness. Movement doesn’t have to be excessive or even elevate the heart rate. It can be as simple as focusing on the breath and bringing mindfulness to simple tasks and movements (Reddy 2013).

Beginning an Exercise Program

To best support a client who has PTSD, personal trainers must provide a safe place and a simple, repetitive, achievable and gradual workout—one that builds range of motion and strength, along with confidence. Since hyperarousal is a potential trigger, choosing a mind-body focus with breathing as a central aspect is a sound approach. A good program will also cultivate self-awareness and appreciation. Tai chi, qigong, yoga and Pilates are excellent examples, as they are breath-centered, noncompetitive and nurturing in nature (Netz & Lidor 2003).



Psychological Strength for Sports

Ignite your clients’ concentration and help them achieve more with NASM’s Mental Toughness continuing education course, which focuses on the key aspects of psychological strength for fitness and sport. Learn how to support clients in keeping their minds engaged, responsive, resilient and strong under pressure.

There are no prerequisites for this course. Upon completion, you will be able to do the following:

- Explain how to enhance attentional focus.
- Identify the sources of confidence used in exercise and sport situations.
- Describe how to assess and increase commitment.
- Define different types of anxiety and the role they play in attempting to reach fitness or sports performance goals.

Find out more at nasm.org/products/CEU1109053.

Exercise Programming for PTSD

Refer to the following guidelines when designing exercise programs for clients with PTSD:

Focus on breathing. Teach mindful breathing and/or meditation at the start and/or end of a program.

Be repetitive. Repeat cues to help clients master moves while building confidence and self-efficacy.

Offer predictability. To reduce anxiety, be predictable and use repetition.

Use noncompetitive language and practices. Keep in mind that a competitive environment may activate the sympathetic nervous system, increasing stress levels.

Provide time for reflection. Help clients discover and develop self-awareness. Assist them in feeling and responding to the mild stresses of exercise. Help people learn to differentiate these from a state of hyperarousal.

Be patient. Take it slow and steady, paying attention to clients' reactions to each stage of the exercise program. Pull back when necessary.

Set realistic goals. Help clients figure out realistic fitness and health goals.

Remain flexible. Be ready to switch gears and calmly respond to challenges as they arise (i.e., loud sounds, damaged equipment, clients' needs, etc.).

Be flexible with cues. Develop several different ways to say the same thing so that you have a backup cue or instruction if the first one doesn't work. Clients who have PTSD will likely not respond in the same way as other clients.

Come prepared. If a client experiences an episode or a drastic mood change during a session, be ready to stop, talk and listen. Return to deep breathing or do some simple stretches before moving on.

Be knowledgeable. Stay informed about your clients' health. Learn about changes in medication or any incidences that have occurred since your last session. Adapt as needed.



Deep, diaphragmatic breathing is a great starting place, no matter what the workout is. Ask clients to take a comfortable sitting position (or stand, if they prefer), and cue them to breathe in whatever way is comfortable. After several deep breaths, ask them to describe where they feel the breath, then invite them to explore what feels best (inhaling and exhaling through the mouth or nose, etc.). Encouraging clients to determine their preferences will help keep distracting, destructive thoughts at bay. It will also help people understand what they are feeling and put them in a better position to *respond* to changes rather than *react*.

Deep, focused breaths calm the nervous system, slow the heart rate, lower blood pressure and bring attention to the present moment (Alderman 2016). While deep breathing may not seem like much, it goes a long way toward setting a positive mindset and bringing clients' attention to what they are feeling. When working with people who have PTSD, make sure they are *ready* to listen and able to take in your instructions. Do this by simply facing them and confirming that they are listening and ready for your instructions. This is important because many people with PTSD tend to dissociate, and you want your clients to be fully present.

Use noncompetitive language in your coaching and cuing. Give easy-to-follow, simple, step-by-step instructions and allow clients time to respond to cues before

you move on. Moving too quickly or giving rapid-fire directions can create an aggressive, competitive environment that could provoke hyperarousal. (See "Exercise Programming for PTSD," left, for more.)

A New Way Forward

Whether or not your clients (or you) exhibit signs of PTSD, it's a good idea to be gentle and patient right now as the industry finds its way. One thing's for sure—people need to move, be heard and be seen, and many need a little human interaction, as well. Your presence and availability as a fitness professional is a great resource and will continue to be so.



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BY TONY NUÑEZ, PHD

WHAT'S THE LATEST ON PROTEIN AFTER WORKOUTS, INTENSITY AND ENJOYMENT OF ACTIVE VIDEO GAMES, AND LACTATE THRESHOLD AS A TRAINING TOOL?

WHAT'S THE BEST TIMING FOR PROTEIN AND CARBOHYDRATE INTAKE FOR POSTMENOPAUSAL WOMEN WHO ENGAGE IN RESISTANCE TRAINING?

A classic question on training floors and in locker rooms is “Do I need to consume protein immediately after I work out?” You still hear many opinions. Scientific reviews have indicated that it is not as imperative as was once thought; however, early research did not focus on postmenopausal women, whose hormone profile modifies how their bodies deal with nutrients.

To examine this population more closely, a recent study focused on protein timing among 34 postmenopausal women randomized into two equal groups: a protein-carbohydrate (PC) group and a carbohydrate-protein (CP) group. Everyone performed 1 hour of resistance exercise 3 mornings per week for 8 weeks. The PC group received 30 grams of whey protein immediately after exercise and 30 g of carbohydrate at 3 p.m. The CP group flipped the protein and carbohydrate timing. At lunch, the two groups consumed similar amounts of protein.

At the end of the study, both groups showed improvements in lean mass, strength and overall body composition—with no observable differences between the groups. This demonstrates the importance of total daily protein intake, as opposed to protein timing, for this cohort.

REFERENCE: de Branco, F.M.S., et al. 2020. Protein timing has no effect on lean mass, strength and functional capacity gains induced by resistance exercise in postmenopausal women: A randomized clinical trial. *Clinical Nutrition*, 39(1), 57–66.

HOW EFFECTIVE ARE ACTIVE VIDEO GAMES IN ENCOURAGING SUPPLEMENTAL PHYSICAL MOVEMENT AMONG YOUNG ADULTS?

Advancements in technology have led to the development of active video games (AVGs) that require players to move their bodies to accomplish gaming tasks. While this began with handheld accelerometer-based controls (like the Wii remote), today's AVGs allow players to fully immerse themselves.

Last year, researchers in Poland set out to investigate participants' physical activity (PA) benefits and enjoyment levels when engaging in two types of AVGs: the Omni treadmill and the Icaros Pro flight simulator. Both apparatuses require extensive movements, with the omnidirectional treadmill being lower-body focused and the flight simulator being a full-body static hold similar to a plank.

In the study, 61 adults (mostly males in their 20s) performed 10

minutes of PA in one or both environments. Results demonstrated that the treadmill-based AVG generally required a high level of intensity (76.8% of maximal heart rate), while the flight simulator elicited low-intensity PA (62.5% of HRmax). Both intensities can be beneficial for health. Participants reported high levels of enjoyment and saw these devices as being useful tools for engaging in supplemental PA.

REFERENCE: Debska, M., et al. 2019. Enjoyment and intensity of physical activity in immersive virtual reality performed on innovative training devices in compliance with recommendations for health. *International Journal of Environmental Research and Public Health*, 16(19), 3673.

HOW IS LACTATE THRESHOLD BEING USED AS A TRAINING TOOL TO IMPROVE HEALTH AND BODY COMPOSITION IN SEDENTARY POPULATIONS?

Lactate threshold (LT)—the exercise intensity that causes an abrupt increase in lactate production in muscle—has mainly been viewed as a strong predictor of aerobic performance. However, more researchers are now using LT as a training tool to combat disease and improve body composition in less-active populations.

In a recent study, 18 Korean women ages 36–55 performed aerobic exercise at LT for 60–90 minutes per day 3 days per week for 12 weeks. (In most sedentary individuals, LT occurs at around 50%–60% of maximal aerobic capacity, which is considered moderate- to high-intensity exercise.)

By the end of the study period, significant improvements were made in percent body fat, lean mass and aerobic performance. Furthermore, autonomic nervous system (ANS) function was better in the LT training group than it was in a nonexercise control group. This is important because a high-functioning ANS reduces stress levels and improves heart function at rest.

The researchers added that using LT as a measure of intensity was superior to using heart rate measurements, as is often done in this type of study.

REFERENCE: Park, H.Y., et al. 2020. Twelve weeks of aerobic exercise at the lactate threshold improves autonomic nervous system function, body composition, and aerobic performance in women with obesity. *Journal of Obesity & Metabolic Syndrome*, 29(1), 67–75.



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Have a question for our expert? Send it to AmericanFitness@nasm.org.

The AFAA logo consists of the letters 'AFAA' in a bold, blue, sans-serif font. A small trademark symbol (TM) is located at the top right of the 'A'. The logo is centered within a white rectangular box.

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A woman with dark hair in a braid, wearing a purple tank top and a headset microphone, is smiling and leading a fitness class. She has her arms raised. In the background, other participants are visible, some with their arms raised. The setting is a bright, modern fitness studio with large windows and brick walls.

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