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LAURIE MCCARTNEY, PRESIDENT

TAKE FIVE

CHECK OUT FIVE OF OUR FAVORITE HIGHLIGHTS FROM THIS ISSUE!

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Teach more with less!

HAPPY NEW YEAR!

All of us at *American Fitness* are excited to help you kick off the new decade with fresh resolutions and affirmations. This is the perfect time to build your roster, reinvigorate current clients and reap the rewards of the busiest season of the year. You love hearing people share their renewed commitments to health and fitness, and you are ready to help! The opportunities are endless, so how do you select the smartest strategies for delivering the best results? That's the topic of this issue's cover feature, where we ask top NASM trainers to share their advice on how to thrive in this rewarding career.

As a trainer, you are on the front line of the fitness and wellness revolution. Those of you who work with younger clients see firsthand how childhood obesity is more prominent than ever. In this issue's CEU Corner, "Stand Up to Childhood Obesity: How Fitness Pros Can Impact the Future" (page 26), author Maria Luque, PhD, shares research on the many challenges faced by children who struggle with their weight—challenges that, if not addressed during their formative years, threaten to compromise their adult lives.

If you teach group fitness at a gym with a tight equipment budget, be sure to read the Group Exercise Moves column, "Minimal-Equipment Workouts" (page 22). Author Melissa Weigelt, MS, shares a wonderful selection of creative ideas for teaching with a sparse toolbox. And don't skip "How to Help Deskbound Clients Thrive" (page 44), which offers you innovative options for clients who spend most of their time sitting at a desk. Author Shirley Archer, JD, MA, gives several "exercise snack" examples that people can easily weave into their busy workdays.

We are proud to be your partner in this exciting and expanding industry, and we look forward to supporting your career in 2020 and beyond.

Yours in health,

Laurie McCartney
President – Global Fitness & Wellness Solutions

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CURRENT CLIENTS
AND REAP THE
REWARDS OF THE
BUSIEST SEASON
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Training Edge [INDUSTRY NEWS, INSIGHTS & TOOLS]

Programming for Joy: Tips From a Neuroscientist Who Teaches Group Ex

Many fitness professionals have a defining moment when exercise changed the trajectory of their lives. For Kelly McGonigal, PhD, now a health psychologist, Stanford University lecturer and best-selling author, it was when she was a 22-year-old graduate student standing outside an exercise studio, waiting to audition to become an aerobics instructor. As a shy kid who had grown into an anxious adult, she was flooded with panic, yet she did not turn and run.

"Looking back, I think one of the reasons I stayed was everything I had learned about courage from my favorite forms of exercise," she says in the introduction of her new book, *The Joy of Movement: How Exercise Helps Us Find Happiness, Hope, Connection, and Courage* (Avery 2019). Yoga taught her to stretch beyond her limits, dance led inevitably to optimism, and cardio proved that a pounding heart can be a sign of power, not fear.

Now, nearly two decades later, the AFAA-certified group exercise instructor has woven together fascinating scientific studies and inspiring real-people stories into a "love letter" to movement and the people who promote it. "I am hoping fitness pros who read this will take away a sense of their deep value to their communities, leaving them inspired to apply the science and motivated to reconnect to their own joy," she says.

Here she shares a few insights from the book, which instructors and trainers can use to help clients and participants find more joy in movement, too:

Exploit the high to enhance the experience. Have people think about a personal goal at the peak of a session or during the cooldown, when the neuro-

chemistry of the "exercise high" has them feeling optimistic and courageous.

Adjust schedules to allow time to socialize. Don't put sessions back to back; leave some time for participants to connect and chat. Also, make it easy to bring family and friends. This may lead to new business or, at a minimum, encourage loved ones to support your clients' efforts.

Include synchronized movement in group classes. This can be as simple as leading synchronized breathing during a cooldown. During synchronized movement, consider forming a circle so each person feels more fully part of the group.

Link movement to music. Let participants recommend songs, make a sharable

playlist for use outside of class, or let each class or group select its own "power song." Many endurance athletes have a tune or two that can perk them up when they hit a wall.

Use rituals to help participants get hooked. Familiar routines and sensory experiences (sounds, scents, etc.) make movement more memorable and addicting (in a positive way). Some examples: Before each class, play the same "welcome" song or use a signature essential oil in the lobby. Then close every class by circling up to share an inspiring fitness story or study (from McGonigal's book or elsewhere), or invite members to share something that makes them proud.

KELLY MCGONIGAL, PHD,
ENCOURAGES FITNESS
PROFESSIONALS TO FOCUS
ON THE JOY OF MOVEMENT.



FORM FIX-UP WITH MIKE FANTIGRASSI

SMART
MOVES
FOR

STRONG SHOULDERS

With so much of life happening at the front of the body (driving a car, typing on a computer and even doing many exercises, such as pushup and bench press), a lot of people have developed upper crossed syndrome, which is characterized by a forward head and rounded shoulders. Clients who show these postural distortions during assessments may have a more difficult time maintaining good form during exercises that involve an overhead pressing movement, such as military presses and dumbbell presses, says Mike Fantigrassi, NASM-CPT and Master Instructor.

In fact, exercising the shoulder muscles can be tricky for anyone because of the joint's ball-and-socket structure: This allows it to move in all three planes of motion, but it also means the shoulder is less stable than hinge and pivot joints. "It's really important to have good posture and alignment in any exercise," says Fantigrassi, "but especially when performing shoulder exercises, because this joint's flexibility makes it easier to injure."

Here are some of his shoulder-friendly options for working with people who have upper crossed syndrome:

Look at alignment. For overhead pressing motions, the arms and elbows should align with the torso. If that's not possible, try other exercises to build strength and endurance.

Stretch the pecs and lats. When these are tight, people may arch the back or shift the arms forward during overhead pressing.

Choose externally rotated moves. To counter the internally rotated position of upper crossed syndrome, look for moves that can open things up, such as cobra (either standing or on the floor). Complete 1 set of 12–20 reps at a slow tempo.

Build endurance with activation exercises. Try this shoulder "wall slide": Standing with the feet about a foot from a wall, lean the back against the wall and tilt the pelvis so the lower back presses against the wall. Place the arms in the "goal post" (or "cactus") position. Keeping the hips, lower back and arms against the wall, slide the arms overhead as far as possible without compromising form. Hold for 1 second, then return to start. Complete 2–3 sets of 12 reps.

Think about shoulders when working other body parts. Shoulder shrugs, wide-grip bench presses, and chest flies (if arms extend too far back) can all be hard on the shoulder joint. Also, many chest moves work the anterior deltoids, so on "shoulder day" it may make sense to use lateral raises and scapions (which target more medial deltoids).

SHOULDER OPTIONS

Inhibit/SMR: foam-rolling of chest and upper back

Lengthen: doorway (active pectoral) stretch, active/static latissimus dorsi ball stretch

Activate: cobra (standing or floor), shoulder wall slide

Integrate: standing curl to overhead press

Note: During workouts, transition to an isolation exercise, such as the lateral raise or scaption, if form is not ideal during overhead pressing movements.



HUNCHING OVER A KEYBOARD (OR STEERING WHEEL) CAN PUT POSTURE OUT OF WHACK. THE RIGHT SHOULDER EXERCISES CAN HELP ADDRESS THAT.

COBRA POSE CAN OPEN UP THE CHEST AND SHOULDERS TO COUNTER THE EFFECTS OF UPPER CROSSED SYNDROME.



FORM FIX-UP WITH MIKE FANTIGRASSI

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Some Notes About Exercise-Music Tempo

“Tempo is really interesting at this point in our industry,” says Melanie Douglass, NASM-CPT and director of business development at Yes! Fitness Music®. “We used to have set tempos for each class. I mean . . . Set. In. Stone. But now, with all the prechoreographed content and desire to use radio hits, we are seeing instructors adjust their movements to match the song—for example, doing a burpee with 2–4 beats per move, if that works best with the song.”

Another way to make your music work better in your classes: Use the tempo control feature on the Yes!GO app. “This lets you adjust the tempo plus or minus 50% without changing the pitch—so no zombie or chipmunk sounds. You can even change the tempo in the middle of your class if members aren’t keeping up or are losing their form,” she says. “That means you can have one super-cool mix and use it for every class if you want: Just change the tempo from 130 for core to 125 for barre, then up to 140 for kickboxing.”

A final thought: *When* to pick the music depends upon what purpose it serves, says Douglass. “If it’s cycle, barbell pump or a dance class, I will *always* pick the song first, then match my moves to it. In those classes, the music is the star! If it’s a nonstop class, like HIIT, sports conditioning, toning or step, the music is the background. What matters here is choosing songs with the same ‘style’ and an appropriate tempo, so [they don’t] distract from the workout.”

A QUICK GUIDE TO BPM

Douglass suggests using these speeds as a reference point, making adjustments as needed, based on the tips above.

BEATS PER MINUTE	EXERCISE MODALITY
125 bpm	seniors, barre
130 bpm	warmups, toning, core
135 bpm	aquatics, kickboxing
150 bpm	high-low, intervals, Tabata

Not Sure About Small-Group Training?

HERE’S WHY (AND HOW) TO GIVE IT A TRY

Some personal trainers are wary of small-group training, says Chris Stevenson, owner of Stevenson Consulting, IHRSA board member and certified master trainer for Technogym®. “They feel it will either compromise their craft or cannibalize their client base,” he says.

Stevenson, however, has seen the opposite when working with groups of four to 12 people. These groups can be a *gateway* to personal training, allowing fit pros to build trust and relationships that can lead to one-on-one sessions. The format also provides members with extra motivation and accountability, since they feel loyal to their coach and to other members in their group.

Perhaps most compelling, though: Small-group training can help trainers grow their business. It lets them assist more people per week and, often, earn a higher hourly rate (depending on the club’s payment structure). Here, Stevenson offers a few tips:

Start small and simple. Consider a preformatted program and start with just one small group.

Choose a unique theme. Make sessions either equipment-based (TRX®, indoor cycling), outcome-based (weight loss, Spartan® Sprint) or skill-based (self-defense, Pilates).

Identify the benefits. Point out the perks related to a session’s theme or modality, and emphasize that small-group



participants enjoy individualized attention (for a lower cost than personal training).

Be clear about costs. This is especially important when offering a free week or free session—which Stevenson recommends clubs do two or three times a year.

Invite culture ambassadors. These are club members who are reliable, enthusiastic community builders. Ask for their feedback and consider

offering them a discount if they post on social media about their experience.

To learn how to individualize group training experiences for each client’s goals, obtain NASM’s Group Personal Training Specialization (NASM-GPTS). Find out more at nasm.org/continuing-education/group-personal-training.

Tech Goals for 2020

THAT CAN BOOST YOUR INCOME

A good goal for any fitness professional is to learn more about fitness technology, says Ted Vickey, PhD, founder and CEO of FitWell, a fitness technology management company based in San Diego. Becoming a power user and early adopter can differentiate you from competitors and enable you to provide added benefits to clients—or attract new ones. Some of Vickey's top tips:

Advertise your tech expertise.

"If I'm a personal trainer, I am sending out a message to every member of the gym in January, saying, 'Did you get a wearable for the holidays? Bring it in! I'll set it up for you for free,'" says Vickey. You can use that meeting to learn about the person's goals and offer a free training session, as well.

Ask about fit tech in new-client intakes. After you know what clients are using, you can investigate the details and discuss how you can help them understand the data.

Become a distributor. This is a great way to add another revenue stream, says Vickey. After deciding which fit-tech items you like (e.g., digital scale, smartwatch, heart rate monitor), contact the companies about becoming a distributor, then build new programming around those tools.

Learn more. Check out Vickey's new online courses designed to help fitness professionals learn how to use fitness technology tools and data. Visit TedVickey.com.



EXERCISE AND OLDER ADULTS: Protecting the Brain From Common Problems

As NASM Senior Fitness Specialists well know, older adults are a growing segment of the population—and a rewarding group to work with. Check out these amazing perks that your senior clients can enjoy, thanks to your work.

A CLEARER MIND ALL DAY LONG

A 2019 Australian study found that 30 minutes of moderate-intensity walking—along with light walking to break up subsequent seated activities—improves working memory and executive function throughout the day (doi:10.1136/bjsports-2018-100168).

PROTECTION AGAINST ALZHEIMER'S

In a group of 182 adults in the Harvard Aging Brain Study, those with higher levels

of physical activity showed slower cognitive decline and slower loss of gray-matter volume (doi:10.1001/jamaneurol.2019.1879).

PREVENTION OF POST-SURGERY DELIRIUM

Up to 61% of older adults experience delirium after orthopedic surgery. In a study of 132 patients, those who typically engaged in regular exercise (walking, physical therapy, weightlifting, cycling, stretching, participation in noncompetitive sports and dancing) before this type of surgery were 74% less likely to experience delirium afterward (doi.org/10.1111/jgs.16083).

Learn more about the NASM Senior Fitness Specialization at nasm.org/products/CEU140K.



HOW GROUP EXERCISE CAN HELP

Can personal training and group exercise classes co-exist peacefully? Yes, says Rick Richey, MS, DHSC, host of The NASM-CPT Podcast. In fact, he asserts that making friends with group ex instructors can really help personal trainers to gain and retain their clientele and grow their business.

"I think the big concern is that, if we send clients to classes for free, they're going to stop paying for personal training. And that is wild insecurity talking," he says. "The chances are, if you send your clients to classes, they are going to sing your praises to other members, which can result in new business. And

[when you tell] clients, 'Go to Caroline's class,' now Caroline is your new best friend, and she will refer people to you, too."

Richey suggests looking at the gym's group exercise schedule as a way to round out the one-on-one workouts you supply. For example, Zumba® and yoga classes could provide



Equipment Upgrade:

This Is No Run-of-the-Mill Treadmill

Looking into new equipment this year? Consider the multifaceted SKILLRUN™, a unique high-tech treadmill from Technogym®.

“Never before have users had the opportunity to perform cardio and power training—including sled pushing, parachute training and cadence training—and receive real-time biofeedback all in one treadmill,” says Michaela Raagas, NASM-CPT and Technogym master trainer and education and training manager.

For Raagas, the SKILLRUN has improved running efficiency by enabling her to track important metrics, including power, cadence, step length, ground contact time, propulsion time and flight time. Biofeedback sensors even detect subtle differences between the feet, allowing for correction of imbalances. With the array of options this equipment offers—including a gradient range of +25% to -3% and a sprint capability of up to 18.6 miles per hour—it caters to elite athletes as well as everyday exercisers.

The SKILLRUN offers several testing modes to help personal trainers in assessments and, within its CLUB 4.0 profile, provides engaging group workouts that cater to a diverse population.

To learn more about the other bells and whistles on this groundbreaking treadmill, visit technogym.com/us/skillrun.html.

TUNE IN TO LEARN MORE

For more great advice and sometimes surprising suggestions, check out The NASM-CPT Podcast with Rick Richey, MS, available on all major podcast apps and the NASM website. Episodes cover a wide range of topics, including questions to ask clients during that first (free) training session and how to identify and deal with specific underactive and overactive muscles.



BEND OVER BACKWARD FOR GROUP INSTRUCTORS, AND THEY ARE LIKELY TO DO THE SAME FOR YOU.

extra cardio and flexibility, allowing you to focus on things like resistance, power, and speed, agility and quickness training. He also recommends attending “Caroline’s” (and other) classes *yourself*. “Members like to train with trainers who train,” he says. “I got more clients off the floor when I was working out

myself than when I was wearing a black polo shirt with a nametag. When you’re working out, members feel like they can talk to you—and then you can offer them a free session.”

Finally, if you’re giving free sessions and you can tell that the members are not interested in personal training, Richey suggests

directing them to classes you think they may enjoy. By not giving these members the brushoff, you are building goodwill—and that, too, may lead to future business from them or their friends.

LAURA QUAGLIO has found a new love: vinyasa flow yoga. She can now



hold a handstand for a hot second, thanks to extra shoulder workouts and weekly GX resistance training.

CPTs THRIVE



CUSTOMIZE WINTER WORKOUTS TO PREP CLIENTS FOR SNOW AND ICE SPORTS

Your clients don't need to be winter Olympians to benefit from ski-ready agility, snowboard-ready balance and a sled-ready core.

BY KRISTA POPOWYCH

The dawning of true winter—and holiday gifts of down-filled jackets and cozy snow gloves—may have clients eagerly anticipating a day on the slopes. For those who have yet to start schussing down the mountain, circling the ice rink or shredding it on their snowboards, some targeted training can help them avoid injury and build strength where they will need it most. But even those who have been playing in the snow for the past month can benefit from sport-specific workouts like those described here.

So can anyone else, for that matter. Mixing up workouts is a great way to keep clients engaged and excited for their next exercise session, whether they love the snow or shun it.

Getting Started: Analyze Your Client's Sport

Because clients enjoy different winter pastimes, it is the personal trainer's job to be familiar with each person's sport of choice and train the client accordingly.

Fortunately, whether it's ice hockey, cross-country skiing or snowboarding, there are certain fundamental movements that are similar. A strong core is essential for any activity requiring balance, and, notably, most winter sports fall into this category. But not all winter activities are identical. With skiing, for example, the best preparation for the grind-it-out, long-haul cardiovascular needs of cross-country treks may be different from the optimal training for downhill skiing's short-burst intervals.

Therefore, analysis of the cardiovascular, strength and flexibility requirements of specific snow sports, along with a deeper consideration of specific movement patterning, is advantageous.

If you are not familiar with your client's sport du jour, see "Get Up to Speed on Unfamiliar Sports," right, for tips on how to proceed. You may also want to repeat certain assessments, such as the single-leg squat assessment and speed, agility and quickness assessments, especially if movements required for the sport seem to be beyond the client's current phase on the NASM Optimum Performance Training™ model.

Cardio Conditioning for Endurance and Intensity

Each winter sport has specific cardio conditioning requirements, so when you

are creating a training plan, analyze the cardiovascular needs of the client's chosen activity. Skiing and snowboarding tend to be more anaerobic, but a solid cardio base is still necessary.

Downhill skiing for the recreational enthusiast requires more moderate-intensity interval training. Most skiers or boarders schuss down the mountain for a couple of minutes and then stop and wait for their snow buddies to catch up before they go (and stop) again—the perfect interval. However, an elite skier may power through 30–60 seconds of moguls and would benefit from high-intensity interval training. So would an ice hockey player.

On the other end of the cardio continuum, cross-country skiers are in it for the long haul and will need to build up their aerobic conditioning. This is best attained with moderate-intensity continuous training,

Take Your Clients to the Next Level

The NASM Performance Enhancement Specialization (NASM-PES) reaps powerful results.

Did you know that NASM personal trainers who have the NASM-PES earn 40% more on average than other personal trainers? Expand your knowledge base and skillset while improving your marketability with sports-minded clientele. Athletes will need your comprehensive guidance regarding

- cutting-edge training processes;
- athletic development;
- sports nutrition strategies;
- motivational sports performance psychology tips; and
- sport-specific programming.

Find out more at nasm.org/performance-training/performance-enhancement-specialization.

such as steady-state long runs, bike rides or laps in the pool.

Bottom line: Interval-train according to the needs of the sport and the client's ability.

Get Up to Speed on Unfamiliar Sports

Not all trainers are winter-sport aficionados. If a client asks you about training for an unfamiliar sport, watch YouTube videos, suggests Mike Bracko, EdD, a sports physiologist and fitness educator in Calgary, Alberta. For nonskiers, for instance, he offers this suggestion: “Check out highlights to understand how people ski. Not moguls or ski jumping, but basic skiing. Look at the concentric and eccentric contractions of the lower body, notice the core stability required for the lean, and watch what the upper body is doing.”

Answering the following questions will also help:

- Is the sport lower- or upper-body focused, or both?
- How intense is the activity?
- How much rotation is required?
- Will there be impact, either from the sport itself or from an external force (like a hit in hockey)?
- How fit is your client?

These and other questions will help you create an ideal winter-conditioning training plan that is customized to your client.

Core Challenges for Proper Posture

Core training should be at the top of the resistance-training priority list for every snow enthusiast. Strong abdominals and lower-back muscles support the spine and are important for rotational movements used in snowboarding, mogul skiing and ice dancing. These muscles are also necessary when skiing through deep powder or taking on steep mountain grades. The forward flexion associated with skiing will challenge the back muscles to work harder than usual to protect the spine.

To check whether the erector spinae muscles are activated on a forward bend,

When creating a training plan, analyze the cardiovascular needs of the client's chosen activity. Skiing and snowboarding tend to be more anaerobic, but a solid cardio base is still necessary.

have your clients place their hands at waist level and above, thumbs forward, fingertips spread, touching the erector muscles. Ask the clients to perform a sloppy forward bend. Next have them hinge correctly, activating their core and back. They will feel the muscles contract when the flex is done properly.

Introduce a variety of core exercises using either body weight or various small



training tools. Russian twists on the stability ball, side planks with rotation, V-sit presses with a sandbag or reverse wood chops with a medicine ball are just a small sample of exercises from the core toolbox.

Lower-Body Moves to Strengthen and Stabilize

Skiing, skating and snowboarding all require strong lower bodies. As many downhill skiers can attest, the first day on the slopes often results in last-run-of-the-day wobble legs. Weak legs equal a greater risk of injury—most accidents happen in the first 1–5 days back on the slopes.

To prepare your clients, developing strength and endurance will be crucial, particularly for those facing a 6-hour ski mountain marathon. Assuming their cardio is good, focus on strengthening the quadriceps, hamstrings and glutes. Strong quads will protect the knees and better prepare the body to hold the forward position used in skiing. Additionally, in both snowboarding and skiing, the body

is held in a flexed position with a forward lean from the hips. Therefore, it is also important to train the hamstrings and glutes. Strong hamstrings and glutes will help to stabilize the body and counter any muscular imbalances arising from dominant quadriceps muscles.

For strong quads, it's squats, squats and more squats. Also include glute bridges and other lower-body posterior-chain exercises as part of the training repertoire. A favorite of winter sport enthusiast Mike Bracko, EdD, a sports physiologist and fitness educator in Calgary, Alberta, is the heel bridge to hamstring curl on a stability ball. This exercise works the entire posterior chain, especially the large hip extensors, gluteus maximus, adductor magnus and hamstring muscles. In addition, says Bracko, combining concentric exercises with a focus on eccentric training may lessen the effects of delayed-onset muscle soreness that many skiers experience.

For ice skaters, include lateral movement training. Look for speed skaters and

you may find them in the weight room, a resistance band wrapped around both ankles, continuously stepping side to side against the resistance.

Upper-Body Exercises for Planting and Pushing on Poles

Spending most of the day horizontal (i.e., falling down!) is a common occurrence for first-time snowboarders. Add in the awkward motion of pushing up and out of the snow to get vertical again, and it becomes apparent that upper-body training is needed. Even devoted boarders need arm strength to improve balance and stability, which can potentially prevent a fall. For skiing, strong arms will improve the ability to plant and push with poles while maintaining good shoulder stability.

Focus on both triceps training and shoulder work. Triceps dips, triceps extensions and medicine ball slams are all great upper-body exercises. Various forms of the plank will improve both shoulder and

Sample Winter-Sport Exercises: Beyond the Basics

Once clients have mastered basic moves like the plank and squat, use the NASM Optimum Performance Training™ model to increase the challenge and progress the exercises appropriately. Here are a few advanced moves, each of which offers multiple benefits for winter sport enthusiasts.



CORE Forearm Plank With Side-Arm Extension

Start in prone plank, feet wider than hip-width apart. Maintaining plank position throughout the exercise, extend right arm straight out to side, fingertips touching floor. Hold for 4–8 seconds. Smoothly return to starting position. Repeat with left arm. Continue R and L for 30–60 seconds.



UPPER BODY Triceps Dip and Rotation

Start seated on mat, arms behind you, hands pointed toward buttocks. Maintaining good alignment, bend elbows, lowering into triceps dip. Return to starting position, then smoothly reach R hand up and over across to L. Dip down and back up, extending L hand up and across body for 30–60 seconds.

To increase the challenge: Increase tempo or lift hips higher, drop body deeper into dip or extend reaching arm farther.

core strength. Also include back exercises and choose push-pull combination moves. A fast straight-arm pushdown using a resistance band anchored in the center will elevate heart rate and strengthen the upper back and arms.

Balance and Agility Activities for Fewer Falls

With the changing and challenging surfaces of most winter sports—hard-packed ice, powder snow, variable terrains and tree-

skiers may find themselves off the beaten path and struggling to weave through an ungroomed trail. Having a strong core will help with balance and movement control in both these situations.

To train specifically for balance, you can incorporate various balance-board tools. Single-leg exercises (performed with eyes open or closed) are good nonequipment alternatives.

Agility exercises for fast footwork and directional changes are also important for

quickness and agility drills. Also, add in plyometric training if appropriate for the client. Explosive moves like box jumps, split jumps and ricochets will improve power.

Ready, Set—Snow!

With any winter sport or activity, preparation is paramount to the success of both weekend warriors and elite athletes. Developing a program that is client-driven and sport-specific will enhance performance and enjoyment, keeping your clients injury-free so they can be ready for the *springtime* sport challenges soon to come!



KRISTA POPOWYCH

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Developing strength and endurance is crucial, particularly for clients facing a 6-hour ski mountain marathon.

lined trails—good balance and agility are key to avoiding falls and injuries. For example, boarders need to be able to adapt quickly to various snow-packed surfaces as environmental conditions change. And

winter-sport prep and may come in handy when maneuvering around an out-of-control skier. Reaction time matters. Use an agility ladder or set up markers (cones or tape, for example) on the floor for speed,



LOWER BODY

Weighted Squat With Lifts

Stand with feet shoulder-width apart, holding dumbbell in each hand, arms at sides, with neutral spine. Squat down and place weights on floor. Lift up without weights. Lower down, arms straight, and pick up weights, then return to starting position. Repeat for 30–60 seconds.

To increase the challenge: Increase tempo, add isometric pause in low position (to mimic skiing) or use heavier weights.



BALANCE

Single-Leg Two-Hand Touchdown With Leg Lift

Balancing on R leg, knee soft, extend L leg behind you as you reach both hands toward floor until L leg is parallel with floor. Maintain this position, touching fingertips down in various shapes—circles, diamonds, X's—before returning to starting position. Repeat on L, doing 6–8 reps per side.



AGILITY

Fast-Feet Out-Out-In-In Drill

Place resistance band on floor in reverse-U position or use agility ladder as marker. Run feet out-out-in-in, being mindful of not stepping on band or ladder. Lead with R foot for 20 seconds, recover 10 seconds and repeat, leading with L foot. Repeat for 8 sets, Tabata-style.

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DON'T MISS THE BOAT!

Lead participants to success in indoor rowing.

BY DORIS THEWS



The indoor rowing machine used to be relegated to the main floor, and it wasn't uncommon to see it stashed in a dark corner, gathering dust, as intimidated gym-goers shyly avoided it. However, thanks to innovative programming and advances in equipment technology (among other factors), indoor rowing has been growing in popularity, and, along with it, so has demand for targeted education and coaching.

The rediscovery of rowing—group training, in particular—and its many benefits has made this activity a force to be reckoned with in the fitness industry. As a group exercise instructor, you may be interested in learning more about how to coach, cue and motivate participants through a fun, effective rowing workout. This article shows you how to focus on the physical and mental advantages of rowing so that you can provide class members with a successful class experience.

Rowing Benefits

What **physiological benefits** can participants hope to achieve from a rowing workout? Quite a lot! Rowing provides a total-body cardiovascular workout that

improves lower-body power, upper-body strength and core stabilization with every stroke. The activity has one of the highest energy costs among the predominantly cardiovascular sports (Hagerman 1984). It is age- and ability-friendly, appealing to a wide range of people, and is a wonderful option for those who are rehabilitating or returning to exercise following an illness or injury; it's also a good fit for those wanting to achieve a "runner's high" without stressing their joints. Elite athletes often rely on rowing as a cross-training tool, as it helps to fine-tune their conditioning. With these physical benefits in mind, here are some coaching cues to try out in your next class:

- "This is HIIT without the hit to your body, so go the extra mile!"

- "You are building core strength without doing a situp. Stabilize through hip flexion and extension."
- "Guess what? You're balancing your body right now through posterior- and anterior-chain work."
- "You want full-body results? You're getting upper- and lower-body love with every stroke."
- "I see sweat and lots of it! You're getting drenched without the water."

As for the **psychological benefits**, participants are always pleasantly surprised at how long they can last on a rower compared with other pieces of equipment. This is because rating of perceived exertion is lower, even as workload remains higher. The payoff is increased caloric expenditure for any given duration, which is vastly satisfying and offers the positive reinforcement that encourages healthy-habit creation. Some people also report feeling calmer and more centered during and after rowing, as the cadence and repetition can help lasso the mind.

Because of the lower RPE, the mind will likely check out before the body will. Here are a few cues that will encourage your clients to keep going on the rower when they think they are ready to quit:

- “Remember that rowing will build you up, not tear you down.”
- “Every stroke gets you closer to your personal victory.”
- “Keep your eyes on the prize.”
- “Find a rhythm in your breath and match it to your strokes.”
- “Can you feel that? The range makes the change.”

A Focus on Form

Now that we’ve touched on the benefits of indoor rowing, let’s look at form. In addition to understanding the movement, rowing coaches need to be able to clearly and concisely communicate execution and direction. There are four phases to the rowing stroke. It starts with a lower-body push, followed by a hip hinge. The stroke finishes with an upper-body arm pull and then returns to the starting position. In rowing terms, the first phase is the “catch,” when the arms are fully extended and the legs start to push out. The second phase is the “drive,” when the legs are fully extended.

The third phase—a hip hinge followed by an upper-body pull—results in the “finish” position. In the fourth phase, “recovery,” the rower extends the arms, hinges at the hips and bends at the knees to return to the starting position, ready to begin the “catch” phase of the next stroke. The following cues focus on the different phases:

LOWER BODY:

- “Drive through the legs.”
- “Jump off the foot board.”
- “Use explosive power!”

CORE:

- “Sit up tall and look ahead.”
- “Hinge forward and back.”
- “Stabilize through your hips.”

UPPER BODY:

- “Reach forward as if you were grabbing the water with your oars and do a long, powerful stroke to propel you to success.”
- “Pull to the sternum.”
- “Relax your shoulders.”

Successfully coaching rowing requires cuing not only body movement but also mental movement. It can be helpful to educate

participants about the metrics displayed on the console, so people understand their *actual* output. Be sure to cover wattage, time, distance and stroke rate.

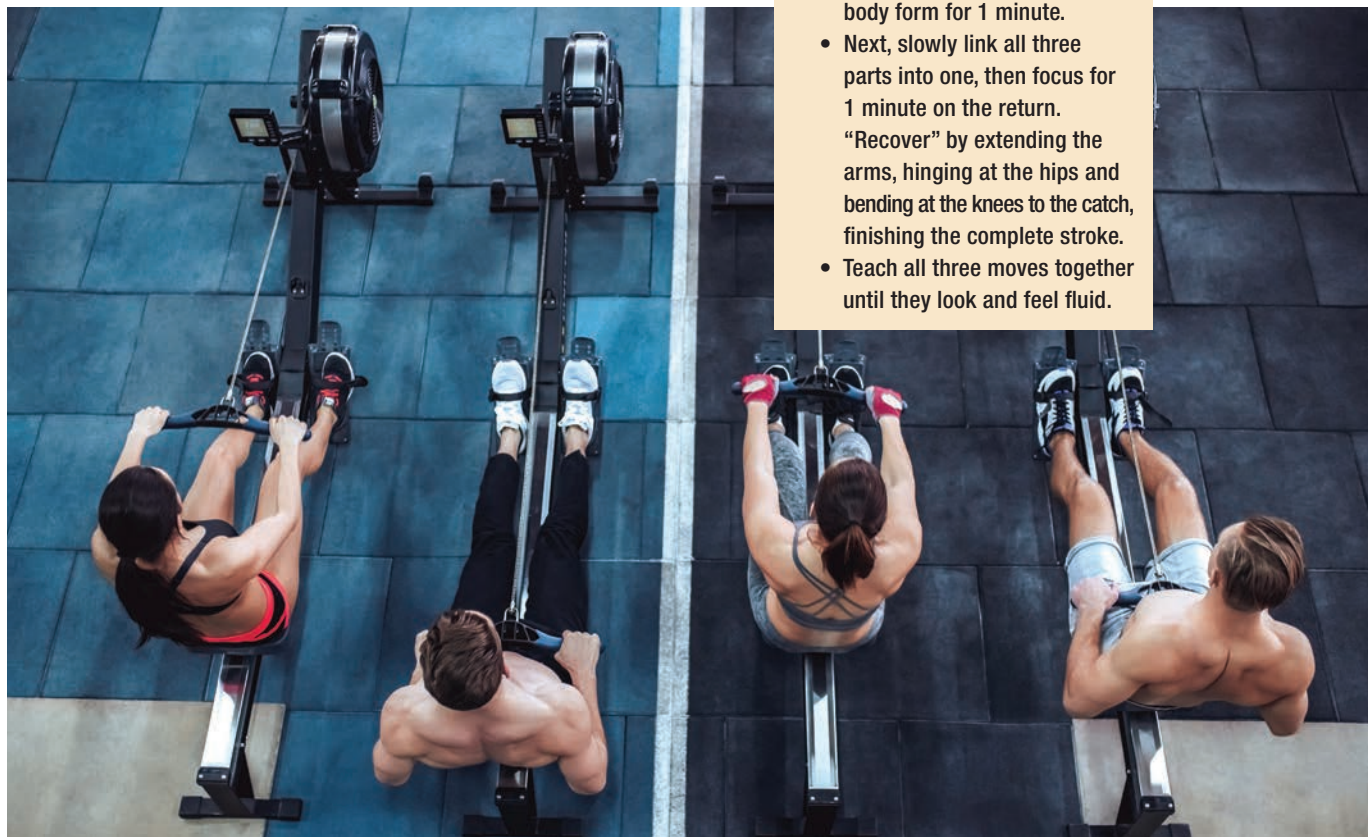
Wattage is the power generated by the user, which results in caloric expenditure. **Time** is often a good motivator, as most people are surprised (and delighted) at how long they can work before fatigue sets in. Many people live and die by metrics, and obtaining a **distance** of 10,000 meters in an hour is a worthy goal for many die-hards. **Stroke rate** is how quickly the “oars” go into the water. The slower the stroke rate, the more powerful each stroke can be. There’s a common misconception that faster strokes result in more distance; this can easily be overcome with good technique and a strong rate of 20–30 strokes per minute, which is a good pace for speed and efficiency.

The most important output is the stroke’s tempo. Most people row with a 1-to-1 ratio of drive to recovery. The most efficient tempo is a 1-to-2 ratio that allows for an explosive

Warmup Drill

During the warmup, prepare participants by teaching and breaking down the following drill:

- Focus only on the lower-body movement for 1 minute.
- Focus on the proper core movement for 1 minute.
- Highlight the correct upper-body form for 1 minute.
- Next, slowly link all three parts into one, then focus for 1 minute on the return. “Recover” by extending the arms, hinging at the hips and bending at the knees to the catch, finishing the complete stroke.
- Teach all three moves together until they look and feel fluid.



The AFAA 5 Questions™

1. What is the purpose of the exercise?

Consider: muscular strength or endurance, cardiorespiratory conditioning, flexibility, warmup or activity preparation, skill development, and stress reduction.

2. Are you doing that effectively?

Consider: proper range, speed and body position against gravity.

3. Does the exercise create any safety concerns?

Consider: potential stress areas (e.g., lower back, knees, wrists, back), environmental concerns or movement control.

4. Can you maintain proper alignment and form for the duration of the exercise?

Consider: form, alignment and stabilization.

5. For whom is the exercise appropriate or inappropriate?

Consider: risk-to-benefit ratio; whether the participant is at a beginner, intermediate or advanced fitness level; and any limitations reported by the participant.

drive from the starting position and time to recover and breathe on the return. This repeats for each subsequent stroke. When coaching timing, a few helpful cues are “Use explosive power . . . glide to recover” and “Find your Zen zone.”



Jump on Board!

If you haven't yet led a rowing class, go ahead and give it a try. Indoor rowing is not a trend. When you coach and cue with rowing's physical and mental benefits in mind, along with the four phases of each stroke, instructing a class will be smooth-going. The drive, catch, finish and recovery describe the perfect stroke from start to finish. By focusing on each of these phases during every stroke, you can help fitness beginners become confident, results-oriented rowers in a short period of time.



DORIS THEWS is the 2019 IDEA Fitness Instructor of the Year and senior vice president of fitness and innovation at VASA Fitness. As a fitness

educator, she has traveled the globe and taught thousands of fitness professionals to coach indoor rowing. She is an international keynote speaker and presenter and, in her 30-year career, has led several of the world's fitness brands.

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Three Indoor-Rowing Teaching Tips

- **Teach to each individual.** For example, tall people with long levers will be better at rowing, since they will have a longer stroke than shorter people.
- **Start slowly.** Rowing has a bit of a learning curve, so make sure attendees master technique for the best, most successful results.
- **Have fun!** Offer a great playlist and support community connections with some friendly competition.

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CREATIVE INTERIM PROGRAMMING SOLUTIONS

How do you keep the momentum going during a facility renovation?

BY DANA BENDER, MS

Are you planning to renovate the flooring in your group fitness classroom? Or perhaps you need to complete a construction project at your yoga studio in the near future? If so, you may be worried about the impact the work will have on your clients' participation in your programming. Although all construction and renovation projects are different, every business owner needs to understand how to offer creative interim programming and services during a short-term renovation period. This article can help!

Here are a few steps you can take to set yourself up for success.

Do Your Research

First, as a business owner make sure you research your project properly, planning financially for any potential impact on business revenue. More specifically, gather detailed information about the cost and the construction timeline to anticipate how long

the renovation project might take, keeping in mind the possibility of delays. During this research process, obtain at least three different professional opinions on overall cost and timing for the construction project. Once you've researched and gathered the critical information about cost and timeline, save and budget accordingly. This part of the process will look different for everyone, and finances can help you determine the

best time frame for completing the project. If possible, it might be worthwhile to undertake facility renovations at a time when business is usually slower or when programming could be transitioned to an outdoor space. For example, consider renovating a yoga classroom space in late spring, summer or early fall, when weather is comfortable enough to offer interim classes outside.

Prepare Clients and Participants

As you plan a construction project, it is important to notify everyone who might be affected by the renovation—as early as possible. Once you've established the estimated timeline for the project and

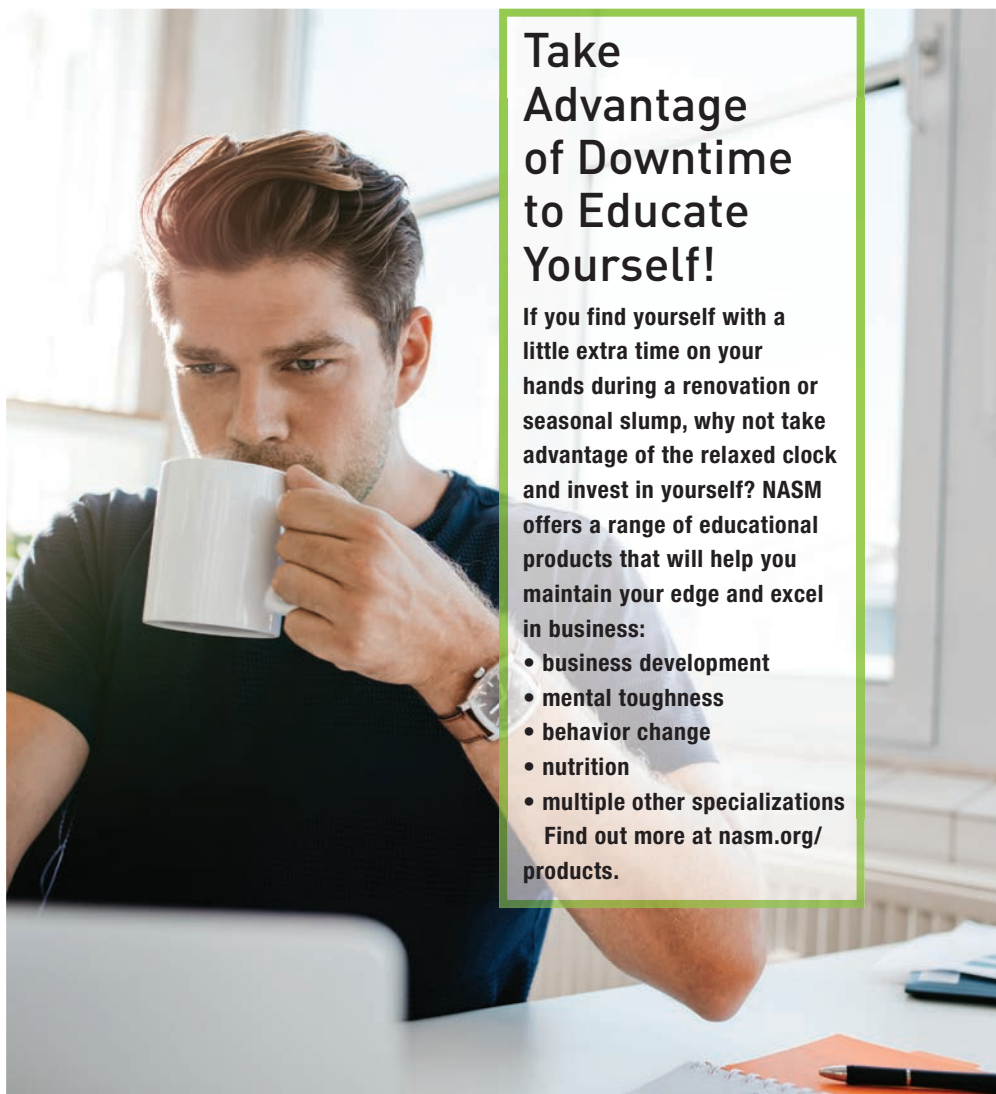


procured the necessary finances, the next step is to communicate with your clients. Provide at least 2 months' advance notice, so that all those who might feel the impact can plan ahead. Avoid waiting until the last minute to communicate about upcoming changes, such as possible gaps in programming or in use of facility space; if you delay, participants could feel angry about not knowing sooner. Let your clients know about the project, give them a glimpse into the predicted timeline and explain what the interim might look like. Above all, stay positive in all communications so your participants will think that way, too.

Don't forget to make sure all staff members understand the messaging and are prepared to field questions as well. It's frustrating for customers not to get a consistent answer from people who are supposed to be on the same team. Additionally, team members can voice any concerns they have, and someone may bring up a potential challenge that no one else has thought of.

Attend to the Nitty-Gritty

With the groundwork laid for time frame, cost management and client relations, it's time to turn your attention to your program offering. How can you still provide creative programming during a construction project in your facility space? Here are some ideas.



Take Advantage of Downtime to Educate Yourself!

If you find yourself with a little extra time on your hands during a renovation or seasonal slump, why not take advantage of the relaxed clock and invest in yourself? NASM offers a range of educational products that will help you maintain your edge and excel in business:

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FIND AN ALTERNATIVE SPACE. Think outside the box on what a creative interim space might look like, whether for group fitness classes or for one-on-one appointments. Consider what other indoor spaces could be available. For example, a small or mid-sized conference room that can fit compact group fitness equipment, or can just provide an open floor area, might be an option. The space might not be perfect, but you could still deliver a great workout with the right accessorial equipment or body-weight exercise sequence. In this temporary space, you might offer low-impact options like recovery, relaxation or even resistance band classes that take up less room.

GET OUTDOORS. Scheduling outdoor fitness classes or special outdoor wellness activities can offset the impact of facility renovations on programming. For example, feature a studio group walking meetup

with various group walks, hold outdoor or rooftop group exercise classes or offer fitness assessments at a public park. If possible, why not create a structured schedule around outdoor classes for the interim period? Offering a walking group or an outdoor boot camp class at least twice a week will enable clients to build these offerings into their own schedules, allowing participation to grow over time. See the sidebar "Finding an Outdoor Venue," page 24, for additional tips.

PROVIDE REMOTE OFFERINGS. If an alternate space is not available, for whatever reason, remote fitness and wellness programming might be a solution. How about a self-reported, self-led program, where participants sign up and obtain your advice and recommendations but do not need to meet with you in person to be successful? For example, a self-led "Couch to 5K" program could pique client interest if you

run a fitness business. Throughout the program, you could provide weekly tips and encouragement to help with engagement and consistency. You could also offer educational conferences through Zoom or other online portals. Consider online webinars where participants take part from the comfort of their own homes. If you do go this route, make sure to survey your participants after the webinar or remote program to get ideas for future classes. By eliciting participant feedback, you can get people involved in the decision-making process for future interim programming.

INCREASE MOTIVATION BY OFFERING PROMOTIONS. Offering participants an added value due to the inconvenience of the construction is another way to show your

appreciation. More specifically, you may be able to increase motivation by offering discounted personal training pricing. Another idea is to offer free fitness assessments, and anyone who completes an assessment gets an additional 5% off a training package. Promotions could even continue once the facility space is up and running again. This could help convince regular participants and clients to continue with your services and come back to your business after construction. Think about promotions that will maintain and elicit interest and encourage consistency.

NETWORK WITH OTHERS. During the planning process, ask other fitness and wellness professionals or any other local business owners if they would like to col-

laborate with you during the interim period. You could even partner with local nature reserves, restaurants or retail stores for a special event. For example, maybe a local registered dietitian would host a yoga session or fitness class at her office, or perhaps a local chiropractor might offer a fitness class to his clients. These options will give you opportunities to keep participation and engagement going until the construction project is complete. Through such collaborative efforts, business owners can promote their business and market their programming to current participants—and maybe even expand their clientele.

BE FLEXIBLE AND TRANSPARENT. It will be important to stay flexible during the entire renovation process, no matter what happens. Construction delays may come up unexpectedly, in addition to other conditions that require a flexible attitude. As situations arise, adjust course to continue moving forward. To do this successfully, you will need to let go of any idea of perfection along the way. Instead, focus on offering high-quality services and programs to participants despite the renovations. Most importantly, stay transparent with your clients, and give them regular progress updates so that people can look forward to the new space and the finished project.

Finding an Outdoor Venue

Competition for good outdoor venues can be fierce, especially if your buildout is planned for the spring or summer. Here are some things to keep in mind when you're looking for an outdoor location.

- **CONSIDER LIGHTING.** If you're holding class before sunrise, make sure there will be some light from street lamps or houses. This improves visibility and keeps everyone safe.
- **AVOID PROBLEM AREAS.** If a field or other greenspace isn't being used during an ideal training time, ask yourself why; there's likely a good reason. The next time it rains, for example, visit the field a few hours later and look for standing water, divots or other undesirable conditions.
- **CHECK THE PARKING OPTIONS.** Clients need a place to park and a safe way to get to the training area. Access to restrooms and water fountains is also important.
- **GO PRIVATE.** Public parks and fields aren't your only option. You may be able to make an arrangement with a private facility, such as a hospital, an office park or a school campus.

Maintain and Strengthen Your Business

These tips and creative ideas on offering interim programming during a temporary gap in facility space could strengthen your business—not just maintain it. Again, all renovation projects and financial situations are different, but it is always highly recommended that you plan well in advance of the onset of a construction period in order to minimize impact on programming and revenue. Stay agile and creative along the way for a successful outcome.



DANA BENDER, MS, works as a fitness and wellness program manager for Health Fitness Corporation in downtown Chicago. She is also a National Board Certified Health and Wellness Coach, an adjunct professor with Rowan University and an E-RYT 200-hour registered Yoga Alliance teacher.



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STAND UP TO CHILDHOOD OBESITY: HOW FITNESS PROS CAN IMPACT THE FUTURE

PARENTS ARE
IMPORTANT ALLIES
IN GETTING CHILDREN
OFF TO A HEALTHY,
FIT START IN LIFE.

Learn the science behind the sources of this troubling trend, its sobering effects on children's quality of life, and the steps you can take to help set up youth for lifelong health.

BY MARIA LUQUE, PHD

Lack of physical activity and an increase in sedentary behaviors are leading an overall upward trend in obesity, but the effects on children and adolescents are especially alarming. Today, obesity-associated disorders previously found only in adults—high blood pressure and type 2 diabetes, for example—are now commonly seen in children. Due to the prevalence of comorbidities linked to obesity and sedentary behaviors, the current generation of children may be the first in history to have a life expectancy *shorter* than that of their parents (AHA 2018).

Perhaps it is of little surprise, then, that childhood obesity is the primary concern among parents in the United States, surpassing both drug use and smoking (AHA 2018; IHRSA 2017). This may, in fact, be the reason parents bring their children to fitness professionals for help with adopting healthier habits in respect to nutrition and physical activity.

Since this special population brings with it special considerations, this article will go into greater detail on the specific effects of extra weight on children's health and quality of life. It will also review some of the most common contributors to overweight and obesity in children—beyond a lack of good nutrition—and provide guidance on the steps that fitness professionals can take to begin turning the tide.

THE PREVALENCE OF CHILDHOOD OBESITY

A 2018 report from the World Health Organization found that, in 2016, an estimated 41 million children under the age of 5 were diagnosed as overweight or obese—a 60% increase from 1990 (WHO 2018; Kelsey et al. 2014). In the United States, in fact, children are the fastest-growing subpopulation of individuals with obesity: 1 in 3 children is now considered overweight or obese (Nowicki et al. 2019). (See “A Better Understanding of Children's BMIs,” page 29, for the medical definitions.)

Income and ethnicity also play a role. The prevalence is higher in lower-income households. Obesity rates in the African-



Childhood obesity is the primary concern among parents in the United States, surpassing both drug use and smoking.

American and Hispanic populations are 50%–75% higher than for Caucasians, whereas rates are 30% lower in the Asian population (also compared with Caucasians) (Nowicki et al. 2019).

THE IMPACT ON MIND, BODY AND BEHAVIOR

Obesity during childhood can have a detrimental effect on quality of life in a variety of ways, leading to psychological, social and behavioral issues, as well as physical issues. For example, one study indicated that clinically overweight girls in kindergarten were 81% more likely to have behavior problems, possibly caused by the stigma associated with childhood obesity (Pulgarón 2013). Another study concluded that children who were overweight were more likely to be victims of bullying and discrimination (Bacchini et al. 2015).

Of course, like adults, children can also suffer from the physical outcomes of excess weight, such as high cholesterol, high blood pressure, metabolic syndrome and type 2 diabetes. What's more, because children are still learning and growing, they experience additional issues related to having a high body mass index. For example, according to Nowicki et al., “The entire hormonal axis is affected in obese children, with complex interactions leading to not only growth differences but early pubertal differences as well.”

Here are some additional physical consequences associated with obesity and overweight in children:

MUSCULOSKELETAL ISSUES

A higher BMI and lack of physical activity are associated with increased risk for lower-extremity fractures, posture problems and alterations in bone metabolism, which can cause physiological changes to the growing skeleton. Specifically, increased body weight strongly affects attainment of peak bone mass (Nowicki et al. 2019). Nowicki and colleagues explain that these risks are significant because lifelong skeletal health can depend on maximizing bone mass accrual during childhood, and 40% of bone mineral accrual occurs within 2 years of the adolescent growth spurt.

Numerous studies have also documented an association between obesity and higher risk of musculoskeletal injuries, with risk rising as weight increases (Kessler et al. 2013). For example, children with obesity are 25% more likely to experience an extremity fracture (Dimitri 2019), and 2- to 5-year-olds who are considered “extremely obese” have more than double the fracture risk of children of normal weight (Nowicki et al. 2019). Fracture risk may be higher for children with obesity partly because they are more likely to fall—due to postural, balance and mobility limitations—and partly because they have difficulty in bracing against falls when they happen.

A Better Understanding of Children's BMIs

Like adults, children receive a diagnosis of overweight or obesity based on body mass index. With children, however, age and gender must also be taken into consideration. Typically, a child's pediatrician will calculate the child's BMI and track it at regular checkups, but fitness professionals may want a better understanding of the math:

Body mass index in children is often based on the BMI-for-Age WHO Child Growth Standard, which states the following: Before age 5, overweight is defined as having a weight-for-height ratio (BMI) greater than 2 standard deviations from the mean; for obesity, the ratio is more than 3 SDs from the mean. For ages 5–19, overweight is indicated by a BMI greater than 1 SD from the mean and obesity by a BMI greater than 2 SDs from the mean. Find the WHO Child Growth Standard charts at who.int/childgrowth/en (WHO 2018; Pinto et al. 2018).

Another way to look at it, according to the *NASM Youth Exercise Specialist Manual*, is in terms of percentiles. Children with a BMI between the 85th and 95th percentile are considered overweight (when compared with youth of the same age and sex), and those with a BMI in the 95th percentile or above are classified as obese.

Interestingly, even if a child's BMI declines over time, his or her percentile may not change. "Example of BMI Percentile," below, shows the BMI of a boy at ages 2, 4, 9 and 13. While his BMI is constantly changing, the BMI percentile remains consistent, and so does his obesity diagnosis.

To learn more about the YES program, visit nasm.org/products/CEU142K.

Example of BMI Percentile (Male)

AGE	BMI	PERCENTILE
2	19.3	95th
4	17.8	95th
9	21.0	95th
13	25.1	95th

BRAIN DEVELOPMENT AND COGNITIVE FUNCTION

Obesity during childhood can greatly influence brain development, and researchers have argued that the excess weight is associated with cognitive dysfunction (Hagman et al. 2017; Mora-Gonzalez et al. 2019). The Mora-Gonzalez et al. study found that, during childhood, obesity is linked to detectable abnormalities in brain structure, such as decreases in brain regions associated with aspects of executive functioning—processes relating to “cognitive flexibility, inhibitory control, planning, working memory, and decision making, which are particularly important for the performance of daily activities, motor development and social relationships.” Normal-weight children show better performance in several of these areas, noted the researchers, who also hypothesized that undertaking high levels of physical activity may counteract obesity's negative influence on brain and cognition. Cognitive function—especially the executive functions—matures around age 12, which demonstrates the importance of adequate physical activity before adolescence or adulthood (Bidzan-Bluma & Lipowska 2018).

MOTOR SKILL DEVELOPMENT

Some researchers contend that children lacking regular physical activity are unable to develop their full potential in terms of motor skills (Bidzan-Bluma & Lipowska 2018). A literature review of children ages 4–6 revealed a reciprocal relationship between physical activity and motor development, highlighting that an increase in physical activity had significant beneficial effects in 80% of studies assessing motor skills and cognitive development (Zeng et al. 2017). Here again we see the importance of early childhood interventions.

TOP CONTRIBUTORS TO OBESITY IN CHILDREN

Several factors play an etiological role in the world's increasing childhood obesity rates. One of the most considerable is dietary behaviors: Both overeating and lack of nutritious food create conditions in which

obesity and under-nutrition exist side by side (WHO 2019). There's also mounting evidence that too little physical activity, too much sedentary activity, too much screen time and poor sleep habits—and the complex interaction of all of these factors—correlate with an elevated risk for obesity. Each of these factors will be explored below.

DECREASE IN PHYSICAL ACTIVITY

While physical activity has a wide range of benefits, lack of physical activity is the fourth leading cause of death worldwide (WHO 2010). Limited or no physical activity in children has been linked to various health problems beyond obesity, including posture and orthopedic problems, sleep conditions and mental health issues (Pulgarón 2013). Studies conducted to evaluate the key age for promoting healthy behaviors suggest that physical activity starts declining at age 7 and that healthy behaviors are stronger if established before grade 6 (Farooq et al. 2017; Lu & Montague 2016). Considering this—and the fact that 80% of adolescents in the world fail to meet the WHO physical activity recommendation of 60 minutes per day—early childhood interventions should be a top priority (De Lyon, Neville & Armour 2017).



Studies conducted to evaluate the key age for promoting healthy behaviors suggest that physical activity starts declining at age 7 and that healthy behaviors are stronger if established before grade 6.

INCREASE IN SEDENTARY BEHAVIORS

Physical activity and outdoor play used to be built into the daily lives of children. Today, however, the trend of earlier exposure to sedentary behaviors is on the rise. Although programming for an upsurge in youth physical activity is of great importance, inspiring a decrease in sedentary behaviors is equally crucial. Too much

sedentary living has been shown to have detrimental effects on health, independent of physical activity level (Thivel, Chaput & Duclos 2018). So, even if children begin to comply with the recommended amount of physical activity per day, they will also need to decrease their sedentary time if they are to enjoy significant health improvements.

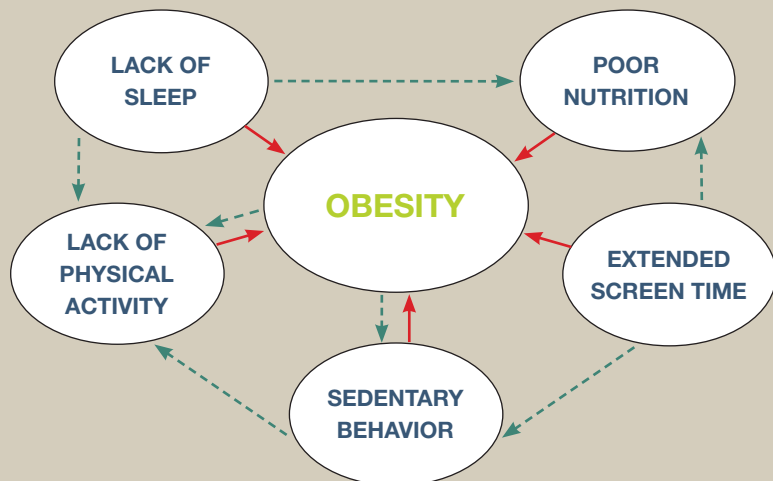
TOO MUCH SCREEN TIME

Screen time for media use and entertainment are contributing factors in the rise of childhood obesity, and children today are being introduced to screen time at very young ages. In 1970, children began watching regular TV at age 4. Now, the average age is closer to 4 months (Reid Chassiakos et al. 2016).

The Youth Risk Behavioral Survey from 2007 found that 35% of high school students in the U.S. watched TV for 3 or more hours per day on a typical school day, and 65% did not meet recommended levels of physical activity (Pulgarón 2013). And a 2016 study found that children watching 1–3 hours of TV per day increased their risk of obesity by 10%–27% (Reid Chassiakos et al. 2016).

Heavy media use is associated with other problems, as well, such as cognitive, language and social/emotional delays in childhood and adolescence, and screen

The Complex Interaction of Obesity Risk Factors



time in lieu of parent-child interactions can heavily influence the mental development of a child (AAP 2016). See “Screen Time Guidelines,” below, to see what experts recommend.

TOO LITTLE SLEEP

A review of recent epidemiological studies revealed that poor-quality sleep and lack of sleep are linked to development of obesity in childhood continuing through adulthood (Cappuccio et al. 2008; Pulgarón 2013; Kjeldsen et al. 2014). This correlation is believed to result from the disruption of two key hormones associated with the hunger response: ghrelin (which increases appetite) and leptin (which decreases hunger). Lack of sleep is associated with an increase in ghrelin and a decrease in leptin. In essence, lack of sleep makes people hungrier.

“We observed that every hour the children slept less per night was associated with a 32% increase in energy from sugar-sweetened beverages and a 15% increase in energy from sugar added to the diet, a 4% increase in energy density of the diet and a 3% higher total energy intake,” according to lead researcher Jonas Sallis Kjeldsen, as reported at the European Congress on Obesity in 2013. This was true even when adjusted for body weight and physical activity. See “Sleep Time Guidelines,” page 33, to see how much sleep kids should get, based on their age.

THE COMPLEX INTERACTION OF OBESITY RISK FACTORS

Due to the complex interrelationships among these factors, interventions can be challenging. For example, the American Academy of Pediatrics states that lower sleep quality is linked to increased exposure to media and screen time (AAP 2016). Extended screen time also correlates with more sedentary behaviors and a decrease in daily amounts of physical activity (Hrafnkelsdottir et al. 2018; AAP 2016). The figure on page 30 illustrates some ways in which these factors interact.

Merely addressing one of the risk factors may not be enough to make significant and long-lasting changes. However, knowing



Screen Time Guidelines

The American Academy of Pediatrics offers these suggestions, which can be shared with young clients and their parents:

- Under age 2, avoid digital media use.
- For ages 2–5, limit screen time to 1 hour per day.
- Do not allow screen use within 1 hour of bedtime.
- Keep bedrooms, mealtimes and playtimes screen-free.
- Turn off screens when not in use.

Source: AAP 2016.

Programming With the Movement Learning Framework

This framework is widely used in physical exercise programming in schools. It is based on three parts: fundamental movement (gross and fine motor skills), movement concepts and movement categories. Fitness professionals can refer to these categories—in conjunction with the guidelines of the NASM Optimum Performance Training™ model—to add variety and education to their fitness programs for children and youth.

FUNDAMENTAL MOVEMENT SKILLS

Think about how the body is being moved and what physical skills children need to improve upon, based on initial assessments.

- stabilization (rolling, turning)
- manipulation (throwing, catching)
- locomotion (running, hopping)

MOVEMENT CONCEPTS

Cuing can include words that educate young people on various aspects of the body and how it moves.

- body (body shape, body parts)
- effort (time, force)
- relationship (far/near, front/behind)
- space (directions, levels)

MOVEMENT CATEGORIES

Trying a variety of activities can help children discover what they enjoy most—and get a well-rounded workout.

- individual physical activities (running, yoga)
- games (chasing, soccer)
- gymnastics
- dance (rhythmic)
- activities in a nongym environment (playing in water, hiking)

Source: Lu & Montague 2016.



When designing programs for children, think of outdoor play. In addition to providing activities that increase their physical fitness, you will help to fulfill their need for adequate sensory stimulation and cognitive development.

how each of these factors exacerbates or promotes another factor can be an opportunity to create interventions that are multidisciplinary and therefore more effective.

THE POSITIVE IMPACT OF REGULAR PHYSICAL ACTIVITY AMONG YOUTH

The impact of regular physical activity on overall health and well-being is firmly set in the research literature. For children and adolescents, physical activity improves body composition, physical fitness, metabolic profile, academic achievement, and brain and cognitive development. Further benefits include improved emotional intelligence and social skills (Ring-Dimitriou et al. 2019; Lu & Montague 2016).

Although any type of physical activity is helpful as long as it is safe, some studies evaluating the best type of physical activity for children highlight the benefits of participation in group sports and other structured activities that have specific rules and regulations (Ring-Dimitriou et al. 2019; Bidzan-Bluma & Lipowska 2018). Group sports provide a host of benefits for children's motor, cardiovascular, respiratory, hormonal and nervous systems. Beyond the physical rewards, group sports foster a

sense of belonging and teach coping skills. The social and emotional benefits can also improve eating habits and reduce harmful sedentary time.

In addition, arguments have been made for youth doing two or three resistance training workouts per week in order to strengthen bones and muscles (Bidzan-Bluma & Lipowska 2018). This is an area in which a fitness professional's help can be invaluable, as many parents are not well-informed in how to guide children safely in this type of training. Fit pros can also provide parents with a more holistic view of their children's health, activity and nutrition and make recommendations that can prevent injuries and help to prepare youth for playing a sport.

TAKE-HOME POINTS FOR FITNESS PROS

Early childhood interventions are needed to prevent and address obesity in children. A successful intervention involves a multidisciplinary approach combining physical activity, nutrition, behavior modification and psychological support. Fitness professionals can participate and play a vital role in many of these facets. Here are a few suggestions that are unique to working with children.

PARTNER WITH OTHER PROFESSIONALS

Fitness professionals wanting to take on the challenge of improving children's physical fitness can contact medical and educational professionals and work with them—for example, by creating links between daycare, school and afterschool activities and by assessing the needs of local schools and exploring ways to be involved with in-school or afterschool programs. Another approach could be reaching out to local pediatricians and exploring ways to collaborate.

INTRODUCE EXERCISE EARLIER

From birth through age 2, children need hands-on exploration and social interactions to develop their cognitive, language, motor and social-emotional skills (AAP 2016). During these hands-on explorations, parents can introduce children to physical activity, setting the stage for an active and healthier life.

PROMOTE OUTDOOR PLAY

When designing programs for children, think of outdoor play. In addition to providing activities that develop their physical fitness, you will be helping to fulfill their need for adequate sensory stimulation and cognitive development. For example, you can offer activities in available (no-cost) neighborhood spaces, using paths, trails, cycle paths, and parks and recreation facilities.

KEEP SAFETY IN MIND

If a child has severe obesity, you should introduce classical sports only after the child's basic physical capacities have improved through a controlled and supervised program, with special attention paid to orthopedic and osteoarticular limitations. Research has shown that overweight children "typically display a slower, more tentative walking pattern with increased forces to the hip, knee and ankle during 'normal' gait," which may make them poorly equipped to undertake certain forms of physical activity (Shultz, Anner & Hills 2009).



Sleep Time Guidelines

The Centers for Disease Control and Prevention offers these recommendations for the amount of sleep needed in a 24-hour period from birth to age 18. Note that the totals for ages 4 months to 5 years include both naptime and nighttime sleep.

AGE	SLEEP (PER 24 HOURS)
0–3 months	14–17 hours
4–12 months	12–16 hours
1–2 years	11–14 hours
3–5 years	10–13 hours
6–12 years	9–12 hours
13–18 years	8–10 hours

Source: CDC 2017.

EXPLORE THE TOPIC OF NUTRITION

Increases in physical activity are not likely to offset a calorie-dense and nutrition-poor diet. This highlights the importance of incorporating nutrition education into any planned intervention, while keeping in mind your personal scope of practice. Unless you hold a license that allows you to give out specific nutrition advice and counseling, you must refrain from offering nutrition assessments and making individualized meal plans; if these are needed, the child should be referred to a licensed nutritionist or registered dietitian.

You can, however, provide encouragement to eat a healthier diet, and you can offer resources to parents of children you're working with. Simple, consistent messages—like encouraging children to eat fruits and vegetables of different colors—can be effective. You can also start a community garden and tend it with young clients and their families. Cooking demonstrations, grocery store excursions and workshops are other creative ways to share information about healthy eating without going beyond your scope of practice.

TAKE TIPS FROM EXPERTS IN KIDS' FITNESS

Many organizations have developed extensive guidelines on fitness programming for children. For example, IHRSA (2017) recommends emphasizing character building, offering age-appropriate opportunities and being active in the local community. With regard to encouraging children with obesity to participate in group sports, the 28th European Childhood Obesity Group Congress recommends using medical monitoring (including getting clearance beforehand), individualizing and adapting activities to a child's needs and abilities, and progressing children with safety in mind (Ring-Dimitriou 2019). All of these are also components of the NASM Optimum Performance Training™ model for all ages.

Another tool for building successful children's fitness programs is the movement learning framework, which is often used in physical education programs in



A successful intervention involves a multidisciplinary approach combining physical activity, nutrition, behavior modification and psychological support. Fitness professionals can participate and play a vital role in many of these facets.

schools. (See “Programming With the Movement Learning Framework,” page 32, for more.) And the NASM Youth Exercise Specialization provides a comprehensive overview of the most important factors to consider when working with children. (To learn more about the YES program, visit nasm.org/products/CEU142K.)

THE POTENTIAL IMPACT ON FUTURE GENERATIONS

The impact of helping to prevent or mitigate childhood obesity reaches into and beyond adolescence. Long-term social consequences of early obesity, for instance, include lower income and lower educational achievement in adulthood (Hagman et al. 2017).

Further, the incidence of childhood obesity influences adult obesity, which directly influences the next generation of children. One well-researched determinant of adult obesity is being obese as a child. A systematic review of the literature found that “around 55% of obese children go on to be obese in adolescence, around 80% of obese adolescents will still be obese in adulthood and around 70% will be obese over age 30” (Simmonds et al. 2016).

In addition, a longitudinal study deter-

mined that 63% of participants who were labeled “at risk of overweight” as children were obese 25 years later (Kelsey et al. 2014). The cycle perpetuates as these adults with obesity then have children of their own. Kumar & Kelly (2017) state that the risk of obesity in children increases two- to threefold if one parent is obese and up to 15-fold if both parents have obesity, underscoring the influence of parents on their children's risk.

For fitness professionals, then, it is rewarding to know that the programming you provide today—whether for children or adults (who are or may become parents)—can promote a healthier future throughout your clients' lives and into future generations.



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CEU QUIZ: STAND UP TO CHILDHOOD OBESITY: How Fitness Pros Can Impact the Future

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

1. List common risk factors for the development of childhood obesity.
2. Understand the trends in and implications of childhood obesity.
3. Identify successful multidisciplinary intervention strategies.
4. Explain the role of physical activity in preventing and treating childhood obesity.
5. Comprehend the impact of obesity on quality of life and on cognitive, brain and skeletal development.

1. According to the World Health Organization, _____ million children under the age of 5 were overweight or obese in 2016.

- a. 32
- b. 54
- c. 2
- d. 41

2. For ages 5–19, overweight is indicated by a BMI greater than _____ standard deviation(s) from the mean and obesity by a BMI greater than _____ SD(s) from the mean.

- a. 1, 2
- b. 2, 3
- c. 3, 2
- d. 3, 1

3. The rate of obesity is _____ lower in the _____ population than in the _____ population.

- a. 30%, Asian, Caucasian
- b. 20%, Caucasian, African-American
- c. 15%, Asian, African-American
- d. 30%, Caucasian, Asian

4. When both parents are obese, their children's risk of obesity increases _____.

- a. threefold
- b. twofold
- c. 15-fold
- d. 10-fold

5. Which of the following is a musculoskeletal effect of a higher BMI and lack of physical activity in children?

- a. earlier attainment of peak bone mass
- b. greater bone mass in adulthood
- c. increased risk for lower-extremity fractures
- d. greater postural stability

6. Normal-weight children perform better in tests of executive functions, which mature around age _____.

- a. 5
- b. 12
- c. 18
- d. 19

7. The average age at which today's children begin watching regular TV is _____.

- a. 4 years
- b. 6 months
- c. 4 months
- d. 2 years

8. A 2016 study found that watching 1–3 hours of TV per day increased children's risk of obesity by _____.

- a. 10%–27%
- b. 5%–10%
- c. 50%–60%
- d. 3%–5%

9. Children ages 3–5 should sleep _____ hours per 24 hours, including naps.

- a. 9–12
- b. 11–14
- c. 10–13
- d. 12–16

10. Screens should be turned off _____ hour(s) before bedtime.

- a. 1
- b. 2
- c. 1.5
- d. 0.5

11. The appetite-boosting hormone that increases with lack of sleep is _____.

- a. insulin
- b. cortisol
- c. ghrelin
- d. leptin

12. Which of the following is *not* one of the fundamental movement skills in the movement learning framework?

- a. inversion (hanging, tumbling)
- b. stabilization (rolling, turning)
- c. manipulation (throwing, catching)
- d. locomotion (running, hopping)

13. Lack of physical activity is the _____ leading cause of death worldwide.

- a. second
- b. fourth
- c. sixth
- d. eighth

14. _____ plays an etiological role in increasing childhood obesity rates.

- a. Lack of nutritious foods
- b. An abundance of nutritious foods
- c. Lack of neighborhood parks
- d. Lack of organized activities

15. Hands-on exploration and social interactions are especially important in the development of cognitive and language skills for children ages _____.

- a. 1–3
- b. 0–2
- c. 2–4
- d. 3–6

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The COMPLETE Personal Trainer

Blend technical skills, business knowledge and people savvy to succeed in an evolving industry.

BY APRIL DURRETT

A

fter “James” earned his exercise physiology degree, he was eager to get certified as a personal trainer and begin his career. A college athlete, he had dreams of putting clients through rigorous programs that yielded results, and he envisioned owning his own studio within 5 years.

Two years into his personal training career, however, James realized he needed to add more tools to his toolbox. His education and certification had given him a strong foundation, but he wanted to refine his career. Although he considered himself a tech wiz, translating the data from clients’ wearables into programming was proving to be a struggle, and, speaking of programming, James hadn’t anticipated how unfit people would be or how little they would know about nutrition. He decided he needed to redefine himself if he was going to succeed in a field he was passionate about.

While James is a fictional personal trainer, his dilemma is all too real for many who enter the fitness industry with high hopes of making a difference. But the reality facing new trainers can be a positive wake-up call for those who want to excel in this exciting profession. The industry is still relatively young and, thanks to forward-thinking people who’ve fought to



legitimize personal training as a solid career option, a lot has transpired over the past 30 years to bring us to where we now are as an industry. What qualities does a personal trainer need in order to thrive today? What advice do veteran trainers have for brand-new personal trainers? Is there such a thing as an “ideal” trainer? Discover the focus areas that are pivotal to a personal trainer’s success.

A Personal Trainer Certification

What type of qualifications does a new personal trainer need? “At a minimum, a personal trainer would need a high school diploma or equivalent, CPR/AED certifica-

tion and an accredited certification,” says Mike Fantigrassi, MS, NASM-CPT and Master Instructor, and director of product development for NASM in Chandler, Arizona.

“A [standard] personal trainer certification provides the baseline knowledge to begin a career and become employed,” adds Fantigrassi. “It is a way for employers and customers to confirm they are working with a qualified individual who takes his or her career seriously. Then, the requirement for ongoing continuing education helps ensure [that trainers] are staying up to date on the latest information.”

Before Kinsey Mahaffey, MPH, NASM-CES, FNS, Master Trainer and Instructor, and

owner of LevelUp FitPro in Houston, got certified, she researched different options. “I heard from multiple employers that the NASM personal trainer certification was the gold standard in the industry,” she says. “The same is still true today.” (See “Top 5 Reasons to Get Certified,” left, for more.)

Some people wonder if they need an exercise or kinesiology degree to succeed. The short answer: not necessarily, but you do need to have a solid understanding of biomechanics and functional anatomy, which are taught in most certified personal trainer courses, notes Mahaffey.

“A degree in an exercise-related field is always helpful but not necessary to become a certified personal trainer,” says Fantigrassi. “The certification course contains all the fundamental information you need, and the real learning happens on the job when you are faced with new challenges. Those who continue to learn and seek out solutions to the problems they experience while on the job will excel.”

Business-Related Skills

Succeeding in the personal training industry is tougher than you may realize, says Nicole Lark, NASM-CES, and owner of Breathe Fitness in Edmonton, Alberta. “There is stiff competition, and being an educated and experienced trainer does not always correlate with success,” she says. “You also need to have marketing skills, social media presence, networking capabilities and business acumen to make a long-lasting career for yourself.”

SALES AND MARKETING. All trainers should take a sales training class to learn how to present the services they are trying to sell, advises Bill Ross, PhD, NASM-CPT, CES, PES, BCS, FNS, GFS, GPTS, MMACS, WLS, Master Trainer, life coach and nutritionist with Bill Ross Fit in Denver.

Marco Rojas, NASM-CPT, CES, PES, FNS, WLS, and owner of Move Right Training in New York City, agrees. “Before we get a client, we have to know how to sell ourselves to a client. Part of that is promoting your product and giving it value—the product being the trainer and the trainer’s knowledge as it relates to the client’s goals. If you can’t sell yourself,

Top 5 Reasons to Get Certified



Whether you are already certified or want to get a second (or third) certification, the following solid reasons will reinforce your decision:

1 YOU CAN CHANGE LIVES FOR THE BETTER. Many individuals seek the guidance of a personal trainer because they want to improve their general fitness, reduce discomfort, improve performance or lose fat. Whatever the reasons, people need help and motivation, and this is where a pro comes in.

2 IT'S A GROWING BUSINESS. Fueled by the need for healthier living, the personal training industry is expected to keep growing. Trainers who can help their clients lose weight and reach their fitness goals are, and will continue to be, in high demand.

3 THERE'S POTENTIAL FOR HIGH EARNINGS. With a growing industry comes the likelihood of growing pay. As demand for personal trainers increases, you can expect incomes to rise as well.

4 YOU CAN BE YOUR OWN BOSS. A personal training career can open many doors, including the opportunity to work independently. You can be your own boss and make your own schedule. The industry is wide open to entrepreneurs who have the ambition to build their own brand and business.

5 YOU CAN BE A COMMUNITY LEADER. A successful, knowledgeable personal trainer is in a prime position to be the go-to professional for a community’s health and fitness needs; this can lead to numerous opportunities.



“Before we
get a client,
we have
to know
how to sell
ourselves
to a client.
Part of
that is
promoting
your product
and giving
it value.”

—Marco Rojas





**“Trainers
should
definitely
educate
themselves
on nutrition.
[But you
can only]
give general
information,
without
prescribing
a personal-
ized diet
program,
unless
you hold
the proper
nutrition
credentials.”**

—Marco Rojas



no one will want to buy,” he says.

Another important skill is knowing how to price and package your services so that you can make a profit, says Mahaffey. “Also, understanding where and how to find your ideal client is crucial to success!” she adds.

ORGANIZATION/TIME MANAGEMENT. Every trainer needs to be organized and structured with regard to client workouts, session tracking [and] performance tracking, says Ross. Mahaffey says being organized and skilled at time management are key to maximizing your training schedule and staying on top of all appointments.

TECHNOLOGY. “Understanding technology is also necessary, with all of the [software] and apps [there are for tracking] client success, scheduling, workouts, nutrition, etc.,” says Mahaffey.

Kurt Gillon, NASM-SFS, WFS, who trains clients in the Atlanta area, forecasts that trainers will need to embrace wearable and data-tracking platforms and to incorporate them into their training soon.

COMMUNICATION. Lark points out that excellent verbal and written communication skills will help with giving presentations, meeting clients, writing blogs, posting on social media and sending mailings to new and current clients.

People Skills

Veteran trainers mention again and again how crucial the interaction-oriented skills are. “Most trainers know how to teach a squat or a plank,” says Lark. “However, trainers who can relate to their clients and build a strong rapport with them will see the most rewards.”

EMPATHY. “My clients need to know that I understand what they’re going through and the experience they’re having,” says Joni Deardorff, NASM-CPT, CES, PES, WLS and Master Trainer, owner of Joni Deardorff Personal Trainer LLC in Frisco, Texas. “A good trainer should be able to put themselves into their clients’ shoes.”

If you are not naturally empathetic, you can develop this skill, says Lee Jordan, MS, who, with his wife, Beth, runs Fullest Living, a wellness company in Jacksonville Beach, Florida. Both are certified personal trainers. “A few key *learnable* skills that

profoundly impact a trainer’s ability to be successful are often, mistakenly, considered ‘traits.’ The best example is empathy. This is a critical skill [needed] to gain, keep and grow clients. It doesn’t matter how much knowledge you have if the client doesn’t believe [he or she is] being heard and understood.”

Certified personal trainer Nathan White, CSCS, has been coaching, training and mentoring personal trainers on the Palos Verdes Peninsula, in California, for the past 8 years. “Most new trainers have relatively little life experience, as they’re between the ages of 23 and 30,” he explains. “The most glaring area has been

What Surprised You Most?

Veteran trainers share some of the biggest surprises they encountered early in their careers:

HOW UNFIT CLIENTS WERE. “I came from an athletic background, and I was honestly surprised at how deconditioned the general population was,” says Kinsey Mahaffey, MPH, NASM-CES, FNS. “Over time I learned how to plan a first workout that would be a reasonable challenge for a brand-new client but [would] also let the client build the confidence to continue training, even though it was hard.”

THE ENORMOUS IMPACT OF THE MEDIA. “What I’ve found most surprising is how quickly clients believe the media, infomercials or TV shows when learning about fitness trends and weight loss,” says Michael Yaremko, NASM-CPT, CES, GFS, GPTS, MMACS, WLS. Potential clients may think that participating in certain fads and trends will help them reach their goals, but in fact it could be harmful. “To meet this challenge, I continue to educate people through my marketing pathways. The more they can learn about science-based approaches to fitness, the easier it will be [for them] to make educated decisions when choosing a workout and nutritional plan.”

THE PUBLIC’S PERCEPTION. Marco Rojas, NASM-CPT, CES, PES, FNS, WLS, was shocked at how much clients expect him to know. “Trainers are often seen as medical professionals, even though we aren’t necessarily in the medical field,” he notes. “We deal with the human body and its functions on a daily basis, but our scope of information and education is often limited. We can’t and shouldn’t ever diagnose, but we will often get asked some type of medical question. I always try to stay informed about common health conditions, such as heart diseases and respiratory diseases, and about the general functions of the organ systems of the human body. Then I can provide general information whenever possible but, again, *never* diagnosing.”

HOW CONNECTED YOU CAN BECOME TO CLIENTS. “I had no idea how often I would double as a therapist!” says Joni Deardorff, NASM-CPT, CES, PES, WLS. “The bond that forms between a trainer and a client can be very strong. I think that, when you’re helping someone through a serious life change like getting healthy, it forms a lasting connection. The trick is to remain professional.”

their lack of self-awareness in expressing empathy toward their prospective clients. We spend a lot of time role-playing and practicing motivational interviewing skills. I also loan them leadership books that have helped me over the years to improve my coaching skills.”

MENTAL FLEXIBILITY. Trainers need to be adaptable to different personalities and still be themselves, explains Deardorff. “I have only had two clients whose personalities just really clashed with mine. Everyone else I’ve been able to get along with.”

Nutrition and Behavior Change

Do you need to become a nutrition expert to be a personal trainer? “Nutrition and exercise go hand in hand but are two different areas of knowledge and expertise

and should be treated as such,” says Rojas. “Trainers should definitely educate themselves on nutrition. [But you can only] give general information, without prescribing a personalized diet program, unless you hold the proper nutrition credentials.”

A basic understanding of nutrition can help you feel comfortable in giving clients general nutrition recommendations, notes Mahaffey. “However, getting a certification in nutrition can give you a better understanding of how to guide your clients—within your scope of practice—to reach their goals.”

In addition to nutrition knowledge, behavior change basics are key. “Understanding these fundamentals is crucial to [trainers’] success rates, since most clients set goals that require a change in lifestyle [habits]—such as nutrition, sleep or exercise—not just

three workouts a week,” says Mahaffey. “If you don’t know how to guide clients toward sustainable lifestyle change, they’ll never be able to get or keep the results they’re after.”

Specialization

Ask veteran trainers and almost all will say that focusing on a certain area or clientele has been key to their career success.

“I definitely feel that a trainer needs a niche market,” says Michael Yaremko, NASM-CPT, CES, GFS, GPTS, MMACS, WLS, Master Trainer, and CEO of Yaremko Sports & Personal Training in Greensburg, Pennsylvania. “I work with professional and amateur ice hockey goalies, training for their specific movements and functions. It is a small niche that I have become proficient in, as I also coach goalies on the ice, as well.”



Advice for a New Trainer

What advice do veterans have for a new trainer? Here’s what some say:

MAKE SURE YOU TRULY GRASP THE “WHY” OF EACH EXERCISE. “Understand the theory behind what you are doing and learn to be as creative as possible,” advises Michael Yaremko, NASM-CPT, CES, GFS, GPTS, MMACS, WLS. “Clients want to know why they are performing certain tasks and how they will be helpful to them. If you can’t answer those questions, you will be hard-pressed to retain clients. Also, nothing is ever textbook. Being creative is essential because every client will have different strengths and weaknesses that force you to think quickly and adjust exercises during a session.”

EXPECT TO WORK SOME UNPAID HOURS. “The amount of time you spend with your clients is only half the picture,” says Nicole Lark, NASM-CES. “There are many unpaid hours each week spent on handling scheduling and logistics, especially when many clients ask to reschedule or cancel at the last minute. There’s also bookkeeping, networking and continuing education to maintain your certification(s).”

FOCUS ON MIND, BODY AND SPIRIT. “What people think and what they value, especially how they value their own health and wellness, is inextricably connected to their ability to achieve sustained success,” explains certified personal trainer Beth Jordan. “That’s why my training programs are designed and structured around body, mind and spirit.”

SEEK MENTORSHIP. “Find a mentor trainer to shadow and learn from,” advises Kinsey Mahaffey, MPH, NASM-CES, FNS.

“Look for trainers with several years of experience and a reputation for being a great trainer. They might also train a specific population or in a certain setting that you’d like to work with one day.”

Lark encourages patience. “You cannot expect to know everything right away,” she says. “Give yourself time to be mentored. [Pursue] mentorship from other like-minded health-care professionals, such as physiotherapists, chiropractors, massage therapists and dietitians. Learn from these pros and build a referral network with them. This will help you gain new clients while also [giving you trusted people] to refer your clients to when needed.”

JUST BEGIN. To learn how to swim, you must get wet, say Lee Jordan, MS, and his wife, Beth. “Becoming a thriving personal trainer means you must start helping someone. Finding one client with whom you can work consistently will pay amazing dividends in increasing your skillset and growing your business. Having at least one such client is so important. It’s worth doing this as an investment in growing your business, just like a website or marketing effort.”

CONTINUE TO LEARN. Take as many continuing education courses as possible, recommends Mahaffey. “Be open to new ideas and new ways of thinking and always look for opportunities to network with other personal trainers. Having an insatiable hunger to learn more and master your craft will take you very far in this field.”



Mahaffey earned a corrective exercise specialization that she believes is invaluable for all trainers. Beyond that, she recommends choosing a target area that fits the population you typically train—for example, weight loss.

“We all have an area of fitness that we find especially interesting and that excites us to train,” explains Rojas. “Get extra education in that area and become an expert in it without forgetting the foundational knowledge of anatomy and physiology that exercise is built on.”

Is There an Ideal Trainer?

To be successful, a new personal trainer needs to obtain the skills and education described above, but what makes an ideal trainer? Opinions vary.

“The characteristics of an ideal trainer begin with certification and education, a client-centered approach, and an understanding and commitment to an evidence-based approach to exercise design/coaching,” say the Jordans. “As part of this standard, trainers must be able to ‘be’ who they are, authentically, and to meet and accept others where they are, empathetically. Every trainer can be committed to this standard of excellence and, through a commitment to ongoing personal development, grow forward.”

How does Mahaffey define an ideal trainer? “One who loves helping others, prioritizes continuing education to stay fresh, seeks opportunities for [career] growth—whether that means [moving into] managerial positions or attaining additional certifications or qualifications as a trainer—and regularly takes time off to avoid burnout. One trainer can meet [all] these qualifications, but it takes intentionality and effort to have a plan on how to get there.”

Yaremko thinks there is no one definition of the ideal trainer. “The concept of an ideal trainer is impossible to reach because, just like the ideal spouse, everyone has a different opinion on what that means,” he says. “Every client needs something a little different, and every trainer has to be true to his or her values while training or the

sessions will not seem genuine. Based on [the individual’s] values and conduct, each trainer will then attract clients that are drawn to that style or technique. Therefore, one trainer will be unable to attract every type of client.”

Deardorff also believes there is no set standard. “There is no ideal trainer. . . . Is that trainer ideal in the eyes of his or her clients? That’s what matters. Happy clients. Be who they need, be trustworthy and help them reach their goals.”

Toward a Successful Career

“Entering the personal training industry, I didn’t realize the potential that the career held,” says Mahaffey. “Personal trainers can train for their entire careers or branch out



Get an NASM Specialization

Fitness needs vary by individual as well as by age and stage of life.

If you’re already a personal trainer, adding a fitness specialization can positively shape the future of your business. Taking this step has the potential to increase your client roster, expand your employment opportunities and raise your income. Plus, specializations provide valuable CEUs.

Specializations are also a good way to share your passion for fitness with others. Get the coveted credentials elite trainers have, and gain the skills, knowledge and confidence needed to help your clients succeed. Among the many choices: nutrition, behavior change, weight loss and more. Find out how to add to your credentials at nasm.org/continuing-education/fitness-specializations.

into a variety of other opportunities, such as specializing in a niche population, speaking, educating other fitness professionals, mentoring, writing for fitness publications or owning a business. The only limit on the potential of this career is the one that you place on it!”



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How to Help Desk-bound Clients

Thrive

Promote “exercise snack” breaks, various movement options and targeted training

BY
SHIRLEY ARCHER,
JD, MA

It's likely that many of your clients spend the majority of their time sitting at a desk, staring at a screen. They then sit in their cars for a long commute. When they arrive at their final destination, they sit down to eat and then watch television. If they make it to the gym, they often sit on a recumbent bike or use selectorized strength equipment. That's a lot of sitting. Your challenge is to help them combat the deleterious effects of such limited movement and encourage them to meet and surpass their health, fitness and wellness goals.

Ideally, our cultural norms wouldn't include so much time spent seated, but the reality is that many fitness pros work with clients who *must* sit to earn a livelihood—and they likely sit more during the rest of the day. Seated time is linked with higher death risks from all causes (Ku et al. 2018). The issue, however, is nuanced.

Research reveals that simply standing more is *not* the answer. And even people who work out a few hours per week are *not* protected from the negative consequences of excessive sitting (Akins et al. 2019).

How can fitness professionals help deskbound clients? First, it's important to understand what the health risks of sitting are and how best to combat them. Second, there are a number of workplace options for reducing sitting—what are the pros and



A Sedentary Snapshot

We're facing a modern inactivity crisis, with increased amounts of daily sitting across all ages—particularly among office workers. The average American full-time worker spends 8.5 hours per day on the job (Bureau of Labor Statistics 2019). Approximately 25% of American adults sit for 8 or more hours daily (Ussery, Fulton & Galuska 2018).

People sit not only for work but also for fun. In 2015–2016, 65% of adults, 59% of teens and 62% of children in the United States sat and watched television or videos at least 2 hours per day. In addition, computer use during leisure time is increasing across all ages (Yang et al. 2019).

And, to compound matters, people aren't going outside. Americans and Canadians spend an average of 87% of their days in buildings and 6% in vehicles, leaving just 7% for outdoor time. This includes walking to stores and to public transportation, so even less time is spent being physically active in nature (Klepeis et al. 2001).

to counteract the consequences of excessive sitting.

cons of treadmill, cycling or sit-to-stand desks? Third, fitness pros can offer evidence-based tips and training program options to alleviate the strains of a seated lifestyle.

The Hazards of Desk Work

Prolonged sitting is linked to an increased risk, in general, of any cause of death. Recent studies investigating an association between sitting time and increased death risks are

looking more closely at whether data is self-reported (typically inaccurate) versus measured by devices, and whether differences exist among adults ages 64 and younger versus adults over age 64. This article focuses on adults ages 64 and younger and cites studies with accelerometer-measured data, except where noted.

Researchers are refining our understanding of how many hours of sitting per day increase risks and the types of breaks

that provide the most protection from harm. According to a review study with over 1 million participants, adults ages 18–64 should sit less than 7.5 hours to avoid increased risk of death from all causes (Ku et al. 2018). Additional sitting time over 7.5 hours has a linear relationship with increased death risks.

Sitting for long hours is related to a higher risk of cardiovascular disease, metabolic diseases, cancer and musculoskeletal issues. Scientists think

Research suggests that the best approach is to break up seated time with short movement sessions of any intensity—what is important is simply to move, even if only for 1 minute at a time.

a sedentary lifestyle exacerbates some of the following conditions:

LOW PHYSICAL FITNESS LEVEL.

Lack of movement results in deconditioning. Cardiorespiratory fitness decreases, and muscular strength, endurance and flexibility decline.

POOR PULMONARY FUNCTION.

Slouching restricts the diaphragm's movement, limits lung volume and weakens respiratory muscles.

POOR CIRCULATION AND VASCULAR HEALTH.

Lack of activity brings about compromised circulation, less vascularization, less blood vessel elasticity, blood pooling, increased risk of blood

clots and more inflammatory factors.

MUSCLE AND JOINT STIFFNESS.

Stiffness develops because muscle fibers shorten due to inactivity and because there is less hyaluronic acid for joint lubrication.

HIGHER OSTEOPOROSIS RISK.

Reduced movement, lower levels of growth hormone and lack of growth factors necessary for muscle and bone development can all be an issue.

INCREASED INSULIN RESISTANCE.

This occurs when regulation of enzymes affecting glucose uptake is compromised; poor regulation contributes to elevated insulin levels and impaired lipid metabolism.

WEIGHT GAIN. Inactivity leads not only to fat gain but also to metabolic changes that reduce exercise capacity, impede glucose uptake, and impair muscle development and fat metabolism. Preliminary research shows that these metabolic changes also occur in individuals who exercise regularly.

SLEEP QUALITY. Poor melatonin production interferes with a good night's rest. This promotes daytime fatigue, possibly increasing the sympathetic response, elevating heart rate and raising blood pressure (Lurati 2017; Akins 2019).

It's clear that no one factor is responsible for the increased health risks of prolonged sitting;

Sample Training Program A

Tamara Smith, NASM-CPT, CES, SFS, WLS, owner of Dreamtree Principle in Long Beach, California, recommends doing the following simple routine (twice or three times weekly) to strengthen typically weak muscles in office workers. Start with 1 set of 20 reps and work up to 2 or 3 sets of each exercise.

1. frontal-plane tube walking to strengthen gluteus medius
2. basic squats to strengthen gluteus maximus
3. transversus abdominis activation, or the "draw-in" maneuver
4. planks
5. pelvic tilts lying supine, knees bent, feet flat on floor
6. bridges to activate glutes and strengthen core
7. quadruped arm raises, followed by opposite-arm/opposite-leg raises
8. cobra: double arm followed by single arm
9. "swimmers," lying prone or on stability ball
10. cervical spine retraction while prone on floor



inactivity affects all aspects of physiological functioning.

Break Up Sitting Time

Since sitting is essential in modern life, how can we reduce the resulting health risks? The latest research suggests that the best approach is to break up seated time with short movement sessions of any intensity—what is important is to move, even if only for 1 minute at a time. Researchers at Columbia University in New York tackled this quandary by examining whether it's necessary to exercise, to simply move or to sit for shorter lengths of time. Investigators analyzed data on activity levels and death rates from approximately 8,000 adults, ages 45 and older, over 4 years. The researchers learned that 30 minutes per day of physical activity of *any intensity*—even in bouts of 1–2 minutes at a time—reduced risks of early death (Diaz et al. 2019).

Another study from Columbia University suggests that, ideally, sitting bouts should not last more than 29 minutes without a movement break. Over about 4 years, researchers evaluated data from almost 8,000 black and white volunteers, ages 45 and older, who wore hip accelerometers. Subjects included men and women. Those who interrupted their sitting at least every 30 minutes had the lowest death risks. Study authors advised that both reducing and regularly breaking up sedentary time may be important adjuncts to existing physical activity guidelines (Diaz et al. 2017).

TRY “EXERCISE SNACKS”

Another way to support desk-bound clients is to suggest they

Workday Exercise Snack Breaks

Here are a few simple exercises to motivate and inspire your deskbound clients to squeeze in some activity. Encourage clients to get the most health benefits by doing one activity each hour.

“I’m not quite ready to work!” chair

squats. Before taking a seat, practice lowering and lifting the buttocks. Stand about 1 inch in front of the chair, as if you’re going to sit. Lower the hips and lightly touch the chair without sitting. Work up to holding the squat for 1 minute.

“Good morning!” side and wrist

stretch. Sit with good posture, arms at your sides. Lift your left arm, palm up, in a long arc overhead until the palm faces down. Feel the side stretch. Continue stretching and move the wrist from side to side as if waving at a colleague (this warms up the wrist and improves wrist mobility). Lower your arm and repeat on the other side.

“Who else is here this early?” seated

spine twist. Sit with good posture, arms at sides. Keep both hips facing your desk as you rotate the waist, ribs and shoulder to the right and bring your left hand across your right thigh. Sit tall, keeping length in your spine as you rotate your neck and look over your right shoulder. Breathe deeply as you try to increase the stretch, using your hand against your thigh for leverage. Unwind slowly. Repeat on the other side.

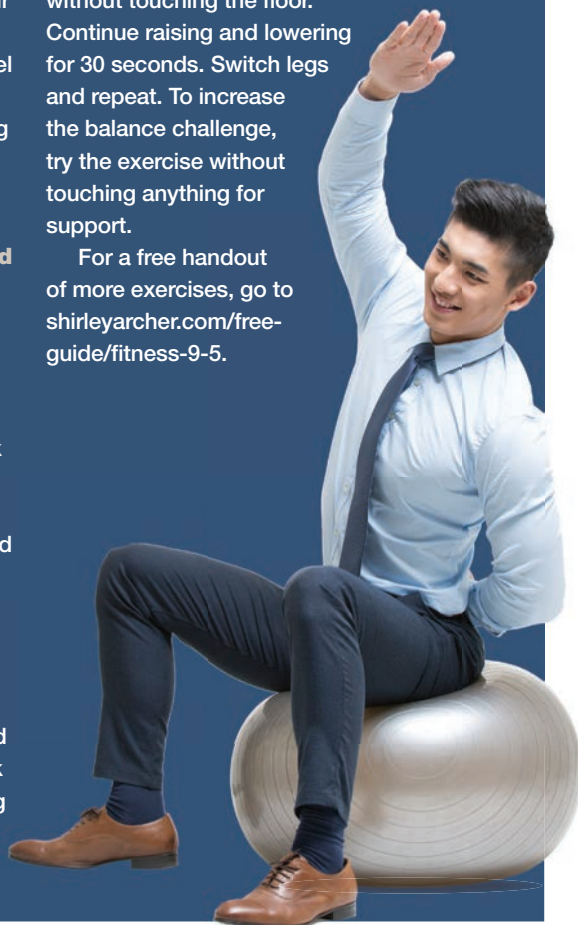
“Reach for the top” stair-climbing

lunges. Find the nearest stairwell. Place your entire right foot on the second step in front of you. Push down, lift yourself up, and place your entire left foot on the second step above your right foot. Continue to walk up, two steps at a time. Work up to climbing for 1 minute. Wear a backpack of books for an extra challenge.

“Prairie dog” cubicle calf raises.

Pop your head up over the cubicle wall and check out what’s going on around the office. Stand up and place one hand on a desk, cabinet or wall for support. Inhale as you stand on one leg. Exhaling, push up onto the ball of your foot, lifting your body weight on the standing leg. Inhaling, lower your heel without touching the floor. Continue raising and lowering for 30 seconds. Switch legs and repeat. To increase the balance challenge, try the exercise without touching anything for support.

For a free handout of more exercises, go to shirleyarcher.com/free-guide/fitness-9-5.



take regular exercise snack breaks. Studies show that multiple short movement bouts provide a training effect. The term “exercise snacks” was coined in 2014 by New Zealand researchers looking for a way to improve glucose control among individuals with insulin resistance (Francois 2014). In a recent study of 24 healthy, sedentary male and female young adults, Canadian investigators found that a few minutes of vigorous

stair-climbing 3 times per day, 3 days per week, for 6 weeks improved cardiorespiratory fitness. The exercise snacks included warming up with 10 jumping jacks, 10 squats and 5 lunges on each leg, followed by quickly ascending three flights of stairs (a 60-step staircase) and then cooling down for 1 minute with level walking. All participants were formerly inactive, and all improved their cardiovascular fitness (Jenkins

et al. 2019). This is good news for clients who are frustrated that they don’t have time for long workouts every day.

WHAT ABOUT ACTIVE WORKSTATIONS?

Should you tell clients to simply stand more often? Standing may address some musculoskeletal and postural issues influenced by prolonged sitting, but it creates other challenges. For example, studies show that long-term

Sample Training Program B

Michael Piercy, CSCS, PES, owner of The LAB Performance and Sports Science in Fairfield, New Jersey, offers solid advice for trainers who work with clients who frequently sit. “When [training] sedentary, deskbound clients it can be key to add some movement and energy to their workouts,” Piercy says. “Envision how they might be in offices all day, performing routine tasks. Desk work can lead to postural issues such as rounded shoulders and compromised core integrity, so it’s a good idea to program exercises that target these areas.” Piercy also suggests that another important element is “to give the clients [moves] that are achievable yet engaging so that they feel accomplished and [obtain] a measure of excitement about continuing the program.”

Sample Deskbound Client Workout

Start with a short, dynamic warmup mixed with static stretches.

- 1A: jumping jack (3 x 30 seconds)
- 1B: plank (3 sets, 10 seconds per plank)
- 1C: body-weight squat (3 x 10 reps)

- 2A: high knees or jog in place (3 x 30 seconds)
- 2B: glute bridge (3 x 12–15 reps)
- 2C: dumbbell floor press (3 x 12–15 reps)

- 3A: plank jack (3 x 15 reps)
- 3B: curl-up (3 x 15 reps)
- 3C: TRX® low row (3 x 12–15 reps)

A study suggests that sitting bouts should not last more than 29 minutes without a movement break. . . . Study authors advise that both reducing and regularly breaking up sedentary time may be important adjuncts to existing physical activity guidelines.

standing can increase risks of varicose veins and heart disease, particularly for men with ischemic heart disease, since standing puts more strain on the circulatory system and on the legs and feet (Krause et al. 2000). Other studies show increased discomfort from prolonged standing. And a 6-year study of 293 Canadian adults ages 18–65 found that people who reported engaging in more worktime standing did not experience less incidence of overweight, obesity, glucose intolerance or type 2 diabetes than those who sat (Chaput et al. 2015). It seems, therefore, that the key problem is not sitting per se, but rather *lack of physical movement*.

Active workstations can address this to a certain degree. A recent research review sheds light on the pros and cons of three options: sit-to-stand, tread-

mill and cycling workstations. Université de Montreal, Quebec, researchers reviewed 12 studies. All active workstations improved short-term productivity, a particular concern for employers. Treadmill workstations affected keyboarding motor skills the most. Cycling and treadmill stations improved heart rate and energy expenditure, increased alertness and reduced boredom more than standing stations did; but cycling stations enabled workers to process simple tasks most quickly (Dupont et al. 2019). On the positive side, no acute or chronic injuries were associated (during the study) with these workstation alternatives (Tudor-Locke et al. 2014).

Marie-Eve Mathieu, PhD, an author of the study done by Dupont et al., advocates for more research. “Ultimately, workers and corporations should be able

to critically examine the benefits and limitations of each type of workstation and determine which is most appropriate for [a] worker’s specific needs and tasks.”

Best Practice to Date: Movement Breaks and Training

Based on what we know from studies to date, fitness pros can help deskbound clients by offering education about risks of prolonged sitting or standing, support to change behavior, break and exercise snack ideas for moving more throughout the day, and programs to offset typical physical consequences of prolonged sitting (see “Workday Exercise Snack Breaks,” page 47, for more). “The human body was made to stand, walk, jog, run, climb, carry heavy objects,

throughout the day, *not* to sit,” says Tamara Smith, NASM-CPT, CES, SFS, WLS, owner of Dreamtree Principle, in Long Beach, California, who has been working with corporate clients for over a decade.

Smith notes that a number of side effects may occur from sitting for the entire day, if nothing outside of work is done to counteract it. These may include any of the following:

- “tech neck,” or a protracted neck, in which the head and neck extend forward
- upper crossed syndrome, in which the major and minor pectoralis are short and tight; the upper trapezius and levator scapulae are strained and overactive; and shoulders are rounded, protracted or elevated
- weak abdominals
- tight hip flexors
- lumbar lordosis, or swayback
- weak glutes

Smith recommends that clients stretch tight muscles daily and do a simple strength routine two or three times per week to target typically weak muscles (see “Sample Training Program A,” page 46, for more).

Sit Less— Move More

What research tells us and what makes good sense is that the human body is designed to move. Fitness pros are experts in how to move the body for physical and mental benefits. As such, fit pros have an opportunity to engage and motivate people on both how and why it’s important, not only to exercise, but also simply to move more every day. Even the latest edition of *Physical Activity Guidelines for Americans* (HHS.gov 2018) highlights this emphasis on encouraging any

amount of physical activity. Now, more than ever, with a sweeping epidemic of sedentary behavior, fitness professionals need to promote less sitting and more movement, up to and including moderate to vigorous exercise and muscle-conditioning activities. Millions of Americans need help with this message. We don’t have a moment to lose.



author of 16 books, including *Fitness 9 to 5: Easy Exercises for the Working Week* (Chronicle Books 2006), worked as a

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

Go Deeper With the Updated CES Specialization

You may already know the basics of how to help clients with tech neck, lower-back discomfort and rounded shoulders, but there’s always room for refinement. The new, updated NASM Corrective Exercise Specialization, an already-proven program that addresses muscular dysfunction, will help you provide the best techniques available today.

“The updated version has been revised from the ground up with the fitness professional as the target user,” says Rich Fahmy, MS, NASM-CPT, CES, PES, content development and production manager. “Clinical applications such as positional isometrics have been removed for the new CES, and the strategies focus on the exercise professional’s environment and scope. We included more real-world application and callouts on tech neck specifically.” There’s a chapter on cervical-spine corrective strategies that focuses on forward-head posture and the impact it has on overall function.

How *specifically* does CES help trainers deal with the kind of issues deskbound clients face? According to Fahmy, it gives trainers the ability to assess a client’s posture and preferred movement strategies (which are not always ideal) and create a program specific to the client’s needs. “Strategies provided—based on individual assessment—follow the NASM corrective exercise continuum of reducing tension and improving extensibility in overactive tissues, improving strength in underactive tissues and encouraging ideal movement patterns with integrated dynamic movement.”

In the case of deskbound populations, CES enables trainers to reduce the restrictions/overactivity and muscle underactivity in the hips, shoulders and neck that are commonly associated with prolonged sitting. Fahmy provides the following example:

A client who exhibits rounded shoulders will likely need to focus on foam rolling and statically stretching muscles that contribute to the problem (such as the latissimus dorsi, pectoralis major and pectoralis minor) and strengthening muscles that pull the client into ideal posture (such as the mid and lower trapezius and the rhomboids). Once each piece of the puzzle is optimized, integrated movements such as pushing or pulling will be used to encourage the muscles to “play nicely together,” referred to as intermuscular coordination.

Here are some additional highlights of the new version:

- It includes updated science.
- It features multiple experts in the field of corrective exercise, flexibility, human movement science, athletic training, physical therapy, performance coaching, assessment and recovery.
- There’s a new chapter on self-care and recovery, as well as one on applying corrective exercise techniques in the real world.
- It includes all-new application and lecture videos, along with updated techniques and strategies.

Learn more at nasm.org/CES.



A Perfect FITTE:

5 Ways to Customize Cardio Programming

LIKE ANYTHING ELSE, CLIENTS' FEELINGS ABOUT CARDIO FALL ON A SPECTRUM, RANGING FROM LOATHING TO LOVE. HERE'S HOW TO USE THE NASM OPTIMUM PERFORMANCE TRAINING™ MODEL AND THE FITTE PRINCIPLE TO IMPROVE RESULTS AND ADHERENCE FOR EVERYONE.

BY KINSEY MAHAFFEY, MPH

The four words every client loves to hear: “It’s time for cardio!” (Cue the collective eye roll from clients around the globe.) As personal trainers, we know that cardiovascular training is undoubtedly an important part of our clients’ overall health and ability to function in activities of daily living. However, finding the right workouts for particular clients means considering more than the physical benefits. It also means making sure that, whether we recommend traditional cardio equipment, like treadmills, bikes and rowers, or suggest HIIT classes with kettlebells, battle ropes and punching bags, we pick something our clients will enjoy, while minimizing their risk of injury.

Fortunately, NASM’s OPT™ model gives us a framework for looking at all of the factors that influence a client’s cardio success and enjoyment: Frequency, Intensity, Time, Type and Enjoyment—or FITTE.

5 FITTE Factors of Effective Cardio Programs

Keeping in mind all of the following factors will help you integrate a client’s needs, goals and interests into your programming:

FREQUENCY

Frequency describes how often the client performs cardio. Lower-intensity cardio workouts can be performed more frequently, while higher-intensity cardio may require fewer sessions during the week with more rest between them, to avoid the risk of overtraining.

According to *NASM Essentials of Personal Fitness Training* (Jones & Bartlett Learning 2018), for general health, cardio should occur daily for short amounts of time, and for fitness gains, it should happen 3–5 days per week at higher intensities. Start beginner clients slowly by having them perform 1–3 days of cardio a week. See

how quickly they recover, and then slowly add more days as fitness levels improve.

INTENSITY

Intensity describes how hard the client is working during the cardio workout. As a general rule of thumb, the more intense the workout is, the more recovery the client will need before the next session. Looking at the client's overall program in the scope of a week can help you identify days when you can increase intensity and days when the client will need more rest. Heart rate reserve, maximal heart rate, rating of perceived exertion and the talk test are a few methods of gauging intensity during workouts (NASM 2018).

TIME

Time describes how long the client spends doing cardio. For substantial health ben-

efits, the 2018 Physical Activity Guidelines for Americans recommend that adults perform at least 150–300 minutes of moderate-intensity or 75–150 minutes of vigorous-intensity aerobic physical activity, or some combination of the two, each week (HHS 2018).

Client schedules will be the largest limiting factor when it comes to performing cardio. It's efficient to have clients perform cardio on their own, with your programming guidance, but sometimes they can't (or won't) do that. If this is the case, you will need to find ways to work cardio into one-on-one sessions to ensure that your clients reap all the benefits of a balanced fitness program. (For the pros and cons of inserting cardio before, during or after resistance training sets—and tips for making that happen—see “A Closer Look at Timing,” page 52.)

TYPE

Type describes the mode of exercise or specific equipment used to perform cardio. Cardio can be inclusive of any activity as long as the client's exertion level is within the proper zone of training.

If the client has a specific cardio goal (such as running a marathon), this may guide your choice of modality. However, if the goal is simply to improve cardiovascular fitness, you can employ a variety of modalities to keep things fresh.

Including speed, agility and quickness (SAQ) and plyometric training (aka “reactive training”)—both of which are optional components of the NASM OPT model—is a great way to increase heart rate during a session without having to use more traditional cardio methods. Choose cardio exercises that will reinforce proper movement patterns, and be sure to keep in

Sample “Active-Recovery Day” Cardio Workout

This chart provides suggestions to help program an effective cardio workout for clients to do as active recovery on their “off” days. (Of course, clients can also schedule a cardio workout to do in your presence so you can check their form and help them understand how to track and adjust their intensity.) Ask clients to keep a log of their solo cardio workouts to share with you during your weekly resistance training sessions.

Stage / Level	Intensity	Timing	Progressions
Stage I: Beginner	Zone 1: 65%–75% of HRmax	Warmup: 5–10 minutes Zone 1: 30–60 minutes Cooldown: 5–10 minutes	The goal is to build a cardio base for apparently healthy people who are sedentary. Start with a 20- to 30-minute workout (or less, if the client has never exercised before). Increase the difficulty by increasing the time spent. Gradually progress to 30–60 minutes of continuous Zone 1 training.
Stage II: Intermediate	Zone 1: 65%–75% of HRmax Zone 2: 76%–85% of HRmax	Warmup: 5–10 minutes Zone 2: 1 minute Zone 1: 3 minutes Zone 2: 1 minute Zone 1: 3 minutes Zone 2: 1 minute Cooldown: 5–10 minutes	The goal is to increase workload and prepare for Zone 3 by introducing intervals. The total workout will be 30–45 minutes. The client's ability to quickly lower heart rate back to Zone 1 during recovery will determine when it's time to progress. Increase the difficulty by shortening time spent in Zone 1 and increasing time spent in Zone 2.
Stage III: Advanced	Zone 1: 65%–75% of HRmax Zone 2: 76%–85% of HRmax Zone 3: 86%–95% of HRmax	Warmup: 10 minutes Zone 2: 2–3 minutes (increasing heart rate to reach Zone 3) Zone 3: 1 minute Zone 2: 1 minute Zone 3: 1 minute Zone 2: 1 minute Cooldown: 5–10 minutes	The goal is to further increase workload to challenge energy systems that will be utilized in power training. The total workout will be only 15–30 minutes. As intensity increases, volume (total amount of work in a set amount of time) decreases. Increase the difficulty by increasing work time and decreasing rest time. Note: Warmup and cooldown are in Zone 1.

mind the client's assessment results. Also, follow the NASM OPT model's guidelines for phase and stage training to avoid increasing risk of injury by progressing too quickly (see "Progressing Cardio Using the NASM OPT Model's 5 Phases," right).

ENJOYMENT

Enjoyment, of course, refers to how much the client likes the activity. Some clients will have favorite types of cardio, while others will tell you they avoid it like the plague.

One of the best ways to build a comprehensive, client-centered program is to begin with the ending in mind. That is, if you know clients who ultimately want to do the HIIT workout they saw in the latest fitness magazine, you can help them work toward that goal by starting them out at a cardio training level that's appropriate for their current fitness level and then progress from there. Allowing your clients to have input in their cardio programming will increase the likelihood that you'll choose something they enjoy—or as close to it as you can get. If your clients enjoy what they're doing, they're likely to continue to do it! It's a win-win for everyone.

A Closer Look at Intensity: Is Your Client in the Zone?

How do you know whether your client's cardio is at the intensity you intend? If your client is wearing a heart rate monitor, you can quickly gauge their zone using maximal heart rate. (HRmax is easy for clients to remember, because it's simply 220 minus the client's age. Multiplying by 0.65, then, gives you the heart rate that is 65% of the client's HRmax.)

Of course, there are also two easier ways (no equipment, no math) to gauge a client's effort during cardio sessions: rating of perceived exertion and the talk test.

To determine RPE, ask clients how hard they feel they are working (hard, very hard, not very hard at all, etc.). For the talk test, simply engage them in conversation during cardio to see how many words they can speak between breaths.

Here are how the three methods relate to one another:

ZONE 1 (65%–75% OF HRMAX) equals an RPE of "moderate" to "somewhat hard." The client may need to take a few breaths between sentences.

ZONE 2 (76%–85% OF HRMAX) equals an

NASM's Optimum Performance

Training model gives us a

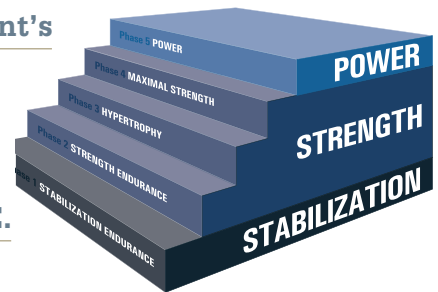
framework for looking at all of

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Frequency, Intensity, Time,

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Progressing Cardio Using the NASM OPT Model's 5 Phases

To simplify programming for clients who are combining cardio with their resistance training workout, it may be helpful to progress both types of training using the NASM OPT model. Here is an example of how you might achieve this:

NASM OPT Model Phase (Stage)	Programming Ideas
Phase 1 (Stage I)	Do resistance circuits (with total-body and multijoint exercises) with 3–5 minutes of cardio at the end of each circuit. Perform cardio separately from (at the beginning or end of) a resistance training session.
Phases 2, 3 and 4 (Stages I and II, with Stage III added for advanced clients)	After resistance training is completed, perform intervals on a cardio machine. Slowly introduce Stage II by alternating between Stage I and Stage II on cardio training days. For Stage III training, try timed power exercises (kettlebell swings, jump squats, ball slams, etc.) for 20–30 seconds to elevate heart rate. Use 1:2 work-to-rest ratio for recovery.
Phase 5 (Stages I, II and III)	Alternate between stages during the week to avoid overtraining. Stage I is great for active-rest days.

RPE of "hard" to "very hard." The client is able to say only three or four words between breaths.

ZONE 3 (86%–95% OF HRMAX) equals an RPE of "very hard" (but not maximal effort). Though the client is still able to speak, he or she can say only one or two words between breaths.

If your clients are doing their cardio on their own (that is, between sessions with you), be sure to guide them on the use of one or more of the above methods, what to aim for in their solo workouts and how to adjust intensity up or down when needed.

A Closer Look at Timing: When Should Clients Do Cardio?

For clients who are not open to doing cardio on their own, there are a number of ways to integrate it into their one-on-one sessions with you—before, during or after resistance training. Let's explore some of the pros and cons of these options.

CARDIO BEFORE OR AFTER RESISTANCE TRAINING

Beginning or ending a session with cardio is a common practice among personal trainers.

Programming for FITTE-ness Is Worth the Effort

Cardiovascular training is vital to helping your clients achieve optimal overall health and reach their fitness-related goals. When properly integrated into the workout, cardio training can help clients maximize calorie burn *and* have a good time. Using the FITTE principle alongside NASM OPT stage and phase training can help them achieve all of this safely and efficiently while getting the most bang for their buck.

Training Zone	Heart Rate	RPE (# / description)	Talk Test
		1 / really easy	can hold steady conversation
		2 / fairly light	
Zone 1	65%–75% of HRmax	3 / moderate 4 / somewhat hard	may have to take a few breaths between sentences
Zone 2	76%–85% of HRmax	5–6 / hard 7 / very hard	must take breaks to breathe every three or four words
Zone 3	86%–95% of HRmax	8–9 / very hard	able to say only one or two words at a time
		10 / very, very hard (maximal)	not able to speak

Allowing your clients to have input in their cardio programming will increase the likelihood that you'll choose something they enjoy—or as close to it as you can get.

If your clients enjoy what they're doing, they're likely to continue to do it!

PROS: Some clients may enjoy a cardio burst at the beginning or end of the workout—they may feel it pushes their limits and gives them that sweat they're after. If you work in a big-box gym, spending a dedicated amount of time on a cardio machine and then moving to the resistance training area is much easier than doing circuit training (hopping back and forth between cardio equipment and resistance equipment throughout the session).

CONS: Performing cardio at the beginning or end of a session will mean less time performing resistance training, since overall training time is limited. One way around this is to complete the 60-minute session with your clients, then ask them to finish (on their own) immediately afterward with 10 minutes on the treadmill or rowing machine, for example. (Of course, you can also flip this and ask them to do a 10-minute cardio warmup on their own right before your training session.)

CARDIO DURING RESISTANCE TRAINING

One way to integrate cardio is with circuits, where resistance exercises are performed back to back with little to no rest. Circuit training minimizes rest time between

exercises to keep heart rate elevated during the training session—thus providing a cardio component.

PROS: This is an incredibly efficient way to train. Circuit training is also helpful for clients who don't enjoy traditional cardio, such as jogging, rowing or cycling.

CONS: Circuits can be tricky in busy big-box gyms, particularly if you plan to use multiple pieces of equipment. However, it can be done with some good planning! One workaround is to think of the circuit in terms of supersets, which alternate between just two moves and, thus, two types of equipment. Or you can plan a circuit workout that uses mostly body-weight and free-weight exercises. These approaches minimize or eliminate the potential problem of having to wait for a machine.

Putting It All Together With NASM Stages and Phases

NASM recommends the use of stage training to systematically progress a client's cardiovascular training. See page 51 for an overview of stage training and a sample "Active-Recovery Day" workout that clients can do on their own. If you

prefer to integrate the cardio into your one-on-one session, you can simply progress the activity in the same way you do with resistance training, using the NASM OPT model's five phases (see the chart on page 52).

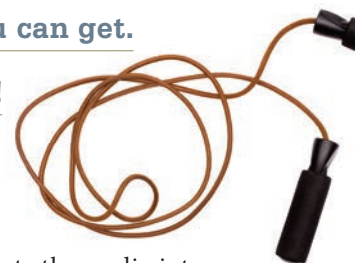


KINSEY MAHAFFEY, MPH, is a Houston-based fitness educator, personal trainer and health coach who developed her commitment to lifelong fitness

while playing Division I volleyball. She's passionate about helping others cultivate a healthy lifestyle and enjoys educating other fitness professionals who share this vision. She's a Master Instructor and Master Trainer for NASM.

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Minimal-Equipment Workouts

NOT ENOUGH EQUIPMENT? NO PROBLEM. DIG INTO YOUR CREATIVITY TOOLBOX TO GIVE ONE PIECE TWICE AS MUCH VALUE.

BY MELISSA WEIGELT, MS

Being a good group exercise instructor means being a master of improvisation. The ability to adjust class plans on the spot is a necessary skill to ensure that all participants have a safe and effective workout. That's true of equipment, too. Perhaps you don't have enough weights to accommodate a large post-holiday crowd, or maybe you have a group of newcomers who are not ready to use more advanced equipment. If these scenarios are familiar, having a toolbox of exercises that use minimal equipment will enable you to provide an awesome workout experience every time, regardless of class numbers or the ability level of your group.

Instructing with less equipment is simple, and the creative possibilities are endless! You can train endurance, strength, balance—and everything in between. Here are some suggestions to get you started. Use minimal-equipment exercises in a standalone circuit or mix and match them to build your class, depending on workout goals and time available.

Single-Dumbbell Exercises

If you don't have enough dumbbells to accommodate your group, no problem. Using one dumbbell instead of a pair is a great alternative, especially if participants are asking for more core work. When training with a single dumbbell, you can load one side of the body while executing traditional strength exercises. The uneven distribution of resistance requires more core activation to maintain proper alignment, and attendees will benefit from this challenging and functional approach to improving strength and muscular endurance.

Pam Benchley, continuing education provider for BOSU®, the Surge® and Stages Cycling, is innovative in her use of single-dumbbell exercises with clients. "I use them to replicate functional movement patterns of daily living, like putting something up

in a cupboard or picking something up off the floor. I love utilizing unilateral pressing and rotational moves. Many of our daily

movements are not symmetrical, so this is how we should train."

UNILATERAL DUMBBELL CIRCUIT

EQUIPMENT: one dumbbell per person

FORMAT: Perform each exercise for 12 reps on each side, cycling through the sequence 4 times.

SUITCASE SQUAT. Hold dumbbell in one hand, standing with feet slightly wider than shoulder-width apart. Lower into deep squat; place dumbbell on floor. Return to standing. On next rep, pick up dumbbell.



Minimal-Equipment Workout Formats

TOOLBOX	EQUIPMENT	REPS	EXECUTION
unilateral dumbbell circuit	1 dumbbell	12	Do 4 sets of each exercise.
single-dumbbell pyramid	1 dumbbell	6, 8, 10; rest 1 minute; 10, 8, 6	Perform sequence for each exercise.
partner-play HIIT	1 8–12 pound medicine ball	none; complete 1 minute	Do 3 sets of each exercise.
body-weight descending ladder	none	12 to 2	Reduce number of reps by 2 (per exercise) to reach 2 reps.

Maintain erect posture and avoid leaning to one side.

SINGLE-ARM CHEST FLY. Begin in supine position on bench or step, holding dumbbell in one hand directly over shoulder. Lower arm toward floor, with slight bend in elbow, until dumbbell is in line with chest, then raise it back to starting position. For more challenge, lift feet off floor.

ONE-ARM DEADLIFT. Stand with feet hip-width apart, holding dumbbell in one hand. Hinge from hips and lower to 90-degree angle while reaching dumbbell toward

floor. Return to starting position. Maintain neutral spine and avoid rotating.

UNILATERAL QUADRUPED ROW. Begin in prone quadruped position with dumbbell in one hand. Perform row by reaching elbow toward ceiling. Return to starting position. For more intensity, lift opposite leg until thigh is parallel to floor.

Option: Load bilateral exercises by holding one dumbbell end-to-end. A single dumbbell offers less resistance, but it is possible to adequately overload the muscles by manipulating additional variables. Simply reduce speed of movement or increase range of motion (ROM) to provide more time under tension.

Keep in mind that resistance is only one factor affecting intensity. Think outside the box, and your participants will be sure to achieve the results they desire!

SINGLE-DUMBBELL PYRAMID

EQUIPMENT: one dumbbell per person

FORMAT: Perform each exercise for 6 repetitions; repeat the sequence for 8 reps, then 10 reps. Rest for 1 minute, then reverse the sequence for 10, 8 and 6 reps.

REAR DEFICIT LUNGE. Stand on step with feet hip-width apart, holding dumbbell at chest end-to-end. Step back with one leg, lower into lunge position, bringing rear knee to floor. Return to standing position.

Alternate lead leg. To progress, reduce speed of movement.

ECCENTRIC-LOAD SQUAT. Stand with feet hip-width apart, holding dumbbell at chest end-to-end. Lower into squat position for 3 counts. Return to standing for 1 count. Increase ROM to progress.

V-SIT CHOP. Begin seated; lean back slightly with extended spine, holding single dumbbell overhead in left hand. Lower dumbbell toward right hip while rotating spine, keeping arms straight. Return to starting position and repeat left. Increase speed of movement for more challenge.

Partner Exercises

Most of our devoted participants joined our classes because they enjoy the social atmosphere of the group exercise studio. Training alongside like-minded fitness enthusiasts offers a sense of camaraderie and allows attendees to feed off the energy of the group. Partner exercises can take this to the next level by providing even more

opportunity for participants to interact, since they share one piece of equipment and work as a team to execute the exercises.

If you lead a high-intensity interval training format, partner training is ideal. HIIT involves alternating periods of high-intensity exercise with rest. Since recovery time is an integral component of this format, participants can take turns using the equip-

ment. Select a series of exercises and use a one-to-one work-to-rest ratio; one person executes an exercise while the partner rests.

Jen Burke, a veteran instructor and continuing education provider from Rochester, New York, utilizes this approach in her small-group training sessions. "Participation in these sessions is consistent, so my clients have developed relationships. When paired up, they tend to work harder, and they also are encouraged by one another. There is a sense of accountability, as well as a lot of fun, laughter and trust being built. Participants can take on the role of coach and student, which really enhances motivation."

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PARTNER-PLAY HIIT

EQUIPMENT: one 8- to 12-pound medicine ball per pair

FORMAT: Perform each exercise for 1 minute. Partner A works while partner B rests; then they switch. Cycle through each exercise 3 times.

BURPEE. Begin standing, holding medicine ball at chest. Squat and bring ball to floor. Jump back to plank position, continuing to hold ball, core engaged. Jump forward to wide-squat position; jump, reaching ball overhead. Add triceps pushup to progress.

MEDICINE BALL SLAM. Stand while holding medicine ball at chest. Raise ball overhead, then slam ball to floor while bending at knees and hips. Return to standing, reaching ball overhead. Repeat. Use heavier medicine ball for more intensity.

SQUAT CHOP. Stand with feet hip-width apart, two hands holding ball overhead. Bend at knees and hips, lowering into squat while rotating spine and pulling ball down toward left knee. Stand and reach ball overhead. Repeat on other side. Increase speed or ROM for more challenge.

Body-Weight Exercises

The most convenient piece of equipment in the training toolbox is body weight. Cindy Frary, director of specialty programming at Aspen Athletic Club in Syracuse, New York, often incorporates body-weight exercises into her fitness classes. “I find they provide benchmarks for progression and often lead to inspirational aha! moments. An exercise that began as a struggle for a participant will often result in a feeling of accomplishment when they can, for example, execute a more advanced plank variation or conquer a set of full-body push-ups for the first time. These moments fuel commitment and keep participants inspired and reaching for more.”

Benchley also believes in the benefit of body-weight exercises. “This approach allows us to focus on how we are designed to move. Even with no resistance equipment, we can use our own body weight to shift, lift and even hold still. Pushing and pulling

movements, as well as core engagement exercises, are also important.”

Include exercises that require the coordination of large muscle groups, add balance challenges, and work in multiple planes of motion. You have all the ingredients needed to offer participants a high-intensity cardio challenge.

**BODY-WEIGHT DESCENDING LADDER**

EQUIPMENT: none

FORMAT: Perform each exercise for 12 repetitions. Repeat the sequence, reducing the number of reps by 2 each set, finishing with 2 repetitions.

LATERAL LEAP AND HOP. Begin standing on one leg, with slight flexion at knee and hip. Leap to one side, landing on opposite foot. Pause, then jump horizontally, landing on same foot. Repeat on other side. To increase intensity, add speed or ROM.

PRONE JACK/PUSHUP.

Start in plank position with hands shoulder-width apart and feet together. Hop feet apart and back in. Then perform pushup by bending

elbows and bringing chest toward floor. Press up to starting position. Maintain straight line from heels to head for both

movements. For added challenge, do pushup while jumping feet apart; press back up when bringing feet together.

SQUAT JUMP. From standing position, feet about hip-width apart, squat by flexing at knees and hips until thighs are parallel to ground. Jump up and return to standing position. Increase ROM to progress.

Less Equipment Equals More Variety

Less equipment does not need to be a barrier to leading your best sessions. Your participants will appreciate the variety as well as the option to train in a new way. Try the suggested workouts or apply the concepts to your favorite moves. Whether working with partners, utilizing body weight for resistance or experimenting with unilateral movements, you can deliver a dynamic and unique workout every time.



MELISSA WEIGELT, MS, owner of Flow Fitness Training, is an NASM-certified personal trainer, a certified fitness instructor, and a vinyasa yoga instructor with 20 years of experience in the fitness industry.

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Nutrition [FOOD NEWS & FACTS]

New Year, New Clients, New Assessment Questions

“**W**ithout objective information to work

from, coaching a client to better health and wellness is like throwing darts blindfolded and hoping one will eventually hit a bull's-eye,” says Andrew Payne, MS, NASM-CPT, CES, PES, CNC, an Arizona-based fitness education expert who helped write the course content for the NASM Certified Nutrition Coach (CNC) program. That’s why a nutritional assessment should be a key component of the initial client meeting. “A nutritional assessment serves the same purpose as a fitness assessment,” says Payne.

“By gaining an understanding of how they are currently eating, [clients are] empowered with objective, personalized, foundational knowledge that significantly boosts readiness to make necessary changes.”

To help with this, the new NASM-CNC program provides guidelines and tips for assessing dietary intake. One of the simplest methods—24-hour recall—involves interviewing clients to help them remember what they recently consumed. This method is adapted from the National Health and Nutrition Examination Survey (NHANES) dietary interviewer procedures manual, which rec-

WITHOUT DOING AN ASSESSMENT, NUTRITION COACHING IS LIKE THROWING DARTS BLINDFOLDED—AND HOPING YOU’LL HIT THE TARGET.



ommends having clients start by making a “quick list” of food and drink *without* going into detail. Then, to help them remember specifics more fully, the fitness coach asks follow-up questions like these:

- Are there any food categories you may have forgotten (beverages, sweets/desserts, snacks, condiments)? (This is asked once more at the end of the interview, too.)
- What activities did you do throughout the day? (This may bring to mind other calories consumed—e.g., while snacking at a meeting or in the car.)

- For each food item:
Where did you obtain it (home, restaurant, vending machine, etc.), what brand was it, how was it prepared, how was it served (alone or as part of a meal), and how much of it did you consume?

The CNC materials offer additional insights, too. For example, the manual suggests reminding clients that you are not judging them but trying to help them, so they should not attempt to look “healthier” than they are.

Payne recommends having clients spend a week tracking daily intake, writing down

foods as they eat them so they won’t forget key details. (The CNC provides several printable templates.)

“Putting pen to paper for every meal and snack can understandably become tedious, which is why I say to do it only for 1 week,” says Payne. “That way, both workday and weekend habits are brought to light, and coaching sessions with clients can [focus on] objective measures that they can build new life patterns around.”

To learn more about the CNC program, visit nasm.org/CNC.

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A Matter of Taste: Why Some People Eat More

Differences in taste perception may explain, in part, why people diagnosed with obesity tend to eat more than their counterparts with a lower body mass index, according to researchers at the University of Iowa. Recently, a team at UI conducted a randomized controlled trial of 290 adults (80% female), with a BMI breakdown of 161 normal, 78 overweight and 51 obese. Every participant was instructed to eat chocolate one piece at a time, stopping whenever they chose and rating their taste perception after each piece.

Typically, according to the Law of Diminishing Marginal Utility, the appeal of anything—including food—declines as consumption increases. Interestingly, in the UI study, while the nonobese participants had very similar responses, those with an obese BMI reported a higher level of initial taste satisfaction and a slower decline in the food's appeal. For example, the women with obesity had the same reaction after eating 12.5 pieces of chocolate as the nonobese women did after eating 10, which equates to nearly 70 additional calories.

"If our findings are generalizable to other foods, they may help inform future interventions," says Linnea Polgreen, PhD, one of the study's authors. "Strategies aimed at reducing obesity may need to account for differences in the perceived taste. A strategy that works for normal weight or overweight individuals may be less effective for individuals with obesity if they derive more satisfaction from eating additional amounts of food."

The researchers agree that further studies need to be done to determine whether there is a causal relationship. Until then, it may help for fitness professionals to simply be aware that certain clients may find it physically more challenging to adopt different eating patterns.



Help Parents Find the Right Words to Encourage

KIDS' HEALTHY HABITS

Fitness professionals know that shaming and teasing kids are not the best ways to motivate them to eat healthier foods—yet that's exactly what many well-meaning parents do. To find out what parents *should* do to support children in losing or maintaining weight, *American Fitness* talked to Brett Klika, CSCS, founder of SPIDERfit Kids® in San Diego, who has worked with kids for many years.

First, Klika recommends keeping the word *weight* out of the conversation. "In my experience, any mention of weight to a young (pre-puberty) child is damaging," he says. "Trainers should focus on getting kids to connect with the positive outcomes of exercise outside of weight loss."

With regard to both fitness and food, Klika says that the word parents should focus on is *energy*. "Energy is a much more relevant and functional conversation to have in regards to goals," he says. He suggests telling kids, "If you want better energy, exercise! It makes you feel great. Eat healthy foods. You feel much better after eating an apple than you do after a cookie. Just frame everything in the context of energy."

Also important: "Make sure the parents are on board with providing the environment at home to 'improve energy'—having healthy foods, displaying healthy eating habits, etc.," he says. "The family needs to work together to create a culture of wellness at home."

QUICK SERVING TRICKS to Make Produce More Appealing

Many people balk at eating their vegetables, but apparently presentation can make a big difference in how appealing they seem. According to research published in *Food Quality and Preference*, a background of 90% blackness resulted in the highest perceived attractiveness for five different vegetables—tomatoes, yellow peppers, carrots, mushrooms and eggplant. Though the article was targeted at produce sellers, it can't hurt to try this in the kitchen, too.

While the aesthetics of vegetables are important as an attention-getting device, the final goal is to get clients to actually eat their vegetables. The following suggestions come from sports nutrition and exercise science expert

Geoff Lecovin, MS, DC, ND, NASM-CPT, CES, PES, FNS, owner of Northwest Integrative Medicine in Kirkland, Washington. These tips may seem disarmingly simple, but to vegetable-phobic clients, they could be both new and surprising.

Dress them up. Head to the supermarket salad bar and load your plate with as much color as possible, e.g., dark-green lettuce (like arugula); purple cabbage; red, yellow and orange peppers; orange carrots; red tomatoes; red and yellow beets; and red onions. Dress with extra-virgin olive oil, balsamic vinegar, and a dash of salt and pepper. For additional nutrients, add walnuts and seeds.

Serve them up in a cup.

To make Dr. Geoff's Power Smoothie, start with 1 cup of water or milk (e.g., dairy or nut), 1 cup of spinach, 1 peeled raw beet, 1 banana and 1 cup of frozen berries. Add 25 grams of whey protein and 2 tablespoons of ground flaxseed. (Blend, adding more liquid if needed.)

Hide them well. This tip from Lecovin is one that all parents can appreciate: Combine spinach, zucchini and carrots in a food processor, then add the vegetable blend to muffins before baking, he suggests.



A VEGAN SPIN ON PARTY-TRAY CHOICES

Clients are always looking for ways to keep their favorite foods on the menu while eating healthier fare and losing excess weight.

Now you can give them a new idea: Peruse the freezer case for better-for-you versions of their favorite snack foods, such as buffalo wings and tater tots. For example, tempura-dipped frozen cauliflower florets in sauce are hitting select store shelves, making the leap from the produce aisle to the freezer case. Lindsey Cunningham, co-founder of Colorado-based organic food company Rollinggreens, attributes its product line of Crispy Cauliflower Wings (available in sweet mustard, spicy green buffalo sauce and teriyaki) to the growing popularity of plant-based meat alternatives and to the “craze of cauliflower in general.”

The same company offers Ancient Grain Millet Tots, made with organic onion and sea salt, which “feature a low glycemic index” and come in three flavors: original (sea salt and onion), organic basil and garlic, and organic sweet potato and poblano chili. Rollinggreens even had their master chef create some recipe ideas for the tots, including super-simple Almond Butter BBQ Sauce (for dipping), a “gourmet” Millet Tot Poutine, and the comfort-food dish Totchos Casserole.

Both “wings” and “tots” are available in select markets, as well as from some online retailers. Visit rollinggreens.com to learn more.



Complex Food Goals: Tips for Clients Who Want to Eat Healthfully and Sustainably

Can avocados be truly vegan if their growth relies on migratory beekeeping? Philosophical dilemmas like this one—which turned up recently in a Twitter debate—are among the latest concerns that clients may want to discuss with fitness pros. Eatright.org has a number of basic tips for sustainable eating. Here are a few changes that the site says can cut down on fossil fuels used to transport food to your client's table:

- Grow food yourself (in containers or a garden plot).
- Shop locally, and buy foods that are in season.
- Use a refillable water bottle (instead of buying bottled drinks).
- Choose foods that are fresh and minimally processed (e.g., whole foods).
- Buy items in bulk (to cut down on packaging).



CUTTING 300 CALORIES PER DAY CAN HELP

According to new data from a 2-year Duke Health trial, a daily cutback of about 300 calories significantly improved participants' cholesterol, blood pressure and blood sugar levels—even in people who already had a “good” health profile and were at or near a healthy weight.

The randomized controlled trial of 218 adults under age 50 is part of an ongoing project called CALERIE (Comprehensive Assessment of Long-term Effects of Reducing Intake of Energy), being conducted with the

National Institutes of Health. In the report, published in *The Lancet*, study authors noted that the average cutback participants maintained over the course of the study was only about 150 calories per day; nonetheless, people showed a “persistent and significant reduction [in] all measured conventional cardiometabolic risk factors” (2019; 7 [9], 673–83).





YOUR HEART

"This shows that even a modification that is not as severe as what we used in this study could reduce the burden of diabetes and cardiovascular disease that we have in this country," says cardiologist William E. Kraus, MD, the study's lead author. "People can do this fairly easily by simply watching their little indiscretions here and there, or maybe reducing the amount of them, like not snacking after dinner."

Using one of the food-recall tips from page 57 can help your clients (and you) decide where to start.

Hope to Set a PR in 2020?

REVISIT THE MEDITERRANEAN (DIET)

Recreationally active adults can improve their endurance exercise performance by eating a Mediterranean diet for just 4 days, according to researchers at Saint Louis University in Missouri. While the study was small (seven women; four men), results showed that participants ran a 5K race 6% faster after 4 days on a Mediterranean diet than they did after 4 days on a Western diet. Interestingly, though, heart rates and ratings of perceived exertion remained about the same for both races.

The Mediterranean diet was defined as a diet containing healthy foods like whole fruits and vegetables, nuts, olive oil and whole grains, while excluding red and processed meats, dairy, trans and saturated fats, and refined sugars. The Western diet was described as basically the reverse, while also being high in sodium and processed foods.

Senior researcher Edward Weiss, PhD, professor of nutrition and dietetics at SLU, hypothesized that the Mediterranean diet's abundant antioxidants, nitrates and alkalizing effects could be at the heart of its exercise benefits. "Many individual nutrients in the Mediterranean diet improve exercise performance . . . it makes sense that a whole dietary pattern that includes these nutrients is also quick to improve performance," says Weiss. "However, these benefits were also quickly lost when switching to the Western diet, highlighting the importance of long-term adherence to the Mediterranean diet."

The full results of the study can be found in the *Journal of the American College of Nutrition* (2019; 38 [7], 597–605).



Is Your Client Ready to Eat a Healthier Diet?

A NEW STUDY SHOWS THAT HAVING A STRONG LIFE PURPOSE MAY MAKE IT EASIER TO ADOPT HEALTHY HABITS.

In a report published in *Health Psychology*, researchers noted that people with a strong life purpose may have an easier time making healthy choices (2019; 38 [6], 545–52).

Two hundred and twenty subjects (all classified as sedentary and either obese or overweight)

completed a survey called the Psychological Well-Being Scales to determine the strength of their life purpose. (For the study, life purpose was defined as having a set of goals derived from one's core values and having less internal conflict with regard to decision-making.)

Subjects were then asked to listen to or view a variety of health-related messages on the risks of sedentary living, reasons to become more active and ways to accomplish that (e.g., taking the stairs versus the elevator). Participants who had a stronger sense of life purpose were more likely to agree with the positive health messages, and the brain regions associated with "processing conflict" were less active when they did so. In the study's writeup, the authors commented that having a lower "conflict-related regulatory burden during health decision-making" may make it easier for people to "accept conflicting yet beneficial health messages."



ALEXANDRA WILLIAMS, MA, works in the Exercise Science and Sport Studies Department at UC Santa Barbara with a lot of students who need to improve their nutritional intake.

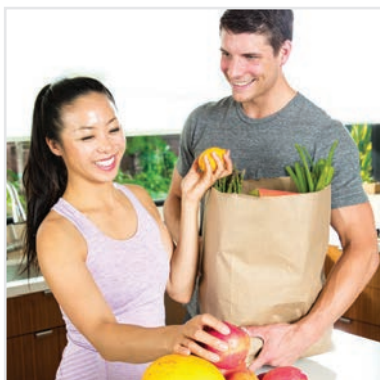
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The Sweet Talk on Stevia: What You Should Know

THIS PLANT-BASED SWEETENER HAS BEEN POPPING UP ON MORE AND MORE INGREDIENT LISTS AND SUPERMARKET SHELVES. HERE'S WHAT FITNESS PROFESSIONALS NEED TO KNOW ABOUT ITS SAFETY, SIDE EFFECTS AND SWEETNESS—*BEFORE* CLIENTS ASK.

BY SCOTT JOSEPHSON, MS, RD

American consumers today have a multitude of options when it comes to choosing low- or no-calorie sweeteners to cut down on sugar and carbs. For those who favor natural products over artificial ones, honey and agave are far from the only options on the supermarket shelves today. In fact, more and more products are being made with a plant-based sweetener called stevia.

Stevia is not a new substance, however. Indigenous peoples of its native South America were using it to sweeten foods and medicines even before the 16th century (Misra et al. 2011). Although there are several species of stevia, *Stevia rebaudiana* is the one that contains rebaudioside A—the sweetest component of the stevia leaf, 200–300 times sweeter than table sugar (Prakash, Markosyan & Bunders 2014; Prakash et al. 2008). Today, most U.S. products made with stevia are sweetened with a highly purified extract of rebaudioside A.

Stevia is relatively new in the United States, having only recently gained approval from the U.S. Food and Drug Administration. Initial reports in 1991 suggested it might cause cancer, but those were soon refuted. In 1994, the Dietary Supplement Health and Education Act permitted stevia to be used as a dietary supplement (e.g., in packets as a coffee sweetener) but not as a food additive (McCaleb 1997). Finally, in 2008, after appeals by food manufacturers, the FDA

declared highly purified rebaudioside A extract (sometimes referred to as rebiana) to be “Generally Recognized as Safe” and approved its use in mainstream U.S. food production (Prakash et al. 2008).

Today, stevia is used in prepared products and comes in both packets for personal use and larger pouches for cooking and baking. When a recipe calls for sugar, a conversion chart can help cooks calculate how much stevia to substitute without oversweetening the food.

Why is stevia gaining in popularity, and how does it fit into a healthy diet? Read on for a summary of research and some guidelines to consider when discussing natural sweeteners with clients.

Stevia: From Farm to Table

Stevia typically refers to sweeteners in powder or liquid form that are made from dried stevia leaves. While the word *stevia* refers to the entire plant, only some components of the stevia leaf are sweet, and they need to be extracted by a multistep process.



TYPES OF STEVIA PRODUCTS

Some people with a green thumb can probably grow stevia at home, but most commonly, stevia leaves are commercially prepared. In either case, the leaves are harvested, dried and steeped in hot water. Then, they undergo several stages of filtration, and the dried plant material is rendered into a powder or liquid.

GREEN-LEAF STEVIA—which comes in powder form—is the least processed. This is the type that has been used in South America for centuries as a natural sweetener and health remedy. Green-leaf stevia is only about 10–15 times sweeter than sugar (Savita et al. 2004; ScienceDirect 2019).

PURIFIED STEVIA EXTRACTS are readily available in the grocery store. Per the FDA standards set forth in 2008, these extracts must contain 95% or more pure rebaudioside A glycosides and may not contain other forms of rebaudiosides or



While the word *stevia* refers to the entire plant, only some components of the stevia leaf are sweet, and they need to be extracted by a multistep process.

steviosides, in order to be legally marketed as food (FDA 2018).

INGREDIENTS ADDED TO STEVIA

Sometimes manufacturers will add other ingredients to stevia to produce a better-tasting sweetener. For example, Stevia in the Raw (developed by In the Raw) adds dextrose or maltodextrin, Truvia (developed jointly by The Coca-Cola Company and Cargill) adds erythritol, and Pure Via (developed by Pepsico and Whole Earth Sweetener Co.) adds dextrose and erythritol.

Carbs, Calories and the Glycemic Index

The glycemic index for sweeteners such as stevia is determined by the amount of

carbohydrate present. Stevia is considered calorie-free because it has less than 5 grams of carbohydrate per serving. Stevia also has a glycemic index and glycemic load of zero.

While some animal studies have noted that *artificial* sweeteners (e.g., aspartame, saccharin and sucralose) might induce metabolic changes that increase the risks of type 2 diabetes, obesity and cardiovascular disease, stevia was not found to have a negative effect on glucose homeostasis. In fact, human studies have shown that stevia has beneficial effects on blood glucose and insulin levels (Gregersen et al. 2004). Unlike artificial sweeteners and sugar, stevia can suppress glucose levels and increase glucose tolerance to potentially stabilize

blood sugar levels (Healthline 2019).



Safety, Side Effects and Allergic Reactions

No negative side effects of stevia were reported in safety studies (Barriocanal et al. 2008). The website of the International Stevia Council goes one step further, stating: “Based on the positive safety opinions of this sweetener, stevia leaf extracts are safe and harmless—like every other approved food” (ISC n.d.). Still, as with any food, stevia can cause side effects, sensitivities or allergies in some people.

SAFETY CONSIDERATIONS

Stevia continues to be the focus of research, with new information emerging all the time. For example, a 2016 study found that stevia—which is steroidal in structure—increased progesterone production in sperm, leading researchers to question its possible role as an endocrine disruptor (Shannon 2016). For those on prescription medicines or with chronic health conditions, it’s best to consult with a physician or registered dietitian before making dietary changes.

POTENTIAL SIDE EFFECTS

Like various other foods, stevia may trigger symptoms in people with a sensitivity or allergy. Those who are sensitive to sugar alcohols may experience GI symptoms such as gas, bloating and diarrhea (Huizen 2017).

ALLERGY SYMPTOMS

The stevia plant is part of the Asteraceae family, which also counts ragweed, goldenrod and other potent allergen-producing plants among its members. However, the few case studies of people allergic to stevia date from before 2008, when today’s highly purified forms hit the market (Urban, Carakostas & Taylor 2015).

STEVIA’S ACCEPTABLE DAILY INTAKE

The acceptable daily intake (ADI) of a food is the maximum amount the FDA considers safe to consume each day over the course of a lifetime, and those numbers are set at very conservative levels. For stevia glycosides, the ADI is 4 milligrams per kilogram of body weight. This

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number is based on steviol glycosides with a purity of at least 95%, which is currently the only form approved for sale in the United States as a food additive or dietary supplement (Huizen 2017).

Although the FDA generally considers these sugar substitutes to be safe, it is still best to consume them in moderation. With more and more options to choose from, selecting a low- or no-calorie sweetener can be a challenge for health-conscious consumers (see “Having a ‘Sweet Talk’ With Clients,” below). Whether something is a good choice or not often depends on the outcome being assessed. Perhaps, and only perhaps, the best remedy is to use and not abuse. Now, that’s food for thought!



SCOTT JOSEPHSON, MS, RD, is an award-winning international speaker who has been featured in multiple publications, webinars and industry videos/DVDs. His awards include director of the year, specialty presenter of the year and fitness citizen of the year. He has served on two international advisory boards, and his portfolio includes television, film and music celebrities as well as Wimbledon champions and athletes.

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Having a “Sweet Talk” With Clients

As fitness professionals, we are often a sounding board for our clientele. In general, here are some considerations to review with clients who are looking for a low- or no-calorie alternative to sugar:

Intended use. Many sugar substitutes do not withstand high temperatures. If you are baking, for example, it is important to select options that are intended for this type of use. (This is usually indicated on product packaging.)

Price. Some sugar substitutes are expensive, whereas others have a cost closer to that of table sugar. Shopping around or buying in bulk may help you find lower prices.

Availability. Some sugar substitutes are more widely available than others.

Taste. Some people find that stevia has a bitter aftertaste. Clients may need to try several different options before they find a sweetener they like.

Side effects. Most people do well with stevia, but remind clients that it is important to listen to their body. Stevia is an herb, and people's bodies may react differently to it—and to other sweeteners, for that matter.

Natural versus artificial. Some people prefer using natural sweeteners, such as stevia, rather than artificial sugar substitutes. However, natural does not always mean lower-calorie or more healthful. With low-calorie sweeteners, as with any type of food, consuming in moderation is generally the best approach.

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Moving Meditations: A Wellness Upgrade

DO YOUR CLIENTS INSIST THAT THEY CAN'T MEDITATE? SUGGEST THESE ACTIVE METHODS AS ALTERNATIVES TO SITTING.

BY LISA QUIGLEY, MFA



Many are aware of the touted benefits of meditation: increased awareness, decreased anxiety, enhanced peace of mind and an improved connection with the present moment. In *The Artist's Way* (Penguin Random House 2016), Julia Cameron describes it like this: "Through meditation, we acquire and eventually acknowledge our connection to an inner power source that has the ability to transform our outer world." As fitness professionals, perhaps you have encouraged your clients to boost wellness by meditating.

Despite the transformative power of meditation, however, some people experience resistance to the practice for many reasons, not least of which is the tendency for emotions to surface in the stillness. For others, just being still in the midst of busy lives, constant digital connection and racing thoughts is a challenge that creates anxiety. After all, who can find time to simply sit and concentrate?

The good news is that meditation does not have to be an "all-or-nothing" activity. Aside from what we may think of as traditional meditation, there are several

ways to reap the physical and mental health benefits by, for instance, incorporating mindfulness practices into our daily lives and simply bringing full awareness to any given moment. Share the following meditation "gateways" with clients as part of a stress reduction program or simply to educate people about different ways to feel more centered and grounded.

Breathing—Pranayama

Pranayama, or breath work, is arguably one of the simplest elements of meditation. It doesn't require any special props, tools

or fancy locations. In fact, for those who already have a strong connection to their bodies, pranayama may come naturally. Many fitness clients are accustomed to breath cues because they are used to physically exerting themselves.

While there are a variety of breathing exercises, which vary in complexity, author and contemporary spiritual teacher Eckhart Tolle suggests we begin by simply becoming aware of our breath. "Notice the sensation of the breath. Feel the air moving in and out of your body," he says in *Oneness With All Life* (Penguin Group 2008). This simple act of following one's breathing automatically connects us with the present moment, reducing the potential for the anxiety that comes with focusing on the past or future.

Pranayama teaches us to be aware of our breath and to breathe deeply. Tolle adds that meditating for hours is not required to

experience the benefits: “One breath is all you ever need to be aware of, indeed ever can be aware of.” So take it one breath at a time. A more conscious awareness of our breath can even improve our workouts as we learn to take longer, more nourishing breaths that can sustain vigorous physical activity. See “Box Breathing,” page 69, for a simple pranayama practice.

Something to note if you decide to guide a client through a breathing practice: As Max Strom notes in *A Life Worth Breathing* (Skyhorse Publishing 2012), intentional breathing may bring up difficult emotions. “Many of us have fear about breathing deeply because we know deep down that our breath is somehow connected to our emotions,” he writes. “If we are stressed out and besieged with unexpressed grief, rage, or fear, then deep breathing terrifies us. So, we keep our breaths small and shallow and erratic, no matter how many times our yoga teacher tells us to breathe deeply. Like opening Pandora’s Box, we feel that if we took a deep breath, our life might fall apart. But the inverse is true. When we take a deep breath, we fall deeper into life.”

Morning Pages

Cameron recommends “morning pages,” three pages of longhand writing completed every morning. The idea is to tap into stream-of-consciousness thinking, not worrying about what you say or how you say it—so

10 Alternatives to Sitting Meditation

- hiking
- coloring
- dancing
- guided, intentional movement
- standup paddling/surfing
- music practice
- nonjudgmental awareness
- yoga
- tai chi
- swimming

Source: Sisson 2015.

there’s no obsessing over grammar, spelling or propriety. The writing doesn’t have to sound smart, contain elevated thought or be artistic in nature. Cameron advises practitioners against allowing anyone to read their pages. For at least the first 2 months, even the author shouldn’t go back to read what’s been written.

So then, what’s the point? According to Cameron, morning pages might be considered a form of “brain drain, since that is one of their main functions.” The meditation is in the act of moving the hand across the page, essentially creating a space

for a random flow of our thoughts that can air out our anxieties, frustrations and grievances. This type of active meditation,

she suggests, takes us to a space beyond our thoughts and “gives us not only the light of insight but also the power for expansive change.”

Using this method can be empowering and can ultimately translate into clients deepening their resolve, not only in relation to their training with you, but also in their everyday lives. This can unlock a strength beyond mere willpower, helping clients stay committed to personal goals—including fitness goals!

Labyrinth Walking

Another meditation modality is labyrinth walking. Pamela Underwood, MA, artist and expressive arts therapist with studios in California and Texas, suggests this practice “might be an easier point of entry for someone who is body-based but isn’t comfortable settling into a sitting meditation.” A labyrinth is a sacred geometry design, and Underwood has found examples “at churches, hospitals, public gardens and preserves.”

Walking a labyrinth is an active, moving meditation that, through its many twists and turns, “physically shifts the mind from the left brain to the right brain, eliciting a trance state, which naturally drops the mind from



Mental Toughness

If you want to help your clients meet and surpass their fitness and wellness goals, don’t overlook the power of mental toughness. NASM offers a continuing education course on this topic, focused on the key aspects of psychological strength for fitness and sport. Mental toughness leads to greater awareness and effectiveness by keeping the mind engaged, responsive, resilient and strong under pressure, leading to measurable results.

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its surface/linear thinking to deeper states of consciousness,” Underwood explains. She instructs her participants to breathe consciously throughout and to pay careful attention to each individual footfall. “Used intentionally, the labyrinth is a container that can safely hold a walking meditation or prayer. There are no dead ends; there is only one way in and one way out.”

How can you find a labyrinth to walk? Underwood recommends visiting the labyrinth-finder website sponsored by Veriditas (veriditas.org) and The Labyrinth Society (labyrinthociety.org), whether you’re looking for a location near your home or while traveling. Not only can it be fun to discover labyrinths in your neighborhood and in the places you visit, but you can even experiment with creating your own. Underwood gives the following helpful tips:

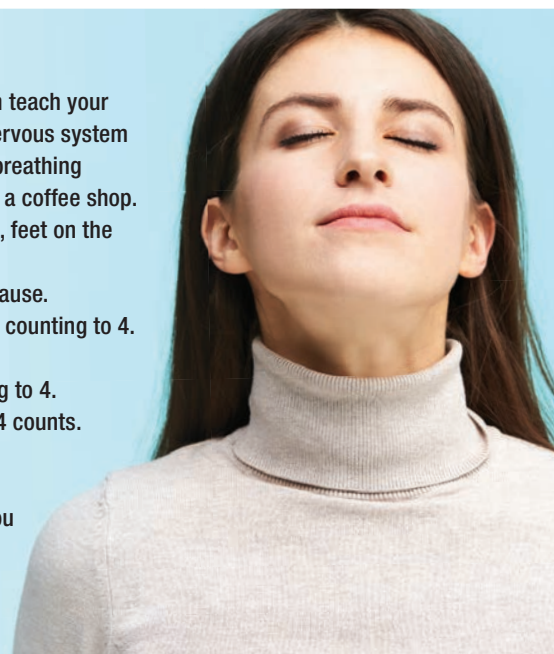
- Lay out rope or toilet paper to create a simple spiral labyrinth indoors.
- Use a stick to draw a labyrinth in the sand at the beach.
- Use chalk to draw one on a driveway or in a parking lot.
- Use contractor spray chalk to draw one on your own lawn or dirt—this will eventually wash away with rain.

To experience the benefits of this practice, it isn’t even necessary to walk a life-size labyrinth path—or to walk! “Draw a labyrinth big enough to ‘walk’ with your finger,” Underwood says. “Turn inward

Box Breathing

Here is an easy pranayama practice you can teach your clients (and try yourself) to help calm the nervous system and become more present. You can do box breathing anywhere, including in the car, at work or in a coffee shop.

- Begin seated with the back supported, feet on the floor. Close your eyes.
- Slowly exhale all air from the lungs. Pause.
- Inhale through your nose while slowly counting to 4. Feel the air inflate the lungs.
- Hold your breath while slowly counting to 4. Don’t strain; simply don’t breathe for 4 counts.
- Slowly exhale for 4 counts.
- Hold the exhalation for 4 counts.
- Repeat at least three times, or until you feel calm.



and notice your body sensations as your finger presses the surface of the drawing and follows the path into the center and back out again. Journal for 10 minutes about the experience.”

Expanding Awareness

Many people struggle with an all-or-nothing mentality that tends to shrink their world. This can be true when it comes to meditation. If people can’t find the discipline to

sit and meditate for 10 minutes or more a day, they may abandon the idea without a second frustrated thought. However, one goal of meditation is not *necessarily* to sit still but to find the potential for inner stillness in a variety of life experiences. The alternative practices presented here will help your clients reap the benefits of meditation and perhaps be so inspired by the inner peace they tap into that they find their way to a more traditional method.



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cultivated her love of stories and language with a master’s degree in creative writing. She currently lives in New Jersey where she is a writer, podcaster, and an adjunct professor of English and communications.

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Scientifically Validated Benefits of Meditation

- boosts the immune system
- decreases inflammation
- decreases stress
- helps with social connections
- enhances brain function
- supports focus and attention
- improves memory
- decreases anxiety
- supports emotional intelligence
- ignites creativity

Source: Seppala 2013.



BY TONY NUÑEZ, PHD



WHAT'S THE LATEST ON STEPS PER DAY TO SUPPORT LONGEVITY, THE BEST AEROBIC EXERCISE PROGRAMS FOR METABOLIC SYNDROME AND IMPROVING MUSCLE RESPONSE TO PROTEIN INGESTION?

DOES TAKING 10,000 STEPS PER DAY REDUCE MORTALITY RISK FOR OLDER WOMEN?

Steps and health—specifically, mortality risk—have long been associated with one another. However, the popular threshold of “10,000 steps per day” may not be the best standard for reducing the likelihood of living a shorter life.

Using accelerometer data from 16,741 women between the ages of 66 and 78, researchers looked at steps per day and walking speed while adjusting for other variables associated with mortality risk. Participants were categorized into quartiles, based on steps per day, and median daily step counts for each quartile were recorded as 2,718; 4,363; 5,905; and 8,442. The mean step count per day for all participants was 5,499.

The researchers concluded that significant reductions in mortality risk began at 3,000 steps per day and plateaued around 7,500 steps per day. More specifically, 4,400 steps per day led to a 41% reduction in mortality risk compared with lower step counts. Results regarding the effects of walking speed were not as clear, perhaps because of the small number of participants stepping at a fast rate.

REFERENCE: Lee, I-M., et al. 2019. Association of step volume and intensity with all-cause mortality in older women. *JAMA Internal Medicine*, 179 (8), 1105–12.

WHAT LEVEL OF AEROBIC EXERCISE TRAINING IS BEST FOR ADDRESSING METABOLIC SYNDROME?

The prevalence of metabolic syndrome (MetS) is rising as rates of physical inactivity increase. To be diagnosed with MetS, an individual must have three of the following four health concerns: central obesity, dyslipidemia, hypertension and hyperglycemia. Improvements in cardiorespiratory fitness (CRF) have been associated with improved markers of MetS; furthermore, research has shown that high-intensity interval training (HIIT) leads to improvements in CRF sooner than moderate-intensity continuous training (MICT).

A study conducted in Spain attempted to determine if 16 weeks of 1:1.5 HIIT (1HIIT), 4:3 HIIT (4HIIT) or MICT was best for improving CRF in 99 men and women meeting criteria for MetS, compared with a 22-person control group. Exercise durations for 1HIIT, 4HIIT and MICT were 35, 43 and 50 minutes, respectively. Along with CRF, the following variables were analyzed before, during and after the intervention: body weight, waist circumference, blood pressure, blood glucose, insulin, and lipids (triglycerides and HDL-c).

At the study's conclusion, all three training groups showed improvements in CRF and blood pressure. In addition, the 4HIIT and 1HIIT groups saw decreases in waist circumference, and the 4HIIT and MICT groups reported reduced MetS scores. Weight

loss occurred only in the 4HIIT group, and lower triglycerides only in the MICT group. The 1HIIT group did not experience a drop in MetS score; rather, blood glucose increased in this group.

Since 4HIIT and MICT were matched for energy expenditure, training volume could be more significant than intensity or exercise type in promoting health among individuals with MetS.

REFERENCE: Morales-Palomo, F., et al. 2019. Effectiveness of aerobic exercise programs for health promotion in metabolic syndrome. *Medicine & Science in Sports & Exercise*, 51 (9), 1876–83.

DOES CONSUMING LEUCINE WITH PROTEIN HELP BUILD MUSCLE?

In addition to correlating muscle loss, or sarcopenia, with aging, research has shown that muscle doesn't respond as favorably to protein consumption and physical activity in older adults compared with younger ones. As a result, building muscle requires more protein consumption. Adding leucine—a powerful amino acid—to protein is thought to improve the muscle-building process.

In a study, 24 men, ages 66–68, performed a single session of resistance training in two groups: participants who consumed 15 grams of protein post-exercise and those who consumed the same amount of protein plus 1.5 g of leucine. After a 10-minute warmup, the men performed four exercises—two lower-body (leg press, leg extension) and two upper-body (lat pulldown, chest press)—at ≥50%–80% of one-repetition maximum during working sets and during 2 or more sets with 8 or more reps (recommended for muscle hypertrophy). Before and after the training, the researchers collected blood samples and muscle biopsies to determine muscle-building rates.

Results revealed increases in insulin and leucine concentrations following protein ingestion in both groups. While some muscle-building markers improved in the group that consumed leucine along with protein, other markers did not show any difference. However, it is reasonable to suggest that adding leucine to protein may improve muscle building in older adults following resistance exercise.

REFERENCE: Holwerda, A.M., et al. 2019. Leucine coingestion augments the muscle protein synthetic response to the ingestion of 15 g of protein following resistance exercise in older men. *American Journal of Physiology, Endocrinology, and Metabolism*, 317 (3), E473–82.



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