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## ON THE COVER

- 36** LEWIS HOWES:  
TAP INTO INNER GREATNESS
- 12** EXTRA INCOME  
FOR FITNESS PROS
- 20** WALK THE WALK:  
GAIT ANALYSIS
- 23** EARN CEUs:  
FROM PEAK BONE MASS  
TO OSTEOPOROSIS

# 36



# 16



# 68

## TRAINING EDGE

- 08** INDUSTRY NEWS AND HIGHLIGHTS
- 11** LET'S GET TECHNICAL
- 12** BEYOND THE FITNESS DOORS  
BY LAWRENCE BISCONTINI, MA
- 16** FALL PREVENTION  
BY KATHY KUENZER, PhD
- 19** AF Q & A  
BY MATT BRZYCKI
- 20** WALK THIS WAY  
BY THERESA MIYASHITA, PHD
- 23** CEU: FROM PEAK BONE MASS  
TO OSTEOPOROSIS  
BY AUDRA EISZ, DPT AND  
LAURA GLADWIN, MS

## FEATURES

- 36** COVER: LEWIS HOWES  
BY LUCIA VITI
- 40** UP IN THE AIR  
BY CHERRYH CANSLER, MA
- 42** BALANCING YOUR PERSONAL LIFE  
WITH YOUR PROFESSIONAL LIFE  
BY JANICE JAICKS
- 44** GIFT GUIDE  
BY LUCIA VITI

## EXERCISE

- 46** EXERCISE UPDATE
- 48** WORK IT OUT: UPPER  
CROSSED SYNDROME  
BY KENNETH MILLER, MS
- 52** MAKE YOUR FITNESS CLASS  
"THE BEST NIGHT OUT!"  
BY SUSANNA KALNES

## HEALTH

- 54** HEALTH UPDATE
- 56** ON THE PULSE:  
YOUTH CONCUSSIONS  
BY MATT BRZYCKI
- 60** HORMONE RISKS  
AT THE GYMNASIUM  
BY YUSUF M. SALEEBY, MD

## NUTRITION

- 62** NUTRITION UPDATE
- 64** THE ATHLETE'S KITCHEN:  
FOR ATHLETES IN  
WEIGHT-SENSITIVE SPORTS  
BY NANCY CLARK, MS, RD, CSSD
- 68** TEA TIME  
BY EVANGELINE YVONNE  
SAMPLES, MS, RD, LD

## AS ALWAYS

- 04** CONNECT
- 05** PRESIDENT'S MESSAGE
- 06** WHAT'S NEW

# AMERICAN FITNESS

## EXECUTIVE TEAM

### PRESIDENT AND PUBLISHER

Andrew Wyant

### VICE PRESIDENT OF OPERATIONS

Michelle Warren

## EDITORIAL STAFF

**CONTENT STRATEGIST** Stacey Penney, MS

**MANAGING EDITOR** Kevin McGuire

**EDITOR** Esther Gwynne

**ASSISTANT EDITOR** Josh Burns

### CONTRIBUTING WRITERS

Lawrence Biscontini, MA  
Matt Brzycki  
Cherryh Cansler, MA  
Nancy Clark, MS, RD  
Ray Eldard  
Audra Eisz, DPT, ATC  
Laura Gladwin, MS  
Deborah K. Howe  
Janice Jaicks  
Susanna Kalnes  
Kathy Kuenzer, PhD  
Kenneth Miller, MS  
Nancy McCarthy  
Theresa Miyashita, PhD  
Stacey Penney, MS  
Laura Quaglio  
George Redmond, PhD  
Yusuf Saleeby, MD  
Evangeline Yvonne Samples, MS, RDN, LD  
Lucia Viti

**EXERCISE & CONTENT CONSULTANT** Meg Jordan, PhD, RN

### DESIGN

Barbara Brown, *Creative Director*  
(BBM&D Strategic Branding)  
Arrate Zavala, *Art Director*  
Jon Leslie, *Associate Art Director*  
Julia Cohat, *Designer*  
Jessica Miranda, *Designer*

### CONTRIBUTING PHOTOGRAPHER

Nick Onken



### ATHLETICS AND FITNESS ASSOCIATION OF AMERICA (AFAA)

WEBSITE: [www.afa.com](http://www.afa.com)  
EMAIL: [customerservice@afa.com](mailto:customerservice@afa.com)  
PHONE: 800.446.2322 | 602.383.1200  
MAIL: 1750 E. Northrop Blvd., Ste. 200  
Chandler, AZ 85286

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**CHANGE OF ADDRESS:** Please provide old and new address details to AFAA, ATTN: Membership, 1750 E. Northrop Blvd., Ste. 200, Chandler, AZ 85286 or call 800.446.2322.



### NATIONAL ACADEMY OF SPORTS MEDICINE (NASM)

WEBSITE: [www.nasm.org](http://www.nasm.org)  
EMAIL: [nasmcares@nasm.org](mailto:nasmcares@nasm.org)  
PHONE: 800.460.6276 | 602.383.1200  
MAIL: 1750 E. Northrop Blvd., Ste. 200  
Chandler, AZ 85286

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ANDREW WYANT, PRESIDENT

## TAKE FIVE

SOME OF OUR FAVORITE  
HIGHLIGHTS FROM  
THIS ISSUE:

- 01 LEWIS HOWES  
Finding opportunities  
for greatness (p. 36)
- 02 OSTEOPOROSIS  
Attaining and  
maintaining peak  
bone health (p. 23)
- 03 GAIT ANALYSIS  
What each step tells  
(p. 20)
- 04 BEYOND  
THE FIT DOORS  
Ways to increase your  
fit income (p. 12)
- 05 UPPER CROSSED  
SYNDROME  
Correct clients'  
"tech" posture (p. 48)

# FROM AEROBICS TO ATHLETICS

We changed our company name from the *Aerobics* and Fitness Association of America to the *Athletics* and Fitness Association of America!

If I were reading this, I might think to myself, "So what?"

Of course, AFAA is still AFAA. Today's AFAA, however, reflects our commitment to deliver the highest level of training, certification and career development—but in a wider array of disciplines than ever before.

Since 1983, AFAA has been the global leader in group fitness certification, issuing over 350,000 certifications in 73 countries. AFAA began by providing instructors and trainers with practical skills, science-based training and hands-on experience in a category that was desperately in need of leadership, direction and consistency.

Now AFAA's vision for a future in fitness includes so much more than just aerobics classes. It has broadened to encompass a wider array of activities and disciplines—many of which can be found on the pages of this issue of *American Fitness*.

For example, in "From Peak Bone Mass to Osteoporosis," Audra Eisz and Laura Gladwin give you tools to help your clients achieve their peak bone mass in their youth, maintain bone mass as they age, and recognize and mitigate the risk factors for bone loss later in life.

In "Upper Crossed Syndrome," Kenneth Miller offers a process for establishing a more ideal posture and re-educating the body. This is of particular importance for clients who remain seated for the majority of their workday, whether behind a desk or a steering wheel.

Fitness professionals looking to add extra income will want to check out "Beyond the Fitness Doors" by one of AFAA's most popular instructors. In this article, Lawrence Biscontini explores career growth opportunities that exist in the areas of guest teaching and training, providing continuing education, and writing articles, blogs and even books.

And if you're ready to take your career and life to the next level, you won't want to miss our cover story on Lewis Howes, the author of the *New York Times* bestseller *The School of Greatness: A Real-World Guide to Living Bigger, Loving Deeper, and Leaving a Legacy*. Howes is a former pro athlete who, after being sidelined by an injury, went from sleeping on his sister's couch to running a seven-figure business in just a few years. In *The School of Greatness*, he provides the framework to help you find and follow your life's passion too.

It's a new day for AFAA, and while our heritage remains firmly rooted in aerobics, today's AFAA and *American Fitness* encompass so much more.

Please reach out to me on Facebook and on LinkedIn! I would love to hear from you about your own success story and the topics you'd like to see covered in future issues.

Regards,

Andrew Wyant  
President

# WHAT'S NEW

## THE NEW AFAA IS STILL YOUR AFAA

Our initials are the same — AFAA — but we begin a new chapter in our 33-year history with a new name: the Athletics and Fitness Association of America. The switch is much more than a word swap from “Aerobics” to “Athletics,” says Andrew Wyant, president and general manager of the National Academy of Sports Medicine (NASM) and AFAA. “This [name change] demonstrates the vision AFAA has for a future in fitness that includes so many more activities than aerobics classes,” says Wyant. Our commitment? To deliver the highest level of training, certification and career development in a wider array of disciplines. We’re also excited about our logo makeover. Check it out in this magazine and on our website at [www.AFAA.com](http://www.AFAA.com).

## ZUMBA AND AFAA – A STRONG COMBINATION

AFAA has partnered with Zumba® to enhance the training and safety of Zumba instructors around the world! For those who register to become certified in the new STRONG by Zumba™ progression system, AFAA is providing a special rate on its Group Ex Instructor certification. In addition, 10% of proceeds from this special purchase will be donated to the Zumba Global Research Grant for Breast Cancer Prevention, a medical research grant working toward a preventative solution for breast cancer around the world. For more on STRONG by Zumba, visit [www.strongbyzumba.com](http://www.strongbyzumba.com).

## IRONMAN U AND NASM TRI THE DISTANCE

IRONMAN® and NASM are teaming up to expand the sport of triathlon through IRONMAN U™. This innovative education and coaching certification platform offers online instruction for coaches and endurance athletes of varying skills and abilities. NASM-CPTs will now have a unique opportunity to introduce their clients to triathlon training, allowing them to expand their fitness programs into sport-specific plans. We’re confident trainers and triathletes will benefit greatly from this exciting new partnership! More information on IRONMAN U can be found at <http://university.ironman.com>.

## NASM KNOCKS IT OUT WITH EVERLAST DISCOUNTS

Everlast®, the preeminent boxing brand since 1910, and NASM have partnered to bring current NASM-CPTs huge discounts on equipment, apparel, and bags—up to 50% off! To sign up, fill out the short form at [www.everlast.com/customer/account/create/](http://www.everlast.com/customer/account/create/) which will take you to the My Dashboard page. There, you’ll select NASM Members and enter your certification number to validate your account. It’s that easy! Everlast has also created Everlast F.I.T., a functionally integrated training program that combines traditional fight sports with functional full-body strength and conditioning, approved for NASM CEUs! Learn more at [www.everlast.com/fitcerts](http://www.everlast.com/fitcerts).



# **THE FITNESS EVENT OF THE YEAR IS ALMOST HERE**

**NASM OPTIMA 2016 CONFERENCE. THE BEST BY DESIGN.**

**OCTOBER 19-22, 2016 | THE SCOTTSDALE RESORT AT MCCORMICK RANCH, SCOTTSDALE, ARIZONA**

## **EXPAND YOUR INDUSTRY KNOWLEDGE AT THE NASM OPTIMA 2016 CONFERENCE.**

With over 60 sessions led by experts in the fitness industry, there's something for every fitness professional! Whether you have your CPT, CES, PES or Group Ex certification, you won't want to miss the fitness event of the year.

### **WHY ATTEND NASM OPTIMA 2016:**

- Earn valuable CEUs
- Learn from world-renowned speakers in personal training, sports conditioning, group fitness, nutrition and more
- Network with other fitness professionals during one of the VIP parties
- Discover the latest in products, trends, and equipment from top health and fitness brands at the Expo Hall
- Enjoy the beautiful scenery of Scottsdale, Ariz., and luxurious accommodations at the AAA Four Diamond resort, The Scottsdale Resort at McCormick Ranch

## **LEADING INDUSTRY EXPERT PRESENTERS AND SPEAKERS:**

- Dr. Brent Brookbush
- Dr. Emily Splichal
- Dr. Kimberly Davis
- Alan Aragon, MS
- And many more



**SPACE IS LIMITED. REGISTER AT [NASMOPTIMA.COM](http://NASMOPTIMA.COM)**



# WHAT IS ActivMotion TRAINING?



ActivMotion Bars contain rolling weights that shift dynamically with every movement, creating the necessity to brace the core and keep stable as the weight shifts.

ActivMotion Bars and ActivMotion Training™ are quickly becoming a staple for trainers and group instructors. According to a recent study at the University of Michigan Human Movement Innovation Lab, ActivMotion Bars activate the core and joint stability muscles nearly twice as much as common static fitness tools.

ActivMotion Training is the education taught in conjunction with ActivMotion Bars. This innovative new training system progresses clients through the development of stability strength, integrated strength and reactive core strength through the use of the unique muscle-activating stimulus of ActivMotion Bars.

Go to [www.activmotionbar.com](http://www.activmotionbar.com) for more info.

# DON'T CALL IT A STATIONARY BIKE!

BY LUCIA VITI

Cyclists take note—the future has arrived. RealRyder®, the first unstationary stationary bike, is rocking the world of indoor cycling. Inspired by a passion for cycling year-round, international co-founder Colin Irving, a semi-pro competitive cyclist, conceptualized an indoor stationary bike that replicated the experience of riding outdoors. In 2005, Irving teamed up with fitness industry experts Sean Harrington and Rich Hanson to unveil RealRyder.

RealRyder touts an articulating bicycle frame (ABF) that rotates like a gyroscope, allowing movement to occur while securely stationed on a fixed frame base. The

design affords fluid motion in the sagittal, frontal and transverse planes. Compared to a typical stationary bike, steering side-to-side or holding straight and stable provides a constant balance challenge, thus instigating upper body and core strength while increasing caloric expenditure. Riders maintain pedal cadence while controlling the bike's rotation. The resulting three-dimensional movement replicates the “real” riding experience.

RealRyders learn how to sidestep the fear of falling roadside. Riders steer a straight line or lean into turns—adjusting speed and balance—to define the sweet spot of any “lean-in” angle. The

simulation occurs as perfectly as the real thing would outdoors. Proper posture, pedal stroke, balance, proprioception and reaction time are also consistently tested and rewarded. Without question, the innovative instability captures a “real-life” crossover.

According to Irving, the RealRyder cycling program is different because the bike is different. “No other indoor bike has our Ryde,” he says. “Reveling in the sensations and awed by the sheer physics, RealRyders glide, lean and flow while playing in a virtual, multidimensional experience. Riders become one with their bike, aware and active literally to their core. Challenged by its power and speed, riders will never get bored. It's time to take the training wheels off!”

**REALRYDER.COM**



# FIND YOUR Fitt

For many individuals, eating well and moving more is easier said than done, so they simply don't do it.

Like other NASM trainers, brothers Anthony and Joe Vennare have made reversing this unfortunate trend their life's work. Having spent years operating a 12,000-square-foot gym before moving their business online, the brothers believe they may have cracked the code for helping people

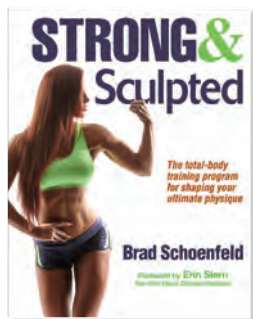
realize their health and fitness goals once and for all.

The key is connecting individuals with fun and active activities that are right in their own backyard. That's why they created Fitt, an online city-by-city guide that connects individuals with the sweat spots, healthy eats and upcoming races in their community. After a yearlong pilot in the city of Pittsburgh that attracted 2 million

users, the Vennares are expanding their platform to 25 cities over the next year. According to Anthony Vennare, Fitt uses shareable content and community events to showcase the local health and fitness scene. That way, he says, "the healthy choice becomes fun and accessible."

TO LEARN MORE ABOUT FITT, VISIT: [WWW.FITT.CO](http://WWW.FITT.CO).

## WHAT'S IN YOUR LIBRARY



New exercises are a great way to prevent trainer (and client) boredom, and this book serves up 117 of the best. **Strong & Sculpted is a simple and effective science-based program that takes into account needs and goals and then provides the**

**blueprint for achieving them.**

Written by internationally renowned fitness educator, author and trainer Brad Schoenfeld, PhD, the four-phase program starts with building an essential foundation for muscle development, then

progresses to more targeted sculpting and shaping. You'll find variations, new exercises and workouts while progressing through advanced and peak physique phases.

In addition to step-by-step exercise instruction and photos showing proper

technique, you'll find advice on reps, pacing, and optimal performance of each movement. You'll also learn to incorporate cardiorespiratory training and mind-to-muscle and visualization techniques proven to enhance results. Visit [HumanKinetics.com](http://HumanKinetics.com) to preview or order.



Just opening this book will make you want to hit the weights and start squatting, lunging and pressing! If you're looking for the chisel and the performance, this read delivers both!

**Nick Tumminello combines effective**

**approaches and exercises into a high-octane, high-efficiency system for building muscle and boosting performance.** Get

the best exercises for increasing speed, explosiveness, athleticism

and endurance as you discover performance levels and a physique that you never thought possible.

*Building Muscle and Performance* includes hundreds of exercises and 75 ready-to-use programs. Detailed photos depict

every movement as well as variations to increase or decrease difficulty. You'll also find expert advice, equipment tips and safety precautions. Get the results you've been looking for. Visit [HumanKinetics.com](http://HumanKinetics.com) to preview or order.





# LET'S GET TECHNICAL

## LYMBER FITNESS AND WELLNESS APP

Meet Lymber, a new app that gives you access to signups for a wide range of fitness classes and wellness activities—without paying a membership fee.

It works like Expedia or Hotels.com, only for exercise and wellness activities including boxing, cycling, Pilates, yoga, and Zumba, as well as spa visits and massages. That means prices can fluctuate up or down depending on real-time availability—a last-minute deal could be a steal or book in advance to ensure a spot with a favorite instructor. Lymber gives instructors and personal trainers the power to create their personal brand and build their following.

Lymber ([www.getlymber.com](http://www.getlymber.com)) is partnering with hundreds of studios on the West Coast, and plans to be in the top 20 U.S. markets by year's end.

## FUSIONETICS

Fusionetics is a Performance Healthcare System integrating cutting-edge technology with sports science and clinical application to provide evidence-based assessment and programming solutions that optimize performance, enhance recovery and decrease the risk of injury.

Developed under the leadership of Dr. Micheal Clark—creator of NASM's OPT™ model—with an elite team of sports medicine professionals and world-class athletes, Fusionetics is used by many of the world's most prominent professional and collegiate sports teams and athletes. It can be utilized by any level of professional, and is easily accessed on any computer, smartphone or tablet.

Fusionetics makes the complex simple and delivers solutions that optimize results and maximize the value of your services. To learn more, visit [www.fusionetics.com](http://www.fusionetics.com).

## FITBIT SLEEP SCHEDULE

Fitbit® has released a simple yet powerful set of sleep tools to help Fitbit users improve their sleep consistency and overall health. Sleep plays a critical role in health and well-being, from protecting against cardiovascular disease, diabetes and obesity, to boosting neurocognitive functions, mental health and longevity. Available on the Fitbit app and compatible with all Fitbit devices that track sleep, Fitbit's new Sleep Schedule feature helps guide you to get a more consistent pattern of sleep with

- personalized sleep goals to achieve your optimal amount of sleep each night
- customized bedtime and wake-up targets to establish sleep consistency
- reminders to stay on schedule, and a sleep schedule history to chart your progress

"What's great about the new Fitbit Sleep Schedule feature is that it looks at your sleep data from your Fitbit device, analyzes it for patterns and creates a personalized schedule just for you," says Tim Roberts, Executive Vice President, Interactive at Fitbit. "This is an example of how we're providing guidance using Fitbit data to help people develop healthier habits and routines, and is just the first in a series of new sleep features that we're working on to help our users improve their health through data and coaching."

## SOURCE:

FITBIT, INC. BUSINESSWIRE.COM: [WWW.BUSINESSWIRE.COM/NEWS/HOME/20160620005271/EN/](http://WWW.BUSINESSWIRE.COM/NEWS/HOME/20160620005271/EN/).



EXERCISING  
YOUR TALENTS  
INTO ADDITIONAL  
SOURCES  
OF INCOME

BY LAWRENCE BISCONTINI, MA

# Beyond THE FITNESS DOORS

For the fitness professional looking to add extra sources of income to this career path, opportunities exist that often-times go unexplored. P.L. Travers, famous for how her character Mary Poppins shares educational advice with children, wrote, “It’s amazing what we can accomplish when we learn how to look beyond our own walls.” These words bring wisdom—and financial opportunity—to today’s fitness professional. The frequently unexplored areas for both **horizontal** and **vertical** career growth include guest teaching and training, providing continuing education, volunteering and writing.

**Horizontal Career Growth** occurs when you do exactly what you currently do, but in a different place, expanding your demographic. **Vertical Career Growth** happens when you amplify your job description to include additional skills, which can occur within and beyond the demographic you currently embrace.

## HORIZONTAL CAREER GROWTH

The first—and usually least daunting—example of how to expand your career is to not alter *what* you teach or train, only *where*. Consider continuing what you do with a change of scenery. Guest teaching at a resort or spa can expose your talents to a completely different culture or demographic. In these situations, the most common contractual arrangement involves a “fitness trade” in which you (and possibly a guest) fly to a destination, offer fitness services for 2 to 3 hours per day in exchange for accommodations, meals and spa services. You’ll often find additional opportunities and work leads just from meeting people while exposing your talents to a wider audience beyond your daily grind.

Suzanne Hosley, Managing Director of Fitness Innovations Thailand (FIT) Ltd., recommends making additional income during vacations. “If you want to be traveling anyway,” she says, “consider working with resorts, spas and hotels in vacation destinations to teach and maybe even develop wellness programs and retreats, incorporating nutrition,

exercise and stress management.” Ultimately, the greater the variety of services you can offer a resort, the more likely companies will consider having you as a guest instructor or trainer. To explore such possibilities

- be sure your resumé highlights your versatility in terms of the populations you can train and the classes you can teach
- find a colleague in the spa industry who may be willing to do a trade. (They take your place while you visit theirs.)
- use [www.spafinder.com](http://www.spafinder.com) and [experienceispa.com](http://experienceispa.com) as places to begin research for resorts with well-established patterns of trade.

One final suggestion for expanding your services horizontally: ally yourself and your services with a charity that speaks to you. When you can create synergy between what you already do while amplifying the message of wellness, making the earth a better place, everyone wins. For example, offer a special event that most of your tribe would want to attend. You teach for free, but to access this event, participants have to bring canned goods, gently used winter coats, used shoes or children’s toys. Invite the supported charity to come by at the end of class for the donations. While initially it appears that you are doing your norm with the same people, a closer look reveals you are thinking beyond self-profit alone. Group pictures, comments, shares and tagging on social media will spread the message of your community outreach initiatives and, consequently, you will reap more press from a properly executed event than you could gain from your normal fitness class. Soon your tribe and the community will associate you with your philanthropic outreach.

## VERTICAL CAREER GROWTH

The following provide unique, and proven, ways to increase both your revenue and exposure as you consider adapting additional work avenues within the fitness world.





## coaching CLIENTS ONLINE

Online coaching can be a great way to expand our services beyond the four walls of our facility, reaching customers all over the world. “Most of our clients are busy people who could really use some extra help and motivation throughout the day,” says AFAA-certified instructor Noel Chelliah, founder of the DailyMuscle Transformation Bootcamp, based in Kuala Lumpur, Malaysia. “The technology available to us today makes this easier. Without having to invest in any additional subscription-based software, I teach other [trainers] how to successfully use emails, Skype and Facebook Private Groups to provide daily motivation exclusively for online coaching clients.” Chelliah adds that social media also serves as the perfect platform for you to upload workouts, recipes, articles and videos for your clients’ reference. “We creatively and economically charge for those needed services,” he says.

Exercise physiologist and fitness consultant Fabio Comana is also a proponent of online coaching. The key to

your success in this arena, he says, lies in showing your clients the value of what you have to offer. First, though, you must learn what they value, need and want. “Take the time to ask, listen, understand,” says Comana, a faculty instructor for National Academy of Sports Medicine. Find out what their barriers to adherence are. Learn what they have found helpful in the past. “Once you fully understand [clients’] challenges, their ambivalence or resistance, what they desire to do or can do—then respond,” says Comana.

Another important factor, he adds, is to “empower them outside of their exercise hour.” The perceived value of your online coaching is directly related to the amount of time it impacts clients throughout the day. Comana likens it to owning a smartphone. If you used it only 10 minutes a day, it would hold little value. But using it 4 hours a day causes it to hold tremendous value. The more you can contribute to your clients’ success throughout the day—beyond your session in the gym—the greater your perceived value will become.

### GETTING STARTED

Here are a few steps Chelliah recommends for trainers and instructors who are ready to begin online coaching:

1. **Clients apply to join the program.** Chelliah requires a minimum 3-month commitment. He also explains clearly how much support he will provide, to prevent becoming overwhelmed with hourly messages, emails and calls.
2. **After signing up, clients take “before” photos** and record their starting weight and measurements. This will serve as a baseline to measure their progress.
3. **Each day, clients email you an update** of their activities and food intake.
4. **Each week, you email each client specific suggestions.** Progress and tweak their plan based on the client’s progress and adherence.
5. **At month’s end, bill your clients.** Chelliah uses PayPal, and he offers a money-back guarantee.

## MENTORING AND COACHING

**Mentoring** occurs when one with experience, practical tips and wisdom shares this information with others. When finding a good fit with a mentoree, choose a compensation plan that provides a win-win situation. Consider these possibilities:

- a payment plan based on what the mentoree can afford without selling valuable insider information below its value.
- a trade of services for time spent together based on professional career or talents the mentoree has, such as massage, tax preparation or even meals.
- an internship program in which the mentoree shadows the mentor and assists with work tasks in exchange for the valuable hands-on experience, plus the additional live recognition the mentoree receives by being introduced and associated publicly with the mentor.

**Coaching** is another vertical growth opportunity. This can involve an individual interaction or interplay with a group or company. Understand that mentoring is relationship-oriented between the parties involved for a long-term commitment, while coaching is task oriented and performance driven, usually for a shorter term.

## FITNESS WRITING

In addition to mentoring and coaching, providing your opinion can build your tribe and be an extra income source. Chris Freytag, based in Minneapolis, works as a group fitness instructor and yoga teacher. As part of her vertical career growth, she founded Get Healthy U ([gethealthyu.com](http://gethealthyu.com)). She recommends making more money in fitness by blogging. “I started my website as a blog,” she shares, “and turned it into a content marketing site where I make money on advertising, affiliate programs and sponsored content. The key to starting a blog is to be consistent, authentic and responsive to your readers. Create connections and offer value to your community through online content.”

Ryan Halvorson works as an editor, freelance writer and group personal trainer in San Diego, and he recommends increasing your income by writing for fitness industry publications. Editors of such publications are always looking for unique ideas, concepts and stories, as well as qualified professionals to write about them. The best way to get started is to research digital or hard-copy publications that produce content that matches your expertise, and send article queries with your fresh ideas. Make sure you adhere to that publication's query process—each will likely have specific requirements—which can usually be found on its website. It's best to have some local writing experience under your belt before submitting a query, so be sure to get plenty of practice with a blog or client email newsletters. Research-based articles will meet with more success than blogs when submitted for industry professional magazines.

When preparing to write, consider these three questions to determine if your material is newsworthy:

1. Why this subject? 2. Why this author? 3. Why now?

The first question ensures that the topic is of interest. The second makes you sell yourself as an expert on the subject. The third establishes that the time when the article comes out would be ideal for this topic.

## PROVIDING CONTINUING EDUCATION

Vertical expansion can include becoming involved in continuing education. Taking your message to other professionals may at first seem a daunting task, but once you find a particular talent in the fitness industry, that talent often comes with a responsibility to share. Start by teaching your fellow instructors and trainers, honing your message. Once comfortable, you can apply to spread your educational message by offering professional continuing education credits.

Veteran instructor and multiple award-winner Keli Roberts recommends this approach if it matches your style. Roberts, winner of the 2003 IDEA Group Fitness Instructor of the Year Award, works out of Pasadena, Calif., as a personal trainer, group fitness instructor, consultant and presenter. She says, “To become a master trainer, start by presenting for one of the many companies that offer opportunities for apprenticing to become a continuing education provider, such as BOSU®, Schwinn®, Tabata Bootcamp®, Barre Above™ and TRX®, just to name a few. Once you make more of a name for yourself offering their content, you can develop and start to offer your own content [with] something special to your unique talents that you bring to the industry.”

Having an established traditional fitness career can produce satisfactory results. However, for those who wish to expand their careers, both vertical and horizontal career expansion holds promise. Consider implementing some of the shared examples that match your personality, and let us know how they work for you!

AF



**LAWRENCE BISCONTINI, MA,** is an AFAA and NASM contributing writer who has been exercising his global talents beyond the gym. As an author, mentor, public speaker, charity advocate and “edutainer,” his company FG2000 is dedicated to raising the standards of fitness around the world with a

philanthropic mission, “wellness without walls.” He has investigated—and implemented—successful horizontal and vertical methods for career expansion for over three decades, as a recent 2015 Lifetime Achievement Award from ECA will attest. Find Lawrence at [www.findLawrence.com](http://www.findLawrence.com).

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# FALL PREVENTION



Falls among older adults have become a public health crisis of near-epidemic proportions. Clearly, falls in aging adults can be life-changing, even life-threatening. But things are happening to change that. In 2008 the National Council on Aging spearheaded the first National Falls Prevention Awareness Day as part of its Falls Free® Initiative. The goal: to form a national collaborative effort to provide information to prevent falls by older adults.<sup>1</sup>

The Centers for Disease Control (CDC) reports that each year 2.5 million older people are treated in emergency rooms for fall injuries, at least 250,000 are hospitalized for hip fractures, and an aging adult dies from a fall every 20 minutes.<sup>1</sup> To put a price tag on it, by 2020 the annual direct and indirect costs of fall injuries for older Americans is expected to exceed \$60 billion.<sup>2</sup>

The CDC has taken action, too, with the STEADI (Stopping Elderly Adult Accidents, Deaths & Injuries) Initiative. STEADI gives healthcare providers tools to reduce their patients' chances of falling. These materials help "identify patients at low, moderate and high risk for a fall; identify modifiable risk factors; and offer effective interventions."<sup>3</sup>

What are the interventions that fitness professionals, such as physical therapists and trainers, can provide aging adults to reduce their chances of falling?

In her practice, Kimberley Bell, DPT and co-chair of the San Diego Fall Prevention Task Force, focuses on older adults with dizziness, vertigo, imbalance and repeated, unexplained falls. Her "multifactorial approach" can be used by PTs and trainers seeking to improve balance in their aging clients. Dr. Bell suggests that a client

- be checked by a doctor for medicines or physical conditions (including vestibular disorders) that can contribute to falling
- have vision and eyewear checked
- find ways to make their homes safer
- exercise to improve balance and leg strength.<sup>4</sup>

PTs and trainers should begin any exercise intervention with a client by making sure they have completed the first three of these directives.

## TAI CHI

Studies show that having a strong core and leg muscles and practicing weight shifts contribute to

improved balance. Tai chi is excellent for balance because it uses multiple types of weight shifts as well as standing on one leg for short periods of time. This form of exercise helps improve balance because it targets all the physical components needed to stay upright—leg strength, flexibility, range of motion and reflexes.<sup>5</sup>

Another of tai chi's benefits is emotional. "Anyone who's had a fall or who has instability has what we call a 'fear of falling,'" says Dr. Peter Wayne from the Osher Center for Integrative Medicine at Brigham and Women's Hospital and Harvard Medical School. "Ironically, a fear of falling is one of the biggest predictors of a fall. By making you firmer on your feet, tai chi takes away that fear," he says.

## PILATES

Preliminary evidence also shows that "core strength training and Pilates exercise training have a positive influence on measures of strength, balance, functional performance and falls in older adults."<sup>6</sup> Simply stated, core strength gives clients a good base for controlling movement and maintaining balance.

"As people get older, they can lose some of their balance and coordination. Pilates increases strength and flexibility in both the core and the legs, which positively affects balance. This, along with basic fitness benefits, can help them reduce the risk of falls," according to Ellie Herman, owner of several Pilates studios, and a renowned Pilates instructor and author. Although Pilates is great for improving core strength and postural alignment in seniors, many Pilates mat exercises focus on spinal flexion. This is problematic because the area at risk of fracture in seniors is between the scapulae affected when performing many of the popular abdominal forward flexion exercises.

## YOGA

Although it is not regarded to be as effective as tai chi, yoga is another balance-enhancing form of exercise that can be done in a class setting. Seniors can practice standing poses using chairs to support themselves. Appropriate poses include an alternative downward-facing dog for flexibility, the crescent lunge for balance and stability, the chair pose for leg strength, the bridge pose for core strength and stability, and the tree pose for balance and alignment.<sup>7</sup>

# EXERCISE STYLES THAT PROTECT SENIORS FROM INJURY

BY KATHY KUENZER, PhD

In the Erlangen fitness intervention, the fitness group experienced 23% fewer falls than the control group.



## OTHER EXERCISES TO HELP REDUCE FALLS

In 2015 the CDC updated its *Compendium of Effective Fall Interventions*. This guide presents “specific interventions for which there is published evidence of the intervention’s ability to reduce falls among community-dwelling older adults.”<sup>8</sup> Of the 29 interventions covered, 15 use group classes that focus on side-stepping, dancing, leg strengthening, tandem standing and walking, endurance training, quick reaction exercises, and multitarget stepping. Three of the exercise interventions are based on tai chi. The average reduction in numbers of falls among the exercise interventions was 42%. In particular, in the Erlangen fitness intervention, the fitness group experienced 23% fewer falls than the control group. Furthermore, in the Multitarget Stepping Program, the fall rate was 65% lower among people who took part.<sup>9</sup>

The CDC guide, which is available online, contains the type of provider for each intervention, the provider’s necessary training, and contact information for the principal investigator of each intervention so that fitness professionals can obtain more information.

One caveat from the American Physical Therapy Association is that “[b]alance training should be challenging and progressive in difficulty (such as reducing base of support and/or increasing movement in multiple directions).” Another recommendation is that balance training be done at least three times per week for older adults at increased risk for falls.”<sup>10</sup>

It goes without saying that keys to ongoing prevention of falls in seniors are tai chi, Pilates, and other balance-focused and core-strengthening exercise. As Dr. Bell says, “Seniors should make exercise a focus of retirement.”<sup>4</sup>

AF



**KATHY KUENZER, PhD**, is a freelance writer from Albuquerque, N.M., who is interested in physical fitness and wellness in seniors. Since retiring from a position as professor of writing and literature at the University of New Mexico, she has walked in seven half-marathons.

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BY MATT BRZYCKI

### DOES ENDURANCE TRAINING HAVE AN ADVERSE EFFECT ON ORAL HEALTH?

Researchers compared a group of 35 triathletes (average age 36.8) who did endurance training for more than 5 hours per week to a control group of 35 individuals (average age 36.1) who didn't do any endurance training. It was found that endurance athletes had a significantly greater risk of dental erosion than non-athletes. There was no significant difference between the two groups in prevalence of decayed, missing or filled teeth. Among the endurance athletes, there was a significant correlation between caries prevalence and the cumulative weekly training time.

It appears as if exercise decreases saliva flow rate. The researchers speculate that this results in a compensatory increase in saliva pH, producing an acidic environment. This may also be exacerbated by the frequent consumption of acidic sports drinks.

It's critical for endurance athletes to replace the carbohydrates that they use for energy as well as the electrolytes that they lose through sweat. However, their consumption of sports drinks, energy gels and energy bars may increase their risk of certain types of oral disease.

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### DOES GRAPE JUICE INCREASE ENDURANCE PERFORMANCE?

Grapes and grape products—such as grape juice—contain varying amounts of antioxidants. (Interestingly, red and purple grapes have more antioxidants than green.) It's reasonable to think that the protective properties of grapes and derivatives could have an ergogenic effect.

Researchers randomly assigned 28 recreational runners (average age 39.8) to two groups: One group received grape juice and the other received a beverage that had the same amount of calories, carbohydrates and volume as the grape juice. For 28 days, both groups drank the assigned beverage, before and immediately after training. On the days in which no training was done, the groups drank the assigned beverage during meals.

Those who consumed grape juice significantly improved their running time to exhaustion by nearly 13 minutes while the performance of the control group worsened by about 1 minute. Moreover, those who consumed grape juice significantly improved three of the four markers that were used to assess antioxidant activity. Those who consumed the control beverage experienced no change in those variables.

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### DOES COLD-WATER IMMERSION AFTER EXERCISE IMPROVE MUSCULAR ADAPTATIONS?

Cold-water immersion is, ironically, a hot trend in recovery strategies. It's thought that this treatment—aka cryotherapy—can reduce muscular fatigue and soreness following exercise.

In one study, 21 subjects (average age 21.3) did strength training two times a week for 12 weeks. The participants—who had at least 12 months of experience with strength training—were randomly assigned to do 10 minutes of either cryotherapy or active recovery after each session. Strength training focused on the lower body and was supervised.

The subjects who received cryotherapy were immersed up to their waists in water that was maintained at about 50°F; those who did active recovery pedaled a stationary bike at a self-selected low intensity.

Individuals who did active recovery after strength training had significantly greater increases in muscular size and strength than those who did cryotherapy.

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#### MATT BRZYCKI

is the assistant director of campus recreational fitness at Princeton University. He has more than 33 years of experience at the collegiate level and has authored, co-authored and edited 17 books.



# WALK THIS WAY

## WHAT YOUR CLIENT'S GAIT SAYS ABOUT THEIR MUSCLES

BY THERESA MIYASHITA, PhD, ATC, PES, CES

Gait analysis is a dynamic assessment that can be completed through a variety of means: when the client walks into your setting, while they are walking on a treadmill, or while they are walking to their next exercise. This evaluation can supply a plethora of information and provide insight into compensations that could be occurring regularly. While there are a variety of high-tech instruments that can be used to analyze gait (accelerometers, gyroscopes, force plates, etc.), visual and/or video gait analysis is common in a clinical setting. However, the quality of the assessment is based on the assessor's experience. The key step is knowing what to look for while conducting the analysis.

Remember that the human body is a kinetic chain; issues at one joint may manifest as a compensation at another joint. For example, altered biomechanics occurring at the hip may be noted as a compensation at the knee, ankle or foot. For this reason, it is important not to isolate an evaluation on a specific joint, but to look at the entire body. Gait compensations can occur for a number of different reasons: current/previous injury, neurological/orthopedic disorders, postural compensations, overactive/underactive musculature, footwear, etc. This article will address potential lower extremity compensations in an otherwise healthy, active client.

## CHECK ANKLE DORSIFLEXION

A decrease in ankle dorsiflexion (moving the top of the foot toward the shin) can have an impact on the entire kinetic chain. A minimum of 10° of dorsiflexion is necessary for proper walking gait mechanics.<sup>1</sup> If someone does not possess the appropriate amount of ankle dorsiflexion, the most common compensation noted on a gait analysis is an early heel-off.<sup>2</sup> This is when an individual picks up their heel too soon, leading to an increased amount of time and pressure on the forefoot.<sup>3</sup> Overactivity of the gastrocnemius and soleus, plus tightness of the Achilles tendon are commonly linked to a decrease in dorsiflexion. The decreased amount of necessary movement between the tibia and talus, due to the overactivity of the aforementioned musculature, is also linked to excessive compensatory pronation during the gait cycle.<sup>4,5</sup> While in the gait cycle, the subtalar joint should pronate during the loading response of the stance phase to adapt to the ground. The concern with a pronated foot is that it is a sloppy foot—and too much time spent in a pronated position will predispose one to a variety of pathologies including, but not limited to, an assortment of overuse injuries.<sup>3</sup>

To address the decrease in dorsiflexion observed, one can incorporate an appropriate corrective exercise strategy into the client's program design. Inhibition of the gastrocnemius complex can be achieved via self-myofascial release (SMR).<sup>6</sup> During this process it is important to "hold" over the tender spots (i.e., trigger points) until they are released, which may take 30 to 90 seconds. Following SMR, the next step is incorporating the appropriate lengthening strategies for the overactive musculature: gastrocnemius and soleus. This can be achieved via static or neuro-muscular (NM) stretching.<sup>7</sup> It is important to separate stretching strategies of the gastrocnemius and soleus via position of the knee—knee flexed to target the soleus and knee extended to target the gastrocnemius. Following the inhibition and lengthening phases, strengthening of the underactive muscles will assist in returning the over/underactive muscles to their proper length-tension relationships. The anterior tibialis and intrinsic foot muscles should be targeted via resisted dorsiflexion and inversion, marble pick-ups and towel scrunches (intrinsic foot muscles).



## LOOK FOR KNOCK-KNEES

A common knee compensation observed in a gait analysis is genu valgum—knee adduction. During the stance phase of the gait cycle, we may note the knee(s) moving inward, creating a "knock-knee" posture. This may become immediately evident as soon as your client's foot hits the ground, or it may become more pronounced when the body weight is completely over the stance leg (with the body and ground at a 90° angle). This type of posture is more evident in the pediatric, female and obese populations.<sup>8,9</sup> The long-term complications linked to genu valgum include joint cartilage de-

generation and osteoarthritis.<sup>8</sup> While there are a number of different causes for genu valgum—injury, metabolic or syndromic conditions<sup>9</sup>—we will focus on potentially over/underactive musculature. Potentially overactive muscles linked to a genu valgum posture include adductor complex, biceps femoris, vastus lateralis and the lateral gastrocnemius. These muscles should be targeted via SMR and static/NM stretching. Potentially underactive muscles that should be targeted via strengthening include gluteus medius, gluteus maximus and the vastus medialis oblique.



## OBSERVE HIP ROTATION

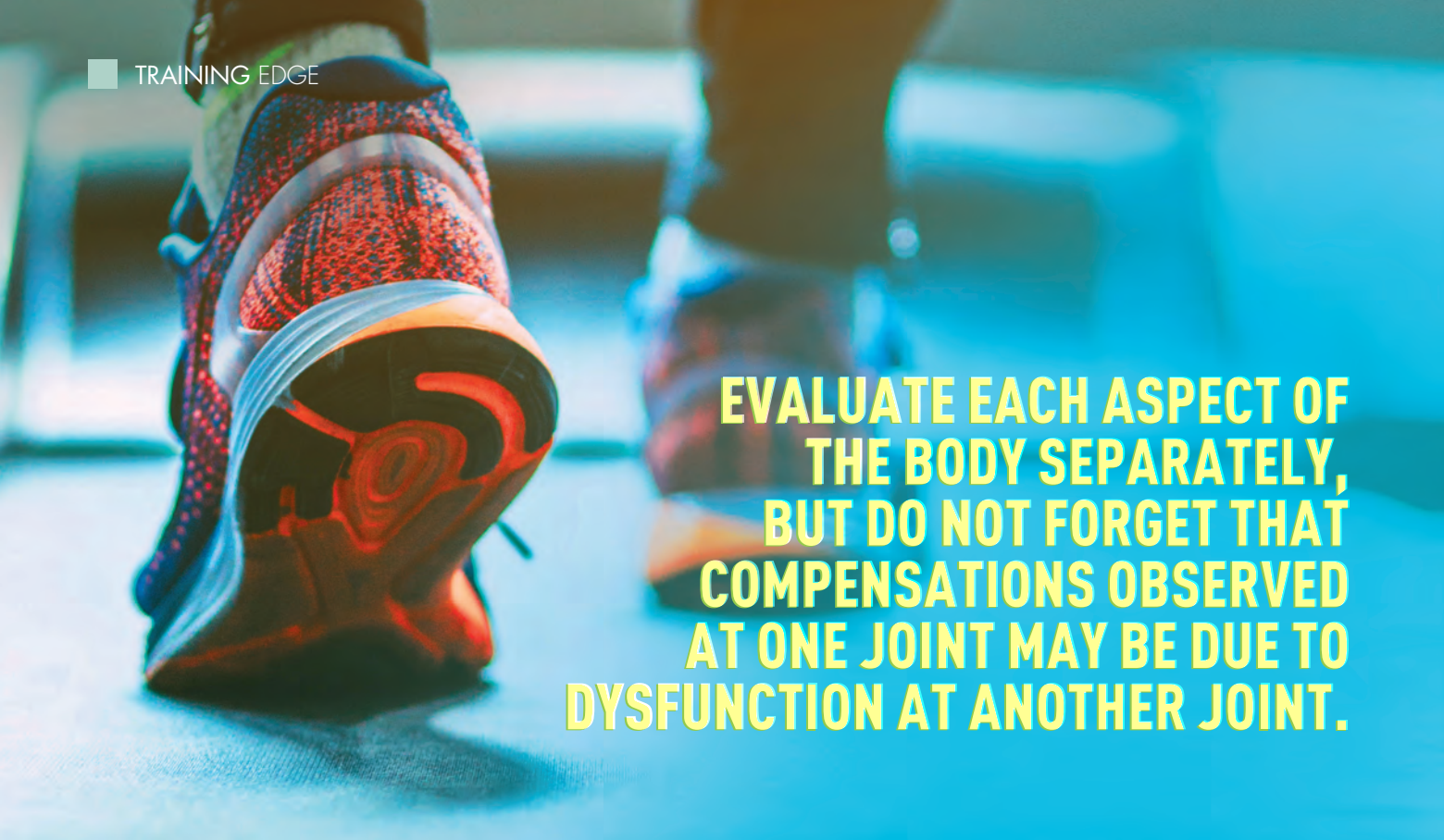
There are many compensations that can occur at the hip joint leading to altered gait mechanics. These adjustments may also be noted lower in the kinetic chain as compensations occurring at the knee, ankle or foot. For example, external rotation at the hip joint may be viewed as a toe-out gait; while an internally rotated hip may present as a toe-in gait. If these hip rotations are due to musculature, and not bony malalignment, we can address the dysfunctions through corrective exercise. Femoral external rotation may be due to overactivity of the piriformis, gluteus maximus, gluteus medius (posterior fibers), and/or the tensor fascia latae (TFL). The gluteus medius (anterior fibers) and adductor complex are likely underactive; while the opposite is probably associated with femoral internal rotation.

Our first step in addressing these muscular imbalances through a corrective exercise program is to inhibit and then lengthen the overactive muscles, followed by activation/strengthening of the underactive muscles.

Due to the sedentary lifestyles and occupations of many Americans, overactivity of the hip flexors leading to an anterior pelvic tilt is commonly viewed. During a gait analysis, we may note an increase in the lumbar curvature or the trunk leaning slightly forward. Targeting the hip flexors and the erector spinae with SMR and static/NM stretching will help to decrease the overactivity of these muscles. Strengthening the gluteus maximus and hamstring complex will assist in maintaining proper pelvic alignment.<sup>10</sup>







**EVALUATE EACH ASPECT OF THE BODY SEPARATELY, BUT DO NOT FORGET THAT COMPENSATIONS OBSERVED AT ONE JOINT MAY BE DUE TO DYSFUNCTION AT ANOTHER JOINT.**

## ASSESSMENT TIPS

While conducting a gait analysis, it is important to take your time. Make note of deviations occurring and determine which muscles may be involved. It is important to take a thorough subjective evaluation prior, so you know if any compensations can be linked to other etiologies; e.g., joint replacement surgeries, osteoarthritis, bony malalignments, etc. If the client's gait compensations are due to issues beyond over/underactive musculature, you may not be able to address them through a corrective exercise program. Should this be the case, it is important to refer to a licensed healthcare provider.

## CONCLUSION

Appropriate strength ratios between agonist and antagonist muscles can help to stabilize joints and allow for proper movement patterns. However, when these ratios are altered due to over/underactivity of the agonist/antagonist muscles, altered joint mechanics and gait compensations can occur.

Dysfunction in walking patterns can lead to several problems including joint pain, injury, decreased force output and long-term complications. Proper identification

of altered gait mechanics can allow for the development of an appropriate corrective exercise program.

For more details on corrective exercise programming and gait assessments, check out the NASM Corrective Exercise Specialization at [www.nasm.org/ces](http://www.nasm.org/ces). AF



**THERESA MIYASHITA, PhD, ATC, PES, CES,** received her undergraduate degree in sports medicine from Canisius College, Buffalo, N.Y.; her master's degree in athletic training from University of North Carolina at Chapel Hill; and her doctoral degree in education and biomedical sciences from Colorado State University.

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THIS ISSUE'S CEU CORNER AND QUIZ FEATURE IS:

## OSTEOPOROSIS

BY AUDRA EISZ, PT, DPT, OCS, ATC, AND  
LAURA GLADWIN, MS, CPT, CGF, MAFP

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## WHAT YOU SHOULD KNOW

BY AUDRA EISZ, PT, DPT, OCS, ATC, AND  
LAURA GLADWIN, MS, CPT, CGF, MAFP

# OSTEOPOR



Many clients view osteoporosis as a concern among seniors. As fitness professionals, though, we know that building peak bone mass begins early in life and ends before we reach middle age. We also know how proper exercise and nutrition can strengthen clients' skeletal system. Personal trainers work hard to design programs that help clients achieve their goals. By including bone health in our program design and nutrition discussions—even for our healthiest young clients—personal trainers can contribute to the prevention of osteoporosis on a large scale.

This article will demonstrate how to help all clients achieve peak bone mass, maintain bone mass and recognize risk factors of osteoporosis. You will also learn how to keep clients with osteoporosis safe, while helping them with bone-beneficial exercise and nutrition.

#### YOUTH: BUILDING PEAK BONE MASS

Humans have a limited amount of time to achieve peak bone mass. That window opens in puberty and closes in the mid-20s, or in some cases in the third decade of life.<sup>1, 2</sup>

“BY INCLUDING BONE HEALTH IN OUR PROGRAM DESIGN AND NUTRITION DISCUSSIONS—EVEN FOR OUR HEALTHIEST YOUNG CLIENTS—PERSONAL TRAINERS CAN CONTRIBUTE TO THE PREVENTION OF OSTEOPOROSIS ON A LARGE SCALE.”

In childhood and adolescence, the primary objective for bone health is to attain the genetic potential of peak bone mass.<sup>1</sup> To do this, we have to ensure proper nutrition and exercise to build the strongest bones possible. It's the only chance we will get.

#### YOUTH NUTRITION AND BONE HEALTH

Three main dietary nutrients contribute to optimal bone density: calcium, vitamin D and protein. In the literature, there is a concern about “milk displacement” among our youth, in which soda, sports drinks and energy drinks are replacing milk consumption.<sup>2,5,6</sup>

This contributes to childhood obesity and affects bone health. It is important for children to consume foods that supply calcium, vitamin D and protein before they consume foods and drinks that provide little nutritional value.<sup>1</sup>

**Calcium.** For children aged 9 to 18, the Recommended Dietary Allowance (RDA) for calcium is 1,300 mg per day, which is roughly four servings of dairy.<sup>1</sup> The American Academy of Pediatrics suggests that diet, not supplements, should be the primary source for calcium. This is both because supplements have a reduced bioavailability and because this promotes healthy lifelong dietary habits.<sup>2</sup> A few notes about calcium:

- **Dairy products.** Researchers have stated that dairy is the optimal source from which to obtain calcium. Milk also provides protein, vitamin D and other nutrients such as magnesium and phosphorus, all of which are important for bone health.<sup>1</sup>
- **Vegetables.** Oxalates in spinach, collard greens, rhubarb and beans reduce the bioavailability of the calcium found in vegetables. Also, it is difficult to eat a large enough quantity of vegetables to meet the RDA for calcium with vegetables alone.<sup>1</sup>
- **Soy milk.** A study looking at supplementation in soy milk shows that the calcium might have reduced bioavailability.<sup>3</sup>

**Vitamin D.** Also called calciferol, vitamin D is actually a hormone responsible for the absorption and utilization of calcium.<sup>1</sup> The RDA for vitamin D is 600 IU or 15 mcg per day for both males and females aged 1 to 70 years.<sup>4</sup> Vitamin D is found in fortified dairy products, egg yolk, fatty fish and fortified orange juice.<sup>4</sup>

Vitamin D is also synthesized by our skin when it is exposed to sunlight; in fact, that's our primary source of the nutrient. Because children are spending more time indoors and using sunscreen when outside, vitamin D deficiency in youth can be a problem.<sup>1</sup> In a recent commentary in the *Journal of the American College of Nutrition*, researchers state that moderate, unprotected sun exposure (less time than is required to burn) should be “sought rather than avoided.”<sup>8</sup>



**Protein.** This nutrient provides the amino acids to build the bone matrix. It also stimulates insulin-like growth factor 1 (IGF-1), which is an important player in bone formation.<sup>2</sup> According to the Institute of Medicine (IOM), the protein Dietary Reference Intake (DRI) for males and females aged 9 to 13 years is 0.76 g/kg/d. At ages 14 to 18 years, this decreases to 0.73 and 0.71 g/kg/d for males and females, respectively.<sup>19</sup>

## YOUTH EXERCISE AND BONE HEALTH

Research has shown that children who participate in *high-impact sports* (gymnastics, volleyball) and *odd-impact sports* (basketball, soccer) generally have higher bone mineral density (BMD) and improved bone geometry.<sup>7</sup> (See page 27.)

One randomized controlled trial, coupled with a summary from the American Academy of Pediatrics, shows that healthy children who participated in high-impact, low-frequency exercises such as jumping, hopping or skipping for 10 minutes three times per week increased BMD of the femoral neck.<sup>9,2</sup> The American Academy of Pediatrics goes on to say that weight-bearing activities (such as dancing, jogging, jumping and walking) are preferred over swimming and cycling for pediatric bone health.

There does, however, seem to be a limit as to how much activity a child's bones can take. In a study of 6,000 high school girls, those who participated in more than 8 hours of impact sports per week (such as basketball, cheerleading, gymnastics or running) were two times as likely to sustain a stress fracture.<sup>1,10</sup>

## ADULTHOOD: A BONE MAINTENANCE PLAN

From our 20s to our 60s (for most adults), our goal is to maintain the bone density we achieved in childhood and adolescence.<sup>2</sup> Here, nutrition and exercise are still key, but so is the awareness and mitigation of risk factors that can lead to a reduction in bone mass.

## ADULT NUTRITION AND BONE HEALTH

As in childhood, the three most important nutrients for bone health in adulthood are calcium, vitamin D and protein.

# EXERCISE IN THE ADOLESCENT YEARS CAN HAVE A PROFOUND EFFECT ON THE ACHIEVEMENT OF PEAK BONE MASS. THE TYPE OF EXERCISE A YOUNG PERSON DOES IS VERY IMPORTANT.

**Calcium.** Adult males aged 19 to 70 years and females aged 19 to 50 years should consume 1,000 mg of calcium per day. Females aged 51 to 70 should consume 1,200 mg of calcium daily.<sup>11</sup>

**Vitamin D.** Adult males aged 19 to 70 years and females aged 19 to 50 years should consume 600 IU (15 mcg) of vitamin D per day. It should be restated that the primary source of vitamin D is its synthesis by our skin when exposed to sunlight. This exposure should be direct (not blocked by sunscreen) and should be moderate (not lasting long enough to cause a sunburn). Vitamin D may also be consumed in food, but sources are limited to dairy, egg yolk, fatty fish, and fortified orange juice.<sup>4</sup>

**Protein.** The amino acids in protein are needed to build the bone matrix. Protein also stimulates the production of insulin-like growth factor 1 (IGF-1), which aids in bone formation.<sup>2</sup> According to the Institute of Medicine (IOM), the protein Dietary Reference Intake (DRI) for adults aged 19 years and older is 0.66 g/kg/d, except during pregnancy and lactation in women, when it rises to 0.88 g/kg/d and 1.05 g/kg/d, respectively.<sup>19</sup>

## ADULT EXERCISE AND BONE HEALTH

Research on exercise prescription for the prevention and treatment of osteoporosis in adults is not as clear as it is regarding children. To date, studies have focused mostly on postmenopausal women, even though others in the same age group are men and premenopausal women. Much of the evidence regarding adult exercise and bone health can seem contradictory if we review one study at a

time. However, if we use this information along with our experience and educated reasoning skills, we can infer that adults need to do both impact exercise and resistance training to maintain and possibly improve BMD. Some evidence points out that exercise may have site-specific (lumbar spine or femoral neck) results. Knowing this, we can choose exercises for our clients based on their needs. Here, some specific study results:

**Premenopausal women: Resistance training and high-impact, weight-bearing exercise.** One systematic review and a review of the literature from Brazil came to the following similar conclusions.<sup>12,15</sup> With regard to premenopausal women, resistance training exercise and high-impact, weight-bearing exercise—either alone or in combination—can increase BMD in the lumbar spine and femur 1 to 2%.<sup>15</sup> A randomized controlled trial with premenopausal subjects found that a 12-month, progressive high-impact training program (3x/week plus home exercises, with more than 66 sessions total) resulted in enlarged bone circumference and improved bone geometry relating to increased bone strength. The same effects were not found in participants who were less compliant (< 19 sessions).<sup>13</sup>

**Postmenopausal women: Resistance training and low-impact activities.** This group has been the focus of most research regarding exercise and osteoporosis. In a systematic review, Nikander et al. uncovered mixed results.<sup>15</sup> The general findings were that resistance training can have a positive effect on BMD (1 to 2%) at the lumbar spine, but improvements at the femur were not consistent. They

(continued on page 29)

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## BUILD YOUR BONE HEALTH VOCABULARY

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As we talk about exercise and bone health, you'll notice a few different terms being used.

**Bone mineral density (BMD)** describes the amount of calcium and other minerals that are found in an area of bone. This can be measured by dual-energy X-ray absorptiometry (DXA).

**Bone strength** refers to the geometry of the bone, and how it may absorb and withstand various forces. It includes such factors as the shape of the bone, its size, and its microarchitecture. Measurement of bone geometry is very complex, and it is usually accomplished with quantitative computed tomography or high-resolution magnetic resonance imaging.

**Conclusion:** Both BMD and bone geometry are important for strong, healthy bones. A very dense bone without good geometry will not be able to bend and absorb forces.



CHILDREN WHO PARTICIPATE IN HIGH-IMPACT SPORTS SUCH AS GYMNASTICS GENERALLY HAVE BONES THAT ARE STRONGER AND BETTER ABLE TO WITHSTAND VARIOUS FORCES.

## EXERCISE GUIDELINES FOR BONE HEALTH

Use this reference to select bone-building activities for clients in various age groups. In all cases, it is very important for the client to obtain a written clearance from their physician prior to participation. This is as vital for young adults and children (particularly

with regard to resistance training) as it is for older adults, who may have risk factors for cardiovascular disease or other conditions or medications that need to be considered.<sup>23–29</sup>

POPULATION	EXERCISE MODALITIES	GUIDELINES
Children/Young Adults	<p><b>Weight-bearing aerobic activities</b> (basketball, gymnastics, soccer, track/field)</p> <p><b>High-intensity resistance training</b> (for young adults only, supervised and with physician's clearance)</p> <p><b>Motor skills</b> (hopping, jumping, running, skipping)</p>	<ul style="list-style-type: none"> <li>• Training loads must be greater than what is experienced during everyday activities.</li> <li>• Include weight-bearing aerobic activities to improve/maintain work capacity and bone mass.</li> <li>• Emphasize activities that develop muscle strength and power (several bouts at 5–10 minutes/bout depending on activities; not one long bout).</li> <li>• Aim for 60 minutes/day total with a combination of aerobic and muscle-strengthening activities.</li> </ul>
Premenopausal Women/ Middle-Aged Men	<p><b>Weight-bearing aerobic activities</b> (basketball, group fitness classes, hiking, jumping, martial arts, running, soccer, tennis, walking)</p> <p><b>High-intensity resistance training</b> (free weights, machines)</p> <p><b>Core/stabilization activities</b></p>	<ul style="list-style-type: none"> <li>• Training loads must be greater than what is experienced during everyday activities.</li> <li>• Emphasize activities that develop strength and power focusing on hips, thighs, back and arms.</li> <li>• Weight-bearing aerobic activities to improve/maintain work capacity and bone mass (30–60 minutes; 3–5 days/week).</li> <li>• High-intensity resistance training to assist in BMD and reduce fall/fracture risk (75–85% of 1RM; 20–40 minutes; 2–3 days/week).</li> <li>• Core/stabilization activities (2–3 days/week).</li> <li>• Flexibility training (30-second hold as tolerated; 3–5 days/week but preferably 7 days/week).</li> </ul>
Non-Osteoporotic Postmenopausal Women/ Older Men	<p><b>Weight-bearing aerobic activities</b> (brisk walking, dancing, hiking, tai chi, water fitness, yoga)</p> <p><b>High-intensity resistance training</b> (machines, free weights, elastic bands)</p> <p><b>Balance exercises</b></p> <p><b>Core/stabilization activities</b></p> <p><b>Flexibility training</b></p>	<ul style="list-style-type: none"> <li>• Include exercises that focus on fall prevention and address muscle weakness, postural instability and poor functional mobility.</li> <li>• Weight-bearing aerobic activities (40–70% peak HR; 30–60 minutes; 3–5 days/week).</li> <li>• High-intensity resistance training to assist in BMD and reduce fall/fracture risk (75–85% of 1RM; 2 sets of 8–10 reps; 20–40 minutes; 2–3 days/week).</li> <li>• Balance activities (2–3 days/week)</li> <li>• Core/stabilization activities (2–3 days/week).</li> <li>• Flexibility training (30-second hold as tolerated; 3–5 days/week but preferably 7 days/week).</li> </ul>



also reported that several studies found no improvement in BMD at the lumbar spine or femur with walking or endurance training programs.

A different meta-analysis revealed that a combination of impact activities was significant for improving BMD at both the lumbar spine and femoral neck.<sup>16</sup> The study looked at *high impact* (jumping rope, vertical jumps, running more than 9 km/hr), *odd impact* (aerobics and agility activities), *low impact* (walking, stair climbing, and jogging at less than 9 km/hr or 11 min/mile) and *combined impact* ("impact activity mixed with high-magnitude joint reaction force loading through resistance training").<sup>6</sup> The authors concluded that low-impact activities (jogging, stair climbing, walking) when combined with resistance training are the most effective in maintaining BMD. Interestingly, this study found that high- and odd-impact activities did not have an effect on BMD in postmenopausal women.

**Men aged >31: Site-specific exercise.** There is little evidence specifically regarding males, exercise and osteoporosis. A meta-analysis found that site-specific exercise may help improve BMD for men older than 31 years.<sup>14</sup> Overall, more research is necessary to determine the most beneficial exercise for men and bone health.<sup>14,15</sup>

## UNDERSTANDING OSTEOPOROSIS

According to the National Osteoporosis Foundation (NOF), osteoporosis is a silent condition and the most common bone disease in humans. Its characteristics are low bone mass and a disturbed bone architecture, with deteriorated bone tissue jeopardizing bone strength and increasing fracture risk.<sup>17</sup>

**Testing.** Osteoporosis is detected by dual-energy X-ray absorptiometry (DXA). One of the results is reported as a T-score, which compares the patient's bone mineral density (BMD) to "young normal" adults of the same gender.<sup>17</sup> A T-score of less than -1.0 results in a diagnosis of osteopenia (early-stage osteoporosis)<sup>2</sup> and a T-score of less than or equal to -2.5 indicates osteoporosis.<sup>17</sup>

**Categories.** There are two categories of osteoporosis: primary and secondary. Primary osteoporosis is bone deterioration due to age and/or decreased gonad function. Secondary osteoporosis is a result of chronic illness that causes accelerated bone loss.<sup>18</sup>

**Causes.** While primary osteoporosis is related to age and hormone levels, secondary osteoporosis has several causes. Some of the most common are:

- *Endocrine and metabolic illness* such as anorexia nervosa, athletic amenorrhea, diabetes mellitus (type 1) and hyperparathyroidism.
- *Genetic disorders* including Ehlers-Danlos syndrome, Marfan syndrome and osteogenesis imperfecta.
- *Medications* such as glucocorticoids (steroids to reduce inflammation), excess thyroid hormone, methotrexate (for rheumatoid arthritis) and the blood thinner heparin (with prolonged use).
- *Nutritional problems* such as alcoholism, chronic liver disease, deficiencies of calcium and/or vitamin D, gastric operations and malabsorption syndromes.<sup>18</sup>
- *The female athlete triad*, which is described as low energy intake (with or without an eating disorder), menstrual dysfunction and low BMD. (See sidebar.)

## RECOGNIZING AT-RISK CLIENTS

Dr. Jeannette South-Paul's article in *American Family Physician* gives a comprehensive list of risk factors for osteoporosis: female gender, petite body frame, low body weight, white or Asian ancestry, sedentary lifestyle or history of immobilization, null parity, increasing age, high caffeine intake, renal disease, lifelong low calcium intake, smoking, excess alcohol use, long-term use of certain drugs, impaired calcium absorption, being postmenopausal.<sup>18</sup> It is important to know these risk factors. However, it may be more useful to create clusters and associations with your clients to effectively identify people at risk. Let's look at a few examples you may see.

## THE FEMALE ATHLETE TRIAD

The female athlete triad is among the causes of secondary osteoporosis, the type of bone loss not related to aging and the hormonal changes that accompany it. As mentioned in this article, the female athlete triad is described as low energy intake (with or without an eating disorder), menstrual dysfunction and low bone mineral density (BMD).

**Low energy intake.** This includes a spectrum of people, ranging from athletes who unintentionally consume too little to those with an eating disorder (who intentionally reduce caloric intake).<sup>1</sup> Athletes at risk for low energy intake include those who restrict food intake or certain types of food, vegetarians, and those who exercise for prolonged periods.<sup>22</sup>

**Menstrual dysfunction.** When an athlete becomes amenorrheic, she loses the bone-building effects of estrogen.<sup>21</sup>

**Low BMD.** Amenorrhea and low body weight, as from an eating disorder, result in a decline in BMD.<sup>21</sup> It can take years for BMD to recover, even after a person is in recovery from an eating disorder and has achieved a normal body weight.<sup>18</sup>

**Conclusion:** In 2007, the American College of Sports Medicine issued a position statement on the female athlete triad.<sup>22</sup> They recommend that the athlete be treated by a team that includes a physician, a registered dietitian and, for athletes with an eating disorder, a mental health practitioner.<sup>22</sup>

## BONE-BUILDING MEDICATIONS

It's good to know what drugs your client is taking, and that includes any for the prevention or treatment of osteoporosis. There are five categories of medications available for the prevention and treatment of osteoporosis: bisphosphonates, calcitonin, estrogen agonist/antagonist, hormone therapy and parathyroid hormone. These are typically used in adults, not children and adolescents, whose first line of treatment is nutrition.<sup>1</sup>

**Biphosphonates.** These medications, often prescribed for people taking glucocorticoids, include familiar brand names such as Actonel, Boniva, Fosamax and Reclast. Results vary, but these generally reduce the incidence of fracture by about 50% over a three-year period. Side effects include difficulty swallowing, gastric ulcers and visual disturbances.<sup>17</sup>

**Calcitonin** is FDA-approved for the treatment of osteoporosis in women who are at least five years postmenopausal. It is administered daily as a nasal spray, with side effects including rhinitis and nosebleeds.

**Estrogen agonist/antagonists.** Evista (raloxifene) is FDA-approved for the prevention and treatment of osteoporosis in postmenopausal women. It reduces vertebral fractures by 30% in people who have had a fracture, and by 55% in people who have not had a fracture over three years. Raloxifene also reduces the risk of invasive breast cancer, but it can increase hot flashes and raise the risk of deep vein thrombosis.<sup>17</sup>

**Hormone therapy or estrogen therapy** is FDA-approved for the prevention of osteoporosis and relief of other symptoms associated with menopause. Vertebral and hip fracture risk can be reduced by 34%, and other osteoporotic fracture risk is reduced by 23%. Since these therapies may increase the risk of cardiovascular disease, stroke and breast cancer in some people, the FDA says that they should not be the first approach to preventing osteoporosis.<sup>17</sup>

Interestingly, adolescent girls with amenorrhea due to anorexia nervosa or the female athlete triad (see sidebar on page 29) are often prescribed oral contraceptives to improve BMD; however there is no research to support this. Additionally, this treatment may start a menstrual cycle in females with anorexia, which can be incorrectly interpreted as a sign that they have achieved a healthy body weight.<sup>1</sup>

**Parathyroid hormone**, or teriparatide, is used for treating osteoporosis in men and women with high fracture risk, as well as men with primary osteoporosis. This is an anabolic (bone-building) treatment and should not be used for more than two years. After 18 months of therapy, patients with osteoporosis experienced a 65% decrease in the risk of vertebral fractures and a 53% decrease in non-vertebral fractures.<sup>17</sup>

**Client 1 is a 15-year-old female** who was recently immobilized for an ankle sprain. She is on the high school cross-country team and the swim team. Recently diagnosed with type 1 diabetes, she is managing well.

**Client 2 is a 56-year-old female** who had gastric bypass surgery and is now well enough to start exercising to maintain her new weight loss. We'll assume she is postmenopausal, and she led a very sedentary lifestyle prior to her surgery.

**Client 3 is a 70-year-old male** who is a former competitive cyclist but now has a diagnosis of atrial fibrillation (AF). (Hint: People with AF usually take a blood thinner, maybe heparin.) He still cycles but lately he has noticed that he's getting weaker and loses his balance when he's working in the garden.

All of these clients appear healthy, energetic and ready for a workout. In recognizing that these people are at risk for osteoporosis or osteopenia, you will want

to ask each of them to secure permission from their physician and other members of their healthcare team before you begin working with them. As an astute fitness professional, you realize your role can have a positive impact in both their fitness and bone health. The following sections will relate back to these client examples and highlight what they may experience with their doctors, as well as ways in which you can help them.<sup>17</sup>

### UNDERSTANDING THE SCREENING PROCESS

First it is important to understand what is advised in regard to screening. We'll look to the NOF for these recommendations.<sup>17</sup> Remember, **Client 2** is at risk because of her prior sedentary lifestyle and her gastric bypass surgery. **Client 3** is at risk because of his age, his background in cycling and his decreased balance.

**Clients 2 and 3** should have a DXA scan for BMD, since they fit the descrip-

tion for two of the recommendations: 1) "In women age 65 and older and men age 70 and older, recommend bone mineral density (BMD) testing" and 2) "In postmenopausal women and men age 50 to 69, recommend BMD testing when you have concern based on their risk factor profile."

**Clients 2 and 3** are thankful for your advice and see their doctors. When they return with their BMD results, **Client 2** reports she has osteopenia (early-stage osteoporosis) and **Client 3** has osteoporosis. **Client 3** has been prescribed medication to help improve his bone density. To learn what he might be taking, read "Bone-Building Medications" above.

**Client 1** is a very different matter. The first line of treatment for adolescents focuses on nutrition, not medication. What's more, your concern for her will be in helping her achieve peak bone mass, which is especially important since she is at increased risk for osteoporosis.

## DESIGNING A PROGRAM FOR CLIENTS WITH OSTEOPOROSIS

The literature has shown that the most effective exercise for improving BMD in adults is a combination of resistance training and impact or agility training.<sup>12</sup> The question is: What is safe?

**Special considerations for clients with osteoporosis.** A team of fitness and healthcare providers should develop a progressive exercise program for those diagnosed with osteoporosis due to the following:<sup>26,29</sup>

- People with osteoporosis have heightened fear and anxiety of falling.
- People with severe osteoporosis are at a higher risk of fracture in the wrists, spine, hips, thighs and ankles if performing more vigorous impact-oriented exercises.
- Neuromuscular function, such as balance, should be assessed prior to exercise.
- Assessing mobility-related fitness parameters (strength and flexibility of the upper and lower body, aerobic endurance, agility and balance) in older adults is recommended.

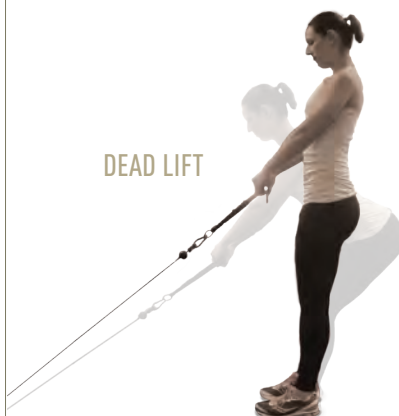
**Exercises to avoid.** For all degrees of osteoporosis, research recommends avoidance of jumping activities and all exercises that involve deep forward trunk flexion or spinal flexion (e.g., full situps, rowing, toe touches). Biomechanically speaking, spinal flexion exercises and flexion-based functional movements increase the risk of fracture in the vertebral body. Along those lines, if your client cannot properly hip-hinge during a squat and shows increased spinal versus hip flexion, they should not be doing a squat until they can maintain a neutral spinal position. With any exercise prescription, your client needs to be safe from a stability standpoint, as most hip fractures happen as a result of a fall.

**Site-specific exercises.** If your client has had a DXA scan and can tell you that his bone density is decreased in a specific site (usually the hip or lumbar spine), you may design exercises to stimulate site-specific bone formation. Some

examples for the lumbar spine include planks and spinal extension exercises.



Examples for the hip are multidirectional lunges, double- or single-leg dead lifts, or leg press.



**Aerobic exercise.** Walking can have a positive effect on BMD at the femur, but not the spine. High-impact aerobics have the greatest effect on both femur and spine BMD.

**Resistance training.** It is important to strengthen the back extensor muscles for both improved spine BMD and reduced fall risk.

### BIRD DOG ON BALL 2



One study describes that postmenopausal women will maintain or improve hip BMD if they participate in resistance training at 70 to 90% of 1RM, three to four sets of 8 to 12 repetitions, two to three times per week over the course of 1 year.<sup>20</sup>

## PUTTING IT ALL TOGETHER

Let's get back to our clients. As you recall, **Client 1** is a teenage girl, recently immobilized by an ankle sprain. Her sports are cross-country and swimming. Your role as her personal trainer must include helping her to achieve peak bone mass. You are concerned because her cross-country sport, gender, recent immobilization and diagnosis of type 1 diabetes are all risk factors for having low BMD in the future.

Nutritional discussions must include calcium, vitamin D and protein intake. Exercise design for this athlete should involve cross-training that incorporates high-impact and odd-impact activities, such as dancing and skipping. Since she is a runner, functional training exercises that target the hip and core—such as resisted or weighted chops in a split stance position—will be both beneficial and meaningful to her.



**Client 2** wishes to reverse the effects of her sedentary lifestyle, which has resulted in osteopenia. Since she has had gastric bypass surgery, you educate her regarding DRI values for calcium, vitamin D and protein, and you encourage her to speak to her GI specialist, since her absorption of these nutrients may be altered. As you evaluate her posture, you notice her head and shoulders are forward, and she has difficulty balancing on one foot.



IF YOUR CLIENT HAS DECREASED BONE DENSITY IN THE LUMBAR SPINE, DESIGN EXERCISES TO STIMULATE SITE-SPECIFIC BONE FORMATION THERE. EXAMPLES INCLUDE PLANKS AND SPINAL EXTENSION EXERCISES.

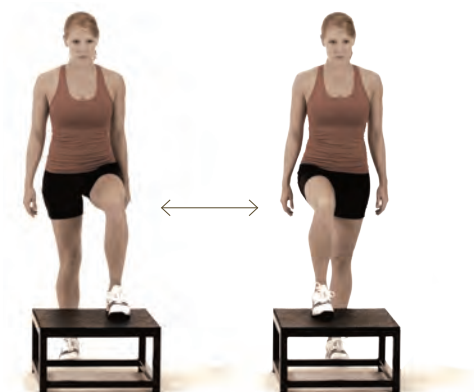


Your exercise design will include back extensor and scapular exercises to improve her posture, and hip strengthening exercises with a balance component to them.



SQUAT WITH ROW

After six weeks of working together, her posture and balance have improved so much you feel her exercise program can reach its full potential by adding in impact activities such as rapid stair stepping and jump rope.



RAPID STAIR STEP

She also joins an aerobics class at your encouragement for more odd-impact activity.

**Client 3** is an accomplished athlete, but he is a bit depressed with his diagnosis of osteoporosis. Luckily, you know that high-intensity resistance training, balance and proprioceptive exercises, as well as impact activities are safe for him as long as his spine is in neutral and he is safe from falling.



LUNGE

You start by retraining his squat mechanics and work on flexibility so he can maintain his posture. After a few weeks of this, he tells you that his balance when gardening is steadily improving. You're able to progress his program by adding planks, single-leg dead lifts and multidirectional lunges, first without resistance and in a few weeks adding a resistance component to ensure increased BMD.

## CONCLUSION

Developing our bones is a lifelong venture, but the most important building comes at a time in our lives when we tend not to think much about it. As fitness professionals we are in a position to give our clients a remarkable gift—bone health for life. So whether you're working with a high school athlete, a professional elite, or someone's dear grandmother, consider the needs of their bones. By helping them understand the consequences of their dietary and activity choices, you will impact their strength for life.

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**AUDRA EISZ, PT, DPT, OCS, ATC,** received her BA in kinesiology, emphasis in athletic training from Chapman University, and her doctorate in

physical therapy from the University of Southern California. She is Board Certified as an Orthopedic Clinical Specialist in Physical Therapy, and practices in San Diego.



**LAURA GLADWIN, MS, CPT, CGF, MAFP,** received her BS in physical education from Michigan State University, and her master's in physical

education, emphasis in exercise physiology and sports medicine, from California State University, Fullerton. She has over 35 years of experience in the fitness industry as an educator, author and master trainer.



# DEVELOPING OUR BONES IS A LIFELONG VENTURE, BUT THE MOST IMPORTANT BUILDING COMES AT A TIME IN OUR LIVES WHEN WE TEND NOT TO THINK MUCH ABOUT IT.

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# OSTEOPOROSIS: CEU QUIZ



**1. Peak bone mass is generally achieved:**

- A. in the fourth decade of life.
- B. at puberty.
- C. from puberty to the mid-20s.
- D. in adulthood.

**2. Optimal bone density can be achieved through the consumption of:**

- A. a low-carb diet, vitamin E and zinc.
- B. minerals such as boron and magnesium.
- C. large amounts of green leafy vegetables.
- D. calcium, vitamin D and protein.

**3. Bone geometry and BMD are two important factors for strong, healthy bones.**

- A. True
- B. False

**4. A very dense bone without good geometry will not be able to:**

- A. produce red blood cells.
- B. support bodily organs.
- C. bend and absorb forces.
- D. attach ligaments and tendons.

**5. There is a high likelihood that adults who perform both**

**\_\_\_\_\_ and \_\_\_\_\_ exercise(s), can maintain and possibly improve BMD.**

- A. high-impact; lap swimming
- B. impact; resistance training
- C. tai chi; yoga
- D. flexibility; core stabilization

**6. The female athlete triad falls into the \_\_\_\_\_ osteoporosis category.**

- A. primary
- B. secondary
- C. lower
- D. upper

**7. Over a three-year period, \_\_\_\_\_ generally decrease(s) the incidence of fracture by 50%.**

- A. bisphosphonates
- B. hormone therapy
- C. glucocorticoids
- D. calcitonin

**8. Bone strength refers to the \_\_\_\_\_ of the bone, and how it may absorb and withstand various forces.**

- A. curve
- B. density
- C. dimensions
- D. geometry

**9. Children who participate in sports such as \_\_\_\_\_ and \_\_\_\_\_ demonstrate higher BMD.**

- A. swimming; baseball
- B. gymnastics; soccer
- C. hiking; golf
- D. rowing; surfing

**10. Men aged 19–70 and women 19–50 should consume 1,500 mg of calcium and 800 IU of vitamin D per day to maintain bone health.**

- A. True
- B. False

**11. For bone health, the literature seems to support that exercise may have \_\_\_\_\_ results.**

- A. site-specific
- B. minimal
- C. inferior
- D. low-adverse

**12. A guideline recommendation for children is to emphasize activities that develop \_\_\_\_\_ and \_\_\_\_\_.**

- A. muscle endurance; agility.
- B. stabilization; balance.
- C. muscle strength; power.
- D. flexibility; speed.

**13. Generally, training loads must be \_\_\_\_\_ what is experienced during everyday activities to see results.**

- A. equal to
- B. greater than
- C. less than
- D. varied to

**14. For postmenopausal women and older men, it is important to incorporate exercises that focus on fall prevention.**

- A. True
- B. False

**15. A client diagnosed with osteoporosis should avoid exercises that involve:**

- A. core stabilization.
- B. using elastic tubing.
- C. deep forward trunk flexion.
- D. circuit training techniques.

To earn 2 AFAA/0.2 NASM CEUs, purchase the CEU quiz (\$35) and successfully complete it online at [www.affaa.com](http://www.affaa.com).



# LEWIS HOWES

TAP INTO INNER GREATNESS

BY LUCIA VITI    PHOTOS BY NICK ONKEN

**L**ewis Howes is a one-man empire. Cultivated from the ground up, the lifestyle entrepreneur, author, keynote speaker, high-performance coach, webinar presenter and podcast host crafted a multimillion-dollar online media company by fusing intellect, tenacity, fortitude, courage and perseverance. Recognized by the White House as one of the top 100 American entrepreneurs under 30, Howes is constant in his pursuit of excellence. Now touting his *New York Times* bestseller, *The School of Greatness: A Real-World Guide to Living Bigger, Loving Deeper, and Leaving a Legacy*, the online mogul towers among the entrepreneurial giants of today. But that wasn't always the case.

## CHASING A DREAM

Howes forged through a turbulent childhood—bullied and sidelined as an outcast—by excelling in athletics, in both football and the decathlon. Grit and guts made up for what the self-described “tall, skinny, goofy-looking kid” lacked in talent. “I wasn’t the fastest, strongest or the most talented athlete,” he says, “but I knew the coaches loved the guys who hustled. So I hustled; not just to make the team but to start, be great and [be] accepted by my peers. I worked to be better prepared than anyone else while taking advantage of every opportunity that came my way.”

The Ohio native became a two-sport all-American planning a future in professional football...until a wrist injury decimated his career. Broke and broken, the 24-year-old crashed on his sister's sofa and sank into a deep depression. Without a formal education, Howes remained uncertain about his future.

“Everything about my identity was tied to football,” he states. “I had little to support my need to survive, let alone thrive. I lacked the skills, tools, knowledge and expertise to land a job. I lacked a college degree. The economy was in decline. The timing was tough.”

Howes didn't take long to change the trajectory of his future. “I began obsessing about business, marketing and positively influencing others. I reached out to mentors who inspired me. I asked them to coach me. I knew I had to aggressively change my mindset to develop the necessary skills to become an entrepreneur.”

## GOING FOR IT

For the next two years Howes hustled “left and right, 12 to 14 hours a day” leaving no stone unturned and no prospect untapped. He rehabbed his injury by working out and taking salsa dance classes. Howes didn't just learn the nuances of venues such as LinkedIn, he became an expert at building a foundation of relationships from it. When interning—for free—at an invention company, he attended master classes in business administration. He formulized self-promoting webinars, making his first “real money” while teaching others how to maximize LinkedIn as an essential resource. The budding entrepreneur burst onto the online marketing scene as a lifestyle and business coach, while establishing his name—and ultimately his brand—through social media. “I took what worked for me and ran with it.

“I worked for seven years before launching the podcast *The School of Greatness* in 2013,” he says of his successful forum that showcases inspiring stories from “some of the most brilliant business minds, world-class athletes and influential celebrities on the planet.”

Howes attributes his expansive podcast audience to his ability to connect with people from all walks of life, not just

online marketers. Interviewees include sports, business and science aficionados. “Greats who reached the pinnacle of success by *choosing* to do so,” he adds.

## PUTTING IT ON PAPER

Howes quickly capitalized on his podcast to fulfill his dream of writing a book that would inspire millions and become a *New York Times* bestseller. “I was determined to give people the tools that my mentors gave me to learn how to embrace greatness in their everyday lives,” Howes says. “*The School of Greatness: A Real-World Guide to Living Bigger, Loving Deeper, and Leaving a Legacy* was written based on the success of my podcast. People were hungry for powerful, meaningful and purposeful.”

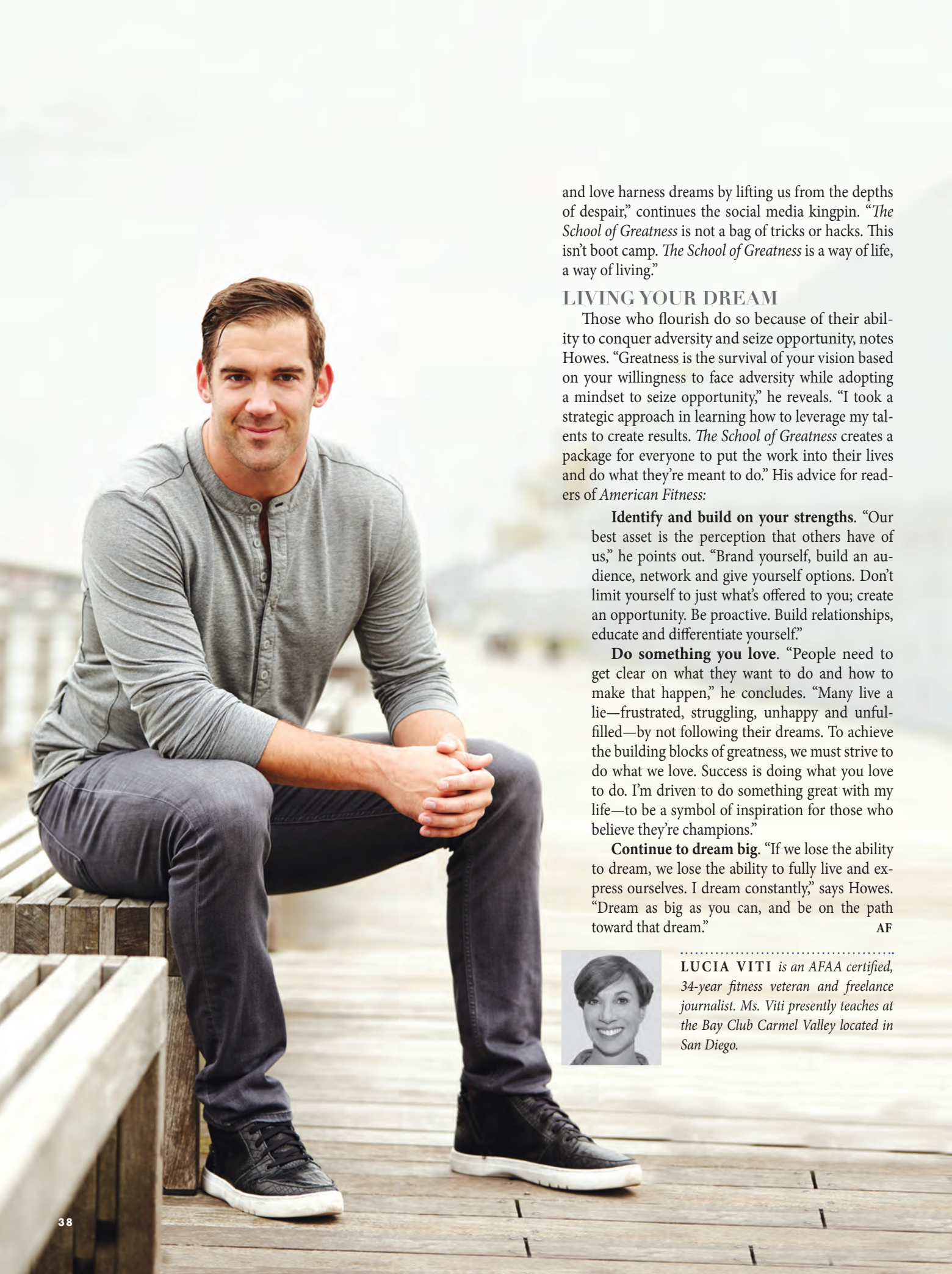
Within a year, his dream come true catapulted his podcast into the stratosphere. Howes had successfully translated his concept of hustling greatness into a thriving business that helped others. “I will do whatever I can to serve people and show them how much I care.”

According to Howes, there are a million ways to be great for those determined to utilize their gifts and talents in achieving their dreams. “Greatness doesn't come to you, you go to it,” he paraphrases from his bestseller. “Greatness moves. You slow down, it moves farther away. You stop, and it disappears over the horizon.”

*The School of Greatness* encourages everyone on their journey of discovery, regardless of their present track. “These concepts of mindfulness, joy

**“GREATNESS  
DOESN'T  
COME  
TO YOU.  
YOU GO  
TO IT.”**





and love harness dreams by lifting us from the depths of despair,” continues the social media kingpin. “*The School of Greatness* is not a bag of tricks or hacks. This isn’t boot camp. *The School of Greatness* is a way of life, a way of living.”

## LIVING YOUR DREAM

Those who flourish do so because of their ability to conquer adversity and seize opportunity, notes Howes. “Greatness is the survival of your vision based on your willingness to face adversity while adopting a mindset to seize opportunity,” he reveals. “I took a strategic approach in learning how to leverage my talents to create results. *The School of Greatness* creates a package for everyone to put the work into their lives and do what they’re meant to do.” His advice for readers of *American Fitness*:

**Identify and build on your strengths.** “Our best asset is the perception that others have of us,” he points out. “Brand yourself, build an audience, network and give yourself options. Don’t limit yourself to just what’s offered to you; create an opportunity. Be proactive. Build relationships, educate and differentiate yourself.”

**Do something you love.** “People need to get clear on what they want to do and how to make that happen,” he concludes. “Many live a lie—frustrated, struggling, unhappy and unfilled—by not following their dreams. To achieve the building blocks of greatness, we must strive to do what we love. Success is doing what you love to do. I’m driven to do something great with my life—to be a symbol of inspiration for those who believe they’re champions.”

**Continue to dream big.** “If we lose the ability to dream, we lose the ability to fully live and express ourselves. I dream constantly,” says Howes. “Dream as big as you can, and be on the path toward that dream.”

AF



**LUCIA VITI** is an AFAA certified, 34-year fitness veteran and freelance journalist. Ms. Viti presently teaches at the Bay Club Carmel Valley located in San Diego.





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CLOTHING FOR PEOPLE WHO LIVE FULLY,  
PLAY LONG, AND TRAVEL WELL.





# up in the



## MELDING ACROBATICS AND DANCE WITH FLAIR

BY CHERRYH CANSLER, MA

If the silk hammocks suspended from the ceiling during AntiGravity® AIRbarre Fitness classes remind you of huge cocoons, then the people twisted up in them may seem like caterpillars emerging as butterflies—if those butterflies were lean, muscular and dedicated to fitness. Participants raise their own body weight into the air to perform flips, lifts and a variety of yoga and dance moves to tone and strengthen their bodies.



### AIRBarre's Roots

Although professional dancer Christopher Harrison first established AntiGravity in 1991 as the AntiGravity Theater & National Aerial Performance Training Center (in Orlando, Fla.), the practice is no longer only for professionals, says Harrison, who was “discovered” when he was in high school by Oscar nominee Herbert Ross. The famous director/producer cast him in *Footloose* as the first person you see dancing in the film, and he went on to star in lead roles on Broadway, including *A Chorus Line*, *West Side Story* and *Cats*.

AntiGravity was the first contemporary American acrobatic performance company that seamlessly integrated acrobatics and dance mediums, according to Harrison, who invented a silk hammock in order to incorporate aerial arts performances. During his second year of creative exploration using his invention, Harrison discovered that if he hung the hammock at the same height as a ballet barre, he could perform his ballet and yoga exercises. “I always knew I would expand the technique to encompass my roots. AntiGravity AIRbarre is that expression, which I am grateful to share,” says Harrison. AntiGravity Managing Director Alex Schlempp, a former principal ballet dancer from the Juilliard School, was also instrumental in developing the AIRbarre fitness routine, which is now taught at CRUNCH gyms in the U.S. as well as other locations you can find at [antigravityfitness.com](http://antigravityfitness.com).

“Because of [Schlempp’s] virtuoso jumps and turns, as a choreographer I would feature him within the performance company long before he moved into management. His expertise has been invaluable in the creation of AIRbarre,” says Harrison. He also credits Lorainne Major, “a beautiful ballerina, with brilliantly creating the sequencing within the class designs.”

### Who's Up For Some Air?

Harrison says anyone can do AntiGravity Fitness, but since the

technique encompasses more than 1,000 moves, it is best for people who are active. Classes range from 60 to 90 minutes and promote the flow of endorphins, leaving participants feeling joyful, empowered and uplifted.

“To do all of the exercises, it is easiest for someone who maintains a consistent fitness regimen and has a strong core,” he points out. “During the course of the practice, participants conquer basic fears and discover a new level of self-confidence while benefiting from a solid workout.”

### Teaching AIRbarre Fitness

There are five levels of AntiGravity Fitness Instructors, but the most common is Level One, a four-day training course called AntiGravity Fundamentals 1 & 2. Once a trainer passes those, he or she may teach in a private (noncommercial) space or in an AntiGravity Fitness authorized and licensed facility.

The higher level trainings are held primarily at the company’s AG Advanced Training Institutes in New York City and in Chiang Mai, Thailand.

Although there are no “strict requirements” to become an AG Fitness Instructor, Harrison has five recommendations.

#### 1. Teaching Experience

Familiarity with teaching in a group environment is very helpful. It doesn’t matter what the discipline is as long as one knows how to take charge of a room and maintain order. Although it is very helpful, teaching experience does not always need to be related to physicality.

#### 2. Positive Outlook

The philosophy of AG Fitness is based on having fun while getting fit. “Everyone needs to leave class feeling successful and empowered. If instructors take themselves too seriously—a typical trap for boot camp-style trainers, balletmaster-style dance instructors, etc.—they are not right for this technique. Enthusiasm is key to being an AG Fitness Instructor,” he advises. “This is not a typical workout; it is playful conditioning for body/mind/spirit.”

#### 3. Training Background

Although not required, some experience in preferably two of the following disciplines helps ensure success: aerial arts, dance, fitness training, gymnastics, martial arts, skating, yoga or other artistic sports. Qualifications in fitness training, physical therapy, Pilates and yoga are also helpful.

#### 4. Knowledge of Anatomy

“Basic understanding of anatomy, kinesiology and body mechanics is very supportive to your learning and teaching approach,” says Harrison.


#### 5. Physical Fitness

AG Fitness requires instructors who maintain a consistent fitness regimen and have a strong core. “It does not require that one is without body fat,” says Harrison. “Rather it requires that they are strong enough to lift their own body weight in different planes of motion.”

AF



**CHERRYH CANSLER, MA**, is a certified personal trainer and group fitness instructor in Kansas City, Mo. She has a master’s degree in journalism and contributes to magazines, newspapers and websites all over the country.

A person is shown in a yoga pose, specifically the Bhujangasana (Upward Dog) pose, on a beach at sunset. The person is in the foreground, with their back to the camera, arms extended upwards, and legs bent. The background features a calm ocean and a sky with soft, warm colors from the setting sun. The overall mood is peaceful and serene.

# Balancing Your Personal Life *with* Your Professional Life

PLANNING. ORGANIZATION. STRATEGY.

BY JANICE JAICKS

There we were, driving down the freeway to visit a new potential venue for our fitness event. I'm discussing the room layout for workshops, and my coordinator is pumping. No, not iron...milk! Work. Life. Balance. Figuring out how to fit it all in and do it well. A common topic among friends, family and coworkers—finding a true balance between your personal life and your professional life can really be a stressful, challenging issue. It is clearly on the minds of many leaders in the fitness and health industries, as more and more books, videos and workshops try to tackle the question of what makes up a well-rounded lifestyle.

## TIPS FROM THE PROS

Successful national and international speakers make a point of trying to create balance in their lives and happily share what they've learned with the rest of us. For example, Shannon Fable, a powerful businessperson who speaks around the world, has created a group fitness management software company, consults for several well-known brands on education and operation, and writes numerous articles. Among them are blogs like "Time Manage-

ment Guidance from One Busy Mom to Another," in which shares how she keeps her sanity and stays connected to her husband and 7-year-old daughter. Same with Brett Klika, who has a 3-year-old daughter and a wife he makes top priority, in addition to being a strong force in the industry and always on the go. He says,

Sometimes I find it's necessary to evaluate time, because time is what provides the opportunity for energy. I often have to audit how I'm spending my time and decide if everything I am doing during that time is necessary for my overall mission. This may mean turning down some opportunities, it may mean cutting out or "outsourcing" things that are taking away my ability to apply energy to the things that are important to me. However, if I cut out something it's so I can apply more energy, not just time, to something more connected to my mission.

For Cody Sipe, PhD, co-founder of the Functional Aging Institute, this re-evaluation of priorities recently led him to alert business associates that he would not be checking email for a bit



because he was traveling with his son's soccer team. And while he managed to reply to important business-related texts, you can bet that he didn't slack with that soccer team either! "A strong spiritual foundation and making my family the top priority are the keys to my success. It keeps me focused and makes saying no to the nonessentials easy," explains Sipe, who has seven children with his wife Jenny. His business partner Dan Ritchie, PhD, (husband and father of five) is the first to say, "Don't plan anything during Father's Day. My wife would shoot me!" Mindy Mylrea, creator of Tabata Bootcamp, is another one who's got balance in the bag. She has always maintained a powerful bond with her three boys, in spite of frequent travel, and she is launching a new workout program, while also standing by her husband Bruce through his cancer fight.

### IT'S MORE THAN BUSINESS

If you're aiming for success in the world of fitness, health and wellness, it's time to start taking notes on the examples being set by these types of individuals. Pay attention to the ones who "have it all," and realize it's because they've figured out *how* to have it all. Planning. Organization. Strategy. Not to mention a good night's rest. These leaders don't lead without sleep, because they need the energy to be the best for their families and the best for their businesses.

What else is essential if you have a family is their support—that of your spouse or partner is particularly crucial when it comes to busy careers. It's important to discuss the things that bother your spouse. These can include working weekends, traveling, and attending social functions in which your spouse is not included. Communication is your foundation. Often, women struggle more than men with the balancing act. Though we say, "We've come a long way, baby," the reality of it is an independent, successful woman needs a partner who can handle that... which isn't always the case and which can lead to serious complications with work and at home. If there are challenges and struggles between you and your partner, it is almost impossible to give 100% to your professional life.

What's best for *my* business is flexibility. The team in our FitnessFest administration office is comprised of a six-woman team that includes a nursing mom of a 9-month-old and a mom of a 1½-year-old. Anyone who has parented knows how challenging it is, and juggling the work week on top of it all is no small accomplishment. We tend to be more flexible in our office than a more corporate environment might allow, and although we try to be consistent, it's not the end of the world if we have to alter our Monday morning meetings to accommodate a "situation."

### SO HOW CAN YOU BE MORE BALANCED?

1. Plan *everything* as far out as you can. Know when graduation is next June so you don't plan a workshop that weekend. Know when special recitals are scheduled. Know your work calendar into the next year (if not farther).
2. Keep a calendar. Maybe you prefer paper, maybe you prefer electronic, but post your calendar somewhere visible for quick access before you commit to something else. It's all about how *you* will remember.
3. When you are with your kids, your clients, your spouse, *be fully present*. Don't answer the phone, reply to texts, or let your mind wander into the next hour.
4. Maintain the support of your spouse/partner and your family by communicating your goals, your plans to reach those goals, and your schedule. Talk to them about what their goals and plans are, too, and find out what they need from you in order to accomplish them.

5. Remind yourself why you're doing what you're doing. Options for this might include making a vision board, writing inspirational notes to yourself, or committing to daily journaling.

6. Take time for yourself. Period. AF



**JANICE JAICKS** has been an aquatic fitness professional for more than 25 years. She founded FitnessFest in 1997 and has hosted over 30 conferences in the Southwest, including Phoenix's largest continuing education conference for fitness professionals. Janice has trained hundreds of new and veteran aqua instructors all over the country. She is a continuing education provider for ACE, AFAA, NASM and AEA, and is the former fitness coordinator for Fitness Forum Health Club in Chandler, Ariz. Janice has gained valuable experience as a national presenter with IDEA, SCW, IAFC and her own FitnessFest and AquaCon conferences.

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# what's on your wish list?

It's never too early to start your holiday wish list—or invest in some innovative new gear. Check out these mindful ways to treat yourself, your clients and fit-minded friends and family members.

BY LUCIA VITI

## THE PURPOSE: **RELEASE** OUR PICK: **GRID® STK FOAM ROLLER**

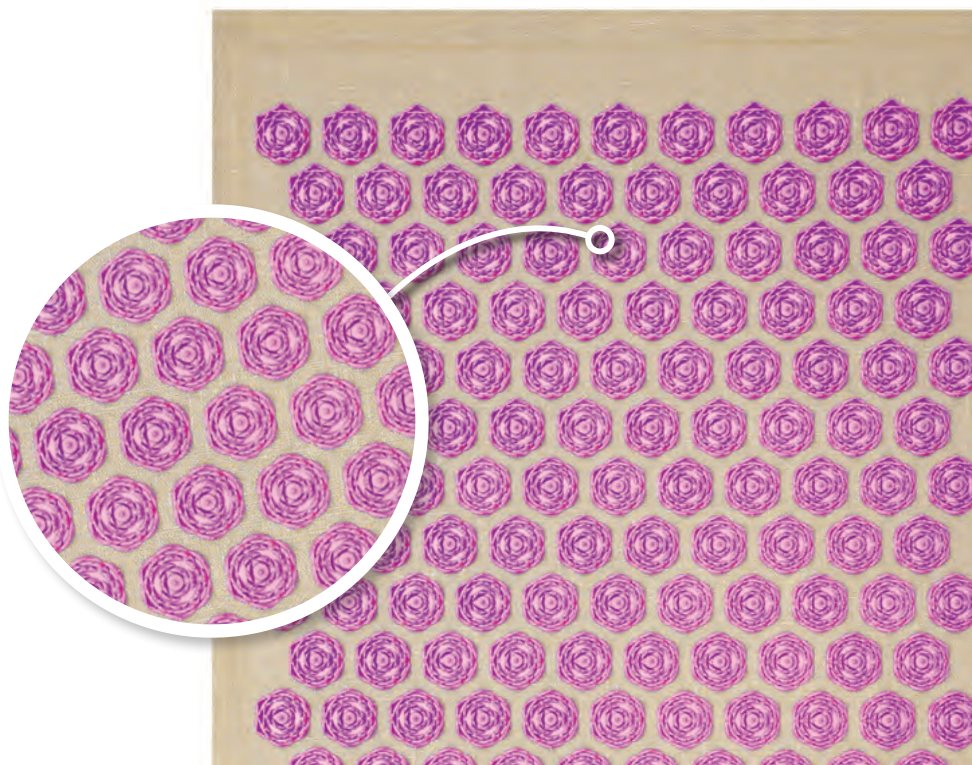
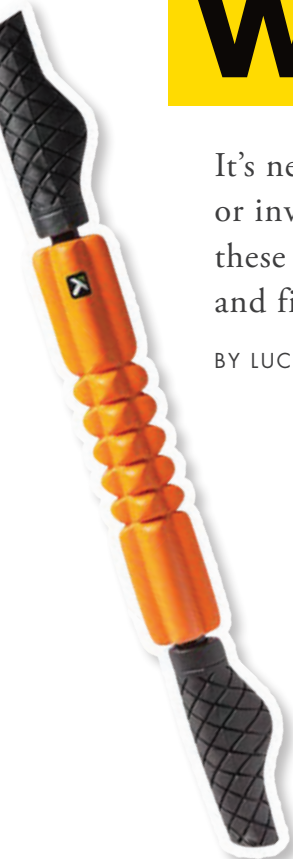
This innovative handheld foam roller from TriggerPoint is wrapped in a GRID three-dimensional surface designed to mobilize tissue and aid in recovery, and its AcuGRIP handles are structured to roll, release and relieve. Lightweight and water-resistant, the **GRID STK Foam Roller** increases circulation and provides acupressure relief. Find out more at [tptherapy.com](http://tptherapy.com).

## THE PURPOSE: **RELAXATION** OUR PICK: **PRANAMAT ECO**

Ready to recharge, sleep better or enhance your yoga sessions? The **Pranamat ECO** therapeutic massage mat is dotted with plastic lotus flowers whose points stimulate the body's autonomic nervous system. Its "bed of nails" effect reduces inflammation, muscle soreness and pain, so it's ideal for recovery after intense exercise. It's also recommended for practicing asanas to reduce headache, back pain or stress. Each mat is made from all-natural materials, so you can rest easy knowing it's eco-friendly too. Available at [pranamat.com](http://pranamat.com).

## THE PURPOSE: **RECOVERY** OUR PICK: **THE HYPERICE HYPERSPHERE**

The **Hyperice HYPERSPHERE** is a soft, travel-size, vibrating massage ball that allows you to target deep muscle tissue in difficult-to-reach areas, such as between the shoulder blades or in the hips. It's a useful tool in recovery sessions to ease muscle tension and soreness, expedite recovery and increase flexibility, but it's perfect for warm-ups too. The sphere's speed, frequency and intensity are all adjustable, and it runs on a rechargeable battery. For details, visit [ElivateFitness.com](http://ElivateFitness.com).







**THE PURPOSE: COMFORT**  
**OUR PICK: TASC**  
**PERFORMANCE APPAREL**

In 2006, tasc Performance began using fast-growing, sustainably sourced 'Moso' timber bamboo to create fabrics for its line of performance apparel. Its unique fabric-finishing process results in a lightweight, silky-soft fabric that wicks moisture *and* offers a UPF (Ultraviolet Protection Factor) of 50+. Choose from a myriad of colorful, chic, comfortable styles of **tasc Performance** apparel on [tascperformance.com](http://tascperformance.com).



**THE PURPOSE: HYDRATION**  
**OUR PICK: HYDRO FLASK®**

Now is the perfect time to upgrade your water bottle. **Hydro Flask** is committed to "saving the world from lukewarm." Its double wall, vacuum-insulated TempShield technology keeps water cold (or tea hot), while preventing the transfer of condensation (or heat) to the outside layer. Inside, a pro-grade stainless steel lining repels flavors, so today's latte won't taste like yesterday's sports drink. Check out the complete product line—available in numerous colors, styles, and sizes—at [hydroflask.com](http://hydroflask.com).

**THE PURPOSE: RESISTANCE**  
**OUR PICK: THE BEAST® BATTLE ROPE**

Stroops® promises to "bring out the beast in you" (or your clients) with this 20-foot heavy rope. Made with Slastix technology (a fabric sleeve encasing elastic tubing), **The Beast Battle Rope** "fights back," engaging the core and forcing the user to work in three planes of motion. Use it in traditional rope drills, as well as in resistance training exercises such as the chest press and standing row. Or hook it to a belt during sprints, broad jumps, lunges and rotational movements. Available for all fitness levels in resistance strengths from 47 to 150 pounds at [stroops.com](http://stroops.com).



PHYSICAL ACTIVITY HAS  
FAR REACHING VALUE  
FOR CANCER PREVENTION.



# RUNNING AWAY FROM CANCER

Here's another reason to feel great about your career: Researchers from the American Cancer Society and the National Cancer Institute (part of the National Institutes of Health) say that increasing physical activity can lower the risk of 13 types of cancer.

In a new study, these researchers looked at data on 1.44 million adults. "For years, we've had substantial evidence supporting a role for physical activity in three leading cancers: colon, breast, and endometrial cancers, which together account for nearly 1 in 4 cancers in the United States," said Alpa V. Patel, PhD, one of the study's co-authors from the American Cancer Society. "This study linking physical activity to 10 additional cancers shows...that physical activity has far reaching value for cancer prevention."

The study's lead author, Steven C. Moore, PhD, says that these results can be generalized to include a diverse group of people, including those who are obese or have a history of smoking. The median level of activity in the study was about 150 minutes of moderate- to vigorous-intensity activities per week.

#### SOURCE:

"INCREASED PHYSICAL ACTIVITY ASSOCIATED WITH LOWER RISK OF 13 TYPES OF CANCER | NATIONAL INSTITUTES OF HEALTH (NIH)." U.S. NATIONAL LIBRARY OF MEDICINE. U.S. NATIONAL LIBRARY OF MEDICINE, N.D. WEB. 21 JULY 2016.

## A NEW VENUE FOR STREET WORKOUTS

Street workouts are nothing new. The Spartans in ancient Greece performed outdoor calisthenics to build strength and speed. What *is* new? This discipline's recent resurgence in popularity around the world.

One facility with a unique approach is **Street Workout Academy** in Santa Monica, Calif. In addition to offering outdoor classes focused on calisthenics and functional training, this company also brings street workouts into a studio setting. Its program features a mix of acrobatics, break dance, calisthenics, freestyle gymnastics,

martial arts, parkour, pole fitness and yoga. Also notable is the "non-commitment" policy; clients purchase all-access punch cards rather than a membership.

By limiting group training to eight participants, Street Workout Academy strives to foster teamwork, high intensity, and motivation for clients at every fitness level. The studio also hosts workshops, private sessions and healthy lifestyle workshops. Learn more at [streetworkoutacademy.com](http://streetworkoutacademy.com).



# Heartwarming News *for Elite Athletes*

Research shows that endurance exercise for a prolonged time does, in fact, result in structural changes to the heart—in particular the enlargement of the right ventricle. The general consensus has been that these changes are a healthy adaptation of the heart muscle, but only recently did a study finally put to rest the concerns about possible long-term effects.

The potential heart hazards of endurance exercise have been deliberated by the medical community for over a century—and by the media whenever an elite athlete dies of a sudden cardiac event. This study, by a team of cardiologists and sports medicine physicians from Saarland University in Germany,

compared the hearts of 33 elite athletes to the hearts of men with a similar profile (age, weight and size) but no participation in endurance exercise. The group of athletes included former Olympians, as well as previous Ironman participants and champions, all of whom have been training at an elite level for about 30 years and still continue to train for an average of about 17 hours a week. The Saarland investigators were able to confirm that the hearts of these athletes were, as expected, significantly larger and stronger than those of members of the control group. “But we found no evidence of lasting damage, pathological enlargement or functional impairment of either the right or left ventricle in the athletes

who had been doing long-term intensive elite-level endurance exercise,” says Philipp Bohm, MD, co-author of the study.

## SOURCE:

“IS ENDURANCE TRAINING BAD FOR YOU?” EUREKALERT! N.P., N.D. WEB. 21 JULY 2016.



**HITTING A PLATEAU IN STRENGTH TRAINING?** THE SOLUTION MIGHT LIE IN ACCENTUATED ECCENTRIC LOADING (AEL). THIS METHOD IS BASED ON THE PRINCIPLE OF REPETITIVE MUSCLE CONTRACTIONS APPLYING A GREATER EXTERNAL LOAD DURING THE MUSCLE'S LENGTHENING (THE ECCENTRIC PHASE OF THE LIFT) THAN IN THE SHORTENING (THE CONCENTRIC PHASE).

To determine the effects of AEL, scientists separated 28 strength training experienced males into three groups. Two were exposed to supervision, motivation, greater loading intensities, immediate post-training protein consumption and assistance at concentric failure. One of these groups used AEL and the other used isoinertial training, in which the same weight is used in both the eccentric and concentric phase. The third group continued their normal routine. After five weeks, the AEL group displayed a remarkable increase of force production, work capacity, muscle activation and resistance.

“This is no magic pill that will suddenly create huge differences over systematic hard work, smart periodization and nutrition,” notes the study's lead author, Simon Walker, PhD, from the Department of Biology of Physical Activity at University of Jyväskylä, Finland. “But [AEL] can give a boost or kick-start to overcoming a plateau in strength and muscle mass development.”

## SOURCE:

“OVERCOME STRENGTH-TRAINING PLATEAU WITH ACCENTUATED ECCENTRIC LOADING.” EUREKALERT! N.P., N.D. WEB. 21 JULY 2016.



**BEAT YOUR  
PLATEAU  
WITH  
AEL**

# UPPER CROSSED SYNDROME

## IDENTIFYING AND APPLYING MOVEMENT STRATEGIES FOR IMPROVED POSTURE

BY KENNETH MILLER, MS

If you're like the millions of people who use electronic tools such as a cell phone, tablet, laptop or desk computer, you've probably spent hours upon hours looking at the screen with your head jutted forward. Other situations that might have you holding your head forward of your shoulders include reading books, significant time behind the steering wheel or watching TV. Whatever the cause, the migration of your head to this forward position can ultimately lead to overactive muscles and a complementing set of underactive muscles. This postural distortion pattern, known as upper crossed syndrome (UCS), can result in imbalances of muscle tone or timing, often leading to poor movement patterns, and in this tech heavy society, increased stress on the head, neck and shoulder joints.

Poor posture at any level may lead to muscle imbalances. This can have a trickle-down effect into the rest of the body, not just in the local areas of the neck and shoulders. An associated sequence of muscle imbalances in the hip region, referred to as lower crossed syndrome, can oftentimes be observed in conjunction with upper crossed syndrome. When looking for long-term success in relieving UCS, identifying and addressing postural issues that could exist elsewhere in the body will also be needed. This total-body approach will relieve tensions through the entire kinetic chain, while also enhancing desired results.

### STEP 1

#### INHIBIT/SELF-MYOFASCIAL RELEASE OVERACTIVE MUSCLES

Upper Trapezius,  
Levator Scapulae, SCM



*Hold pressure on tender spots for 30 seconds.*

### STEP 2

#### LENGTHEN/STATIC STRETCH

**Upper Trapezius**  
Tuck chin and slowly draw left ear to left shoulder.

**Levator Scapulae**  
Continue by rotating chin downward until a slight stretch is felt on the right side.

**SCM**  
Same as above, except rotate chin upward.



*Perform the sequence on both sides, holding each stretch position for 20–30 seconds.*



## CROSSED AND COUNTERCROSSED

The “crossed” in upper crossed syndrome refers to the crossing pattern of the overactive muscles with the countercrossing of the underactive muscles. When viewed from the side, an X pattern can be drawn for these two sets of muscles. The overactive muscles form a diagonal pattern from the posterior neck with the upper trapezius and levators down and across to the anterior neck and shoulder with the sternocleidomastoid (SCM) and pectoralis major. The other side of the X now depicts

the underactive muscles, with the deep cervical flexors down toward the mid/lower trapezius, rhomboids and serratus anterior. As we continually assume the seated, forward head postures driven by electronic devices or poor exercise selection and technique, this X pattern of muscle imbalances will increase.

### IDENTIFY IMBALANCES

When working with clients or performing your own workout routine, attaining and maintaining ideal posture is paramount to a safe and effective program. In

order to address postural or movement imbalances, the less-than-ideal posture has to be identified and a corrective exercise strategy developed. This corrective program can have two applications. First, it can serve as a stand-alone phase of training that will help the client achieve better postural control and endurance. Second, it can be applied as the movement preparation for a workout. In the first application, the client may be in a post-rehabilitation situation and need a program that incorporates flexibility with local and integrated strengthening. The sec-

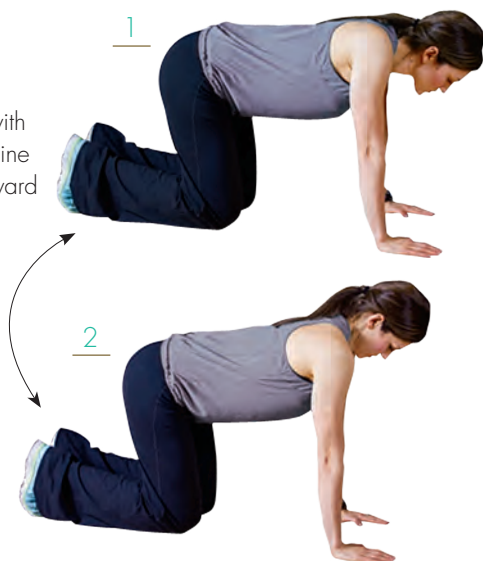
## STEP 3

### ACTIVATE/STRENGTHEN

*Hold each for 2 seconds.  
Repeat 10–15 times, 1–2 sets.*

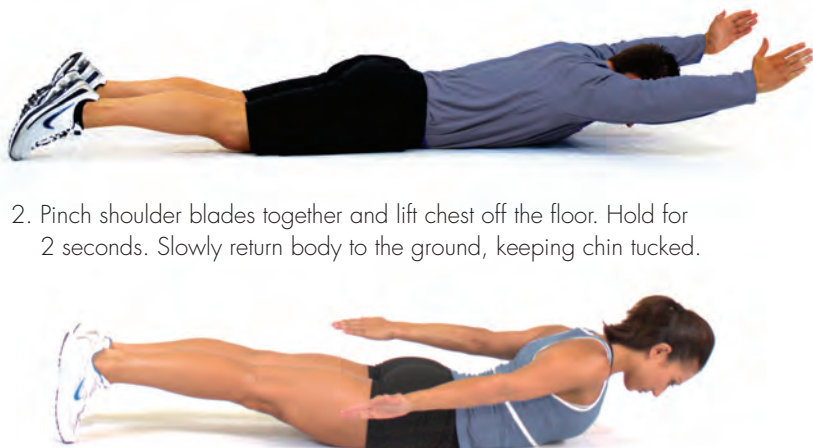
#### Chin Tucks

1. Get on hands and knees with back straight and head in line with spine. Extend chin toward the floor.
2. Scoop chin down toward chest as far as possible (like nodding “yes”). Keeping chin close to body, slide back into the starting position.



#### Floor Cobra

1. Lie on the floor, arms at side of body (or with arms in front of body in a “Superman” position), palms facing toward ground.
2. Pinch shoulder blades together and lift chest off the floor. Hold for 2 seconds. Slowly return body to the ground, keeping chin tucked.



## UPPER CROSSED

Assessment results (upper body compensation observations only)

#### Overhead Squat (OHS)

- Head: Forward
- Arms: Elbows fall to side, elbows flex

#### Pushing (Standing Cable Chest Press)

- Head: Forward
- Shoulders: Elevated

#### Pulling (Standing Cable Row)

- Head: forward
- Shoulders: Elevated

#### Possible Overactive Muscles

- Sternocleidomastoid (SCM), Levator Scapulae, Upper Trapezius

#### Possible Underactive Muscles

- Deep Cervical Flexors, Lower Trapezius

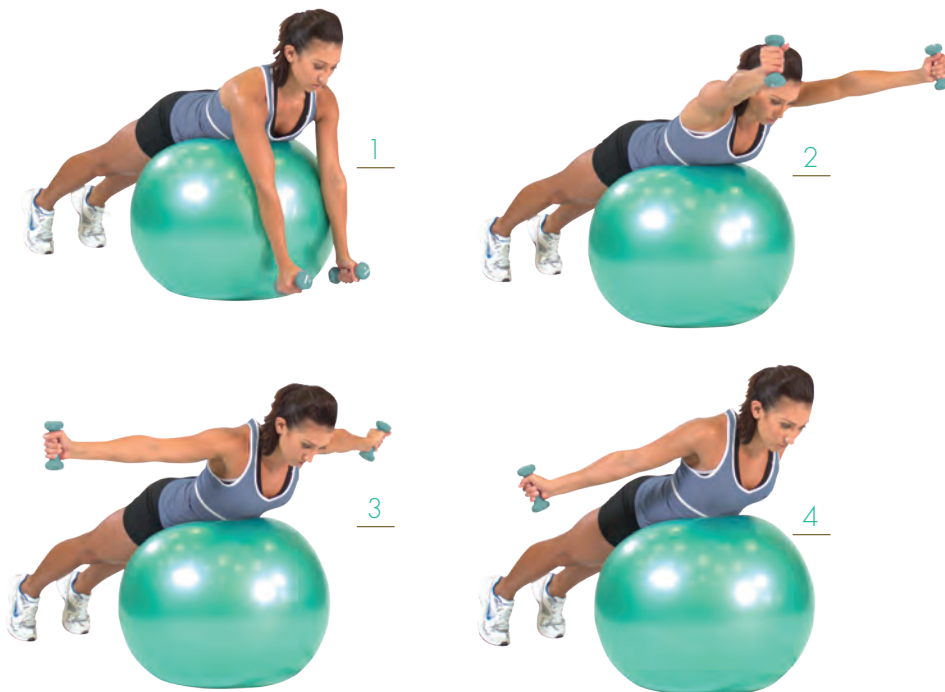


## STEP 4

### INTEGRATE

#### Ball Combination

1. Lie with abdomen on a stability ball, keeping feet pointed down and legs straight. Hold a dumbbell in each hand.
2. Lift chest off the ball, keeping back and neck in proper alignment. Extend arms in front of body. Squeeze glutes and lift arms, keeping thumbs up and pinching shoulder blades back and down (scaption).
3. Move arms straight out to side with thumbs up (abduction).
4. Move arms to the side of the body with thumbs up, retract and depress shoulder blades (cobra).



Hold briefly at each location, then return arms to extended position in front of body (position 2). Repeat 10–15 times, for 1–2 sets.

ond application will most likely be for the client looking to move better and improve coordination before applying speed and increased force during their workout session.

The first step to improving any postural distortion pattern is being able to identify the condition. Upper crossed syndrome can be observed from different vantage points with different motions. Some basic assessments that can be implemented to identify distortion patterns are gait observations, overhead squat, pushing and pulling motions, and static posture analysis. With any postural assessment—static, dynamic or transitional—UCS can be observed by watching head position relative to the shoulders, and the arms and shoulder blades relative to the ribs.

By using the landmarks of the ears, shoulders and the glenohumeral (GH) joint, a static posture assessment can identify UCS by observing if the ears are forward of the shoulder. You might even say that this person is slouching.

Observations for the shoulder blade and the upper arm can be seen from the front and side views with the overhead squat, pushing (pushup) and pulling (cable row)

motions. The movements to note during an overhead squat assessment for possible signs of UCS include

- Arms falling forward or to side during the descent
- Head migrating forward
- Elevating or elevated shoulder blades
- Elbows flexed or challenged in keeping arms straight

Depending on the extent of the distortion, someone may exhibit one or more of the listed movement compensations. Combining the different assessments can also confirm findings. This helps in prioritizing the corrective strategies during program design.

#### CORRECTIVE EXERCISE

Assessment(s) results can now be applied to design a program. The four-step corrective exercise process for upper crossed syndrome starts by inhibiting or relaxing the possible overactive muscles, lengthening these same muscles, followed by strengthening the complementing underactive muscles, and finally, integrating the involved muscles to reestablish functional synergistic movement patterns.

This four-step process of establishing a more ideal posture is a way of re-educating the body and in this case, the upper body. Generally this corrective strategy works to increase range of motion, to improve local strength, and to assist the client in learning to better control the newfound range of motion. Added benefits also include a possible decrease in pain and discomfort, stability of the upper torso, and improved physical performance in training and in play. When the head, neck and shoulders are functioning better, so does the rest of the body.

For more information on the NASM Corrective Exercise approach, visit [www.nasm.org/ces](http://www.nasm.org/ces). AF



**KENNETH MILLER, MS,** is an NASM-CES, PES, and a Pain Free Movement Specialist. As a personal trainer and strength coach in the San Francisco / Oakland Bay area, he works

with athletes and clients to improve and increase their capacity for movement for different sports and recreational activities.





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*Make Your Fitness Class*

# THE BEST NIGHT OUT

SEVEN  
PRACTICAL  
TIPS

BY SUSANNA KALNES

To some people, there is nothing more to a fitness class than what meets the eye. There's an instructor in the room, perhaps some equipment and, of course, a lot of physical activity. Individuals attend classes looking to improve their health, get a nice sweat going and leave feeling accomplished. That's the gym to them—nothing more, nothing less. “Meh!”

But what if I told you that there are little things—simple things—that you can do as an instructor to take your fitness class from “meh” to “marvelous”? What if I told you that, by following these seven steps, you can create an atmosphere that not only draws your students into classes more regularly (growing your numbers), but also makes your class *the best night out of the week*?

The tips I've outlined here are effective tactics I've learned from fitness celebrities, seasoned instructors, and many of my own students! Perhaps you practice some of them already...but are you doing them all?



## TIP 1: DRESS TO IMPRESS

I remember the first time I met fitness celebrity Chalene Johnson. I was out in Los Angeles auditioning to be an Area Promotions Director for her company, Powder Blue Productions (she's now Master Trainer for Beachbody®). When she walked into the room to teach a fitness class, I was absolutely blown away by her appearance. Her outfit was trendy, her hair was curled and sprayed to perfection, and her makeup was impeccable. I remember thinking, "But you are just going to get sweaty!"

Over time, I realized just how important that encounter was. Johnson explained to me that "fitness instructor" is a profession just like any other. You'd want to look your very best for any job, and fitness is no exception. Her appearance itself made her class start to feel like something bigger than just an hour-long workout. It started to feel like a party.

## TIP 2: BE THE FIRST TO ARRIVE

We've all heard the expression, "fashionably late," right? But being fashionably late to a celebration is not so fashionable *if you are the one hosting the party!* All too often, I see fitness instructors roll into the gym 2 minutes before their class begins. They show up looking unorganized, frantic and highly unprofessional.

Don't be *that* instructor! When you are teaching a fitness class, be the first person to arrive and the first person to step foot in the room. Be prepared, be present, and use the extra time before class to tackle tips three and four.

## TIP 3: TIDY UP

If you were hosting a party at your house, you'd spend some time cleaning and making sure that your home looked as welcoming as possible. The same thing goes if you are teaching a fitness class.

I recently had the opportunity to present at a big fitness conference. When I arrived 30 minutes prior to my class, I noticed all sorts of clutter. Towels, old water bottles and flyers were all over the floor. The space looked messy. So I threw out the trash and eliminated all of the extra towels. A half-hour later when people entered the room, they walked into a very clean and welcoming space, not a messy one. And that's exactly the impression I wanted to give.

## TIP 4: GET THE TUNES GOING

There is absolutely nothing worse than walking into a fitness room to the sound of complete silence. Am I right? *I can almost hear the crickets chirping now...*

Let me be frank. When your students enter a silent room, it's awkward! It's awkward for them, it's awkward for you, and it's even awkward for the crickets—*ha!* When a fitness room is quiet, people tend to keep to themselves, look down at their phones, or sit in the corner being antisocial.

When you turn on some great music before they arrive, they walk into a lively room that encourages socializing. Think of it this way: If you were hosting a "night out" with your friends, you'd turn on the music first...so why not do so for your class?

## TIP 5: WELCOME YOUR GUESTS AT THE DOOR

This tip is quite simple but also very important. At a social gathering in your own home, would you greet your guests at the door or leave the door open and meet them in the living room? My guess is the former. So why not do the same in your group exercise class?

When you arrive at the gym, after tidying up and turning on the music, stand by the door and wait for your guests so you can welcome them as they arrive. What a great way to make people feel welcome and comfortable.

## TIP 6: MEET NEW FRIENDS

You might have all the friends in the world, but there's always room for more, especially at the gym. When hosting a party, you'd introduce yourself to new guests. It's no different in your fitness class. Get to know your students sooner rather than later!

Once you get to know your students, they feel more accountable to show up. They plan to be there because they know that if they skip a class, you will want to know where they were and why they missed. So when you get to know your students, you end up being a friend and a fitness accountability partner at the same time. And to me, those are the best kind of friends!

## TIP 7: MAKE INTRODUCTIONS

This is perhaps the most important of the seven tips you will read today. Once you know your students, start introducing them to each other. Find common interests, discuss current events, or talk about whatever you'd like to get them to connect with one another. Once your students become friends with each other, they will view your class as more than just a workout. It will become a social hour with their friends. And that, in a nutshell, is how you turn your class into *the best night out of the week!*

AF



**SUSANNA KALNES** is a freelance writer, TV host, motivational speaker, and AFAA certified fitness instructor based in Chicago. For more information, visit [www.susannakalnes.com](http://www.susannakalnes.com).

*Sources of vitamin K include animal-based foods, broccoli, Brussels sprouts, cabbage, cauliflower, cereals, eggs, fish, green leaf lettuce, kale, liver and spinach.*

# Getting to Know Vitamin K

*Recent research has turned newfound attention to vitamin K and its possible impact on bone health.*



For years vitamin K (which includes K-1, K-2 and K-3) gathered dust on store shelves. Primarily known for helping individuals with hemophilia or for preventing unnecessary bleeding in newborns, dose ranges generally focused on its ability to promote blood clotting.

Research concerning the attributes of vitamin K's possible impact on bone health reveals it may be as biologically important as vitamin D. While many nutrients have a profound influence on calcium absorption and metabolism, many present-day researchers contend that vitamin K-2 is as important as calcium's comrade vitamin D-3 to sustain bone health. Vitamin D-3 (cholecalciferol), naturally produced via sunlight by the skin, makes sure calcium and phosphorus are properly absorbed and that blood levels remain stabilized. It's also needed for

bone growth and remodeling by osteoblast and osteoclast.

Vitamin K is produced naturally by gut bacteria or a healthy microflora environment. A fat-soluble nutrient, it requires adequate amounts of dietary fat in the gut in order to be absorbed.

The adequate intake (AI) for men and women is 120 and 90 mcg/day, respectively, according to the National Academy of Sciences.

They note that no adverse effect has been reported for individuals consuming higher amounts of vitamin K, however, a Tolerable Upper Intake Level (UL) has not been established. Researchers at Linus Pauling Institute at Oregon State suggest taking a multivitamin/mineral supplement and eating at least 1 cup of dark green leafy vegetables daily because the dietary intake required for optimal function of vitamin K-dependent proteins is unknown.

—George L. Redmon, PhD, ND

## TEACH YOUR CHILDREN WELL—ABOUT PHYSICAL ACTIVITY AND BONE DENSITY

Exercise, particularly high-impact activity, builds stronger bones in children, even for those who carry genetic variants that predispose them to bone weakness, according to research from Children's Hospital of Philadelphia (CHOP).

"While we have known for decades that physical activity during childhood builds up bone and confers lifelong benefits, we did not know whether the effects of activity depend on genetic risks for bone fragility,"

said first author Jonathan A. Mitchell, PhD, a pediatric researcher and Instructor of Pediatrics at CHOP. "This study was the first to show that physical activity can counteract the negative effects of genetic variants that associate with bone fragility in childhood."

The researchers analyzed a cohort of 918 children and adolescents, from 5 to 19 years of age, all of European ancestry, who were part of a larger study group, the Bone Mineral

Density in Childhood Study. That national study enrolled healthy U.S. children at five sites starting in 2002, with follow-up visits lasting until 2009. Participants estimated their amount and type of physical activity during childhood. The study team also measured the participants' bone density and genotyped their DNA for over 60 genetic variants known to be associated with bone density.

Across the board, children had higher bone density scores if they

had greater levels of physical activity. This even applied to those with a higher genetic risk for bone fragility.

Based on their current results, the researchers advise that pediatricians, schools and child activity programs should encourage high-impact physical activity for children who are generally healthy.

### SOURCE:

WWW.EUREKALERT.ORG/PUB\_RELEASES/2016-06/CHOP-PAB061316.PHP (ACCESSED JUN 29, 2016).



# athletes: you, too, can sleep better

Now, a new Finnish study clearly shows for the first time that systematic examination, counseling and individual treatment planning can improve the quality of athletes' sleep.


The study, carried out by the University of Eastern Finland and Oivauni Sleep Clinic, analyzed the sleep of 107 professional athletes through a survey. All participants were provided with general guidance on how to sleep better. The study found that 1 in 4 athletes suffered from significant sleeping disorders such as trouble falling asleep, snoring or sleep-disordered breathing. In addition, most slept too little and 1 in 6 used sleeping pills that helped them to fall asleep or stay asleep on a

regular basis during the playing season. Those athletes who, on the basis of the survey, suffered the most serious sleeping disorders were referred to a sleep specialist for examination and an individualized treatment plan.

The study showed that general sleeping-related guidance, further examinations when necessary and a personalized treatment plan significantly improved athletes' sleep, potentially improving athletic performance.

#### SOURCE:

[WWW.EUREKALERT.ORG/PUB\\_RELEASES/2016-05/UOEF-SDC051916.PHP](http://WWW.EUREKALERT.ORG/PUB_RELEASES/2016-05/UOEF-SDC051916.PHP) (ACCESSED JUN 30, 2016).



Sleeping disorders are so widespread that they are considered a common chronic disease, and professional athletes suffer from sleep disorders more frequently than generally thought.

A PRIMER  
FOR FITNESS  
PROFESSIONALS

BY MATT BRZYCKI



# YOUTH CONCUSSION



Public awareness of sport-related concussions is on the rise, largely due to high-profile injuries. Often overlooked is the enormous potential children and adolescents have for sustaining a concussion.

## HOW PREVALENT IS IT?

A systematic review and meta-analysis examined concussion incidences in 12 youth sports. Researchers found the sports with the highest frequency rates per 1,000 “athlete exposures” were football, ice hockey and rugby; the lowest were baseball, cheerleading and volleyball. (“Athlete exposure” is one practice session or competition.) And the occurrence of youth concussions may be rising.

According to the National High School Sports-Related Injury Surveillance Study, an estimated 1.5 million injuries occurred at the scholastic level in nine sports during the 2005–06 academic year, including about 133,000 concussions, representing 9% of all injuries. Compare this with the 2014–15 academic year in which about 1.2 million injuries were reported in those sports, including more than 292,000 concussions, representing 24.5% of all injuries. Even if greater recognition and better reporting contributed to the rising numbers, youth sports concussions are a major concern.

## WHAT IS A CONCUSSION?

A concussion is a traumatic injury of the brain that temporarily disrupts its normal function. Concussions happen when the brain is moved violently inside the skull as a result of a direct blow or jolt to the head, face or neck, or to another part of the body where the impulsive force is transmitted to the head. The movement can stretch and damage brain cells. Because the brains of younger athletes are still developing, they are more susceptible to concussions than older athletes.

## CONCUSSION SYMPTOMS

An athlete needn’t be “knocked out” to have been concussed. One study reported this was a symptom in only 4.6% of concussions. Nevertheless, loss of consciousness—however briefly—is considered a life-threatening condition that requires immediate medical attention.

Headache and dizziness are the most frequently reported concussion symptoms. Others include inability to focus, blurry or

double vision, sensitivity to light/noise, nausea/vomiting, drowsiness, insomnia, depression, and irritability. Additional signs include balance or coordination problems, trouble walking in a straight line, slurred or incoherent speech, a vacant stare, numbness or tingling in the extremities, tinnitus, neck pain, seizures, sluggishness or grogginess, as well as general fatigue and weakness.

It’s important to note concussion symptoms can be immediate or develop over time. A majority of sport-related concussions resolve within 7 to 10 days. However, symptoms can last several months or more. This is especially true for younger athletes whose brains may need longer to heal. The best concussion treatment is rest.

## WHAT CAN YOU DO?

There are four areas in which fitness professionals can contribute: education, evaluation, preparation and rehabilitation.

### EDUCATION

Fitness professionals can be an excellent resource for educating athletes, parents and coaches. Teachers and other school personnel should also be “in the know.” Concussed athletes may require academic accommodations including shortened school days, periodic rest breaks and excused assignments/exams.

At a minimum, educational programs should provide information on the signs and symptoms of a concussion, potential short- and long-term risks, and the latest research.

### EVALUATION

Administer baseline testing so comparisons can be made between an athlete’s pre- and post-concussive health. Especially meaningful are balance, coordination and reaction time tests. Any history of concussions should also be documented, noting symptom details and duration.

### PREPARATION

The best preventive measure to safeguard athletes against concussions is to encourage them to strengthen their necks. In the event of an impact involving another athlete or the ground, having added neck strength and stability can reduce impulsive forces transmitted to the head. This may decrease brain movement inside the skull.

# CONCUSSIONS

**IMPORTANT:** While recovering from a concussion, the brain is vulnerable to repeat injury. Returning to play before the brain is fully healed can put an athlete at risk for another concussion from a second impact. Though rare, this “second impact syndrome” could have dire consequences, including death or disability. This is one reason that it is crucial that parents gain an understanding of concussions, possible signs and symptoms, and what to do if they suspect one has occurred.



In one study, athletic trainers at 51 high schools measured the head and neck circumference, neck length and neck strength of 6,704 athletes who played basketball, lacrosse and soccer during two different academic years. The study revealed that concussed athletes had a smaller neck circumference, a small neck coupled with a larger head (ratio), and less neck strength than uninjured athletes. In sum, neck strength was a significant predictor of concussion. And consider this: For every 1 pound increase in neck strength, there was a 5% decrease in the odds of sustaining a concussion.

This is compelling evidence for performing neck-strengthening exercises, including neck flexion and neck extension. Both can be performed with manual (partner) resistance. If a neck machine is available, neck lateral flexion should also be done for both sides.

## REHABILITATION

Across the U.S. laws have been enacted addressing concussions. Most states require that before returning to action, an athlete must be examined and cleared by a licensed healthcare professional. Nonetheless, fitness professionals can also be involved in the rehabilitative process.

Getting an athlete ready to “return to play” should be a multistep protocol with activities gradually progressing to greater levels of intensity and exertion. Once an athlete is symptom-free, they should follow these five steps (adapted from the 2012 Consensus Statement on Concussion in Sport):

1. Do low-intensity aerobic training (walking, swimming or stationary bike).
2. Increase the intensity and duration of aerobic training. Do simple sport-specific, noncontact drills.
3. Progress to more complex, sport-specific, noncontact drills. Do low-intensity strength training (light weight, stopping short of muscular fatigue).
4. Participate in regular practices and activities.
5. Return to play.

Athletes can proceed to the next step as long as they continue to be without symptoms. Duration of the steps varies. In general, each step should take about 24 hours, but younger athletes may take more time to progress than older ones.

## BOTTOM LINE

Nothing can be done to prevent all youth concussions. But fitness professionals can be an integral part of reducing the risk through education, evaluation, preparation and rehabilitation. AF



**MATT BRZYCKI** is the Assistant Director of Campus Recreation, Fitness at Princeton University. He has more than 33 years of experience in strength and fitness at the collegiate level and has authored, co-authored and edited 17 books.

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# HORMONE RISKS

*at the gymnasium*

UNINTENTIONAL SECONDHAND  
EXPOSURE MAY BE HARMFUL.

BY YUSUF M. SALEEBY, MD

The use of testosterone replacement therapy (TRT) is a hot topic right now. Just observe the myriad of commercials on TV for topical testosterone gel. In the past half-decade the FDA approval of several forms of topically applied testosterone hormone for men facing andropause has escalated, and its use has tripled in the last 10 years. There was a small hiccup in the upward trend of prescribing due to an unfavorable article in a peer-reviewed journal a couple of years ago. The negative press about the harms of TRT was redacted by numerous follow-up publications attesting to the general safety of low-dose testosterone therapy. Again, a steady rise in prescriptions for TRT followed.

## IN THE GYM

The popularity of TRT has led to a not-so-obvious concern: exposure at the gymnasium. Some trainers encourage “dosing up” before a workout. The result, Topical TRT does not have the time needed for appropriate absorption and will leave remnants on equipment by direct contact and perspiration. Topical gels and creams require up to 6 hours for adequate absorption. If there are remnants on hands that touch exercise equipment, then what remains (even



after wiping down) is present to expose whomever follows and uses the equipment. Sweat can also “wash off” the topical hormones and leave significant residue on equipment. This is not limited to men using testosterone. Women using topical estrogens and progesterone are also placing gym-goers at risk for exposure.

## SAFETY SUGGESTIONS

There are several considerations for use of topical hormones. Apply only in areas that limit exposure or contact or “wipe off.” These could be areas covered by clothing or skin less likely to be uncovered at the gym. Places such as the inner thigh or upper inner arm ought to be utilized. There should be adequate time for proper absorption—6 hours is the best estimate for most gels and creams—before exercising in public. The whole notion of applying testosterone just before a workout has no bearing on performance other than providing a bit of a dopamine rush with larger doses.

When you are using gym equipment, lightly wiping it off might just spread residue around. It may be wise to clean *before* you work out on a piece of equipment as well as after. This will cover you in case the previous gym-goer did not do a good enough job. The use of solvents/disinfectant sprays and such may actually increase the absorption of residues into the skin.

Wearing workout gloves is a very good idea as they will provide a barrier for the skin of the hands (those parts of us most likely to come into contact with gym equipment). Shirts that cover the shoulders are also a smart choice. Also take a change of clothes in case yours get too wet with perspiration. Wet cloth may be a better conduit for transfer of hormone residue from equipment.

## SECONDHAND HORMONE RISKS

Those women who have a high possibility for breast cancer may be at an increased risk with environmental estrogen exposures. Men with enlarged prostates or testicular cancer could see a more rapid progression of those diseases with unintentional testosterone exposures. Women subjected to higher than physiological doses of testosterone could suffer masculinization, while men exposed to female hormones might face feminization. The reality is that the gym can be a dangerous place when it comes to hormone exposure. When we wipe down gym equipment, we are providing a sanitary process to limit exposure to infections of the skin and transmission of infectious diseases. Now we should also focus on cleaning equipment to prevent the spread of hormones applied as part of prescriptive hormone replacement therapy.

## CONCLUSION

Prevention is key in limiting exposure to unwanted sex hormones from those using prescription HRT. Be smart and avoid direct contact with equipment, sweat

and other bodily secretions that raise the potential risk. Remember to wipe down equipment and wear protective clothing at the gym. It has not been determined if the use of cleaning agents is beneficial in removal of residues, but certainly avoid skin contact with cleaning agents. These measures will lower exposure risk. For those on an HRT regimen, being considerate and careful with applications will help reduce exposure for others.

AF




**YUSUF M. SALEEBY, MD**, is medical director of Priority Health and practices preventive medicine. He has prescribed natural bioidentical hormone therapy for both men and women for almost two decades. Dr. Saleeby can be reached for comment at [ymsaleeby@gmail.com](mailto:ymsaleeby@gmail.com) or via [www.PHC365.com](http://www.PHC365.com).

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# Remember This!



Eating a meal of seafood-containing omega-3 fatty acids at least once a week may protect against age-related memory loss and thinking problems in older people, according to a team of researchers at Rush University Medical Center and Wageningen University in the Netherlands.

“This study helps show that while cognitive abilities naturally decline as part of the normal aging process, there is something that we can do to mitigate this process,” says Martha Clare Morris, ScD, a Rush nutritional epidemiologist and senior author of the paper.

The study followed 915 people (mean age 81.4 years) for an average of 5 years. Each subject received annual standardized testing for cognitive ability. Participants also completed annual food frequency questionnaires that included four seafood types: tuna sandwiches; fish sticks, fish cakes and fish sandwiches; fresh fish as a main dish; and shrimp, lobster and crab.

People who ate more seafood had reduced rates of decline in the semantic memory, (verbal information). They also demonstrated slower rates of decline in a test of perceptual speed, or the ability to quickly compare letters, objects and patterns.

## SOURCE:

[WWW.EUREKALERT.ORG/PUB\\_RELEASES/2016-05/RUMC-SOC051016.PHP](http://WWW.EUREKALERT.ORG/PUB_RELEASES/2016-05/RUMC-SOC051016.PHP)(ACCESSED JUN 3, 2016).



# Simply DELICIOUS

Simple Mills is a leading manufacturer of natural baking mixes that combine whole-food goodness with great taste and texture.

Ingredients such as almond flour and coconut sugar lower the carbohydrate count and glycemic index to help support digestive health and minimize blood sugar impact. All products are non-GMO, certified gluten-free, paleo-friendly and free of grain, soy, and artificial flavors and

fillers. Baking mixes include Artisan Bread, Banana Muffin, Pancake & Waffle, Pizza Dough and Pumpkin Muffin (a staff favorite!).

Find Simple Mills products (including the new cracker line) at Albertsons, Safeway, Hy-Vee, Mariano's, Raley's, Wegmans and Whole Foods.



Check out their complete product offerings plus recipes at [simplemills.com](http://simplemills.com).



## fall for FIGS

*Figs are an ancient food and naturally part of the healthy Mediterranean diet. Research has shown that the Mediterranean diet (one of the eating patterns recommended in the Dietary Guidelines for Americans 2015–2020) is associated with improved health and decreased risk of chronic disease.*

Further evidence indicates that consumption of about 2 cups of fruit per day is associated with a reduced risk of cardiovascular disease, including heart attack and stroke. However, the 2015 Guidelines point out that nearly 80% of the population does not eat this amount of fruit.

Why not include figs as part of *your* healthy diet? They're rich in antioxidants, calcium ( $\frac{1}{4}$  C dried = 53 mg;  $\frac{1}{2}$  C fresh = 53 mg) and potassium ( $\frac{1}{4}$  C dried = 244 mg;  $\frac{1}{2}$  C fresh = 354 mg). One quarter-cup serving also provides 6% of the recommended Daily Value of iron. A diet rich in fruits and vegetables, including fresh or dried figs, naturally increases potassium and helps lower blood pressure.

Figs provide more fiber (both soluble and insoluble) than any other common fruit or vegetable. Both fiber types are important for good health. This fruit can be a good choice for those watching their weight, since high-fiber foods provide feelings of fullness and can reduce hunger and cravings. Figs also contain prebiotics, which help support the pre-existing good bacteria in the gut, improving digestive wellness.

Snack on tasty fresh or dried figs, and try a few recipes from the California Fig Advisory Board website ([www.californiafigs.com](http://www.californiafigs.com)), including California Figgy Energy Bites found on page 67.

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UP TO **94% OF ELITE ATHLETES** WHO PARTICIPATE IN WEIGHT-SENSITIVE SPORTS REPORT DIETING AND USING **EXTREME WEIGHT-CONTROL MEASURES** TO ACHIEVE THEIR **DESIRED WEIGHT.**"



# FOR ATHLETES IN WEIGHT SENSITIVE SPORTS

## FOOD FOR THOUGHT

BY NANCY CLARK, MS, RD, CSSD

They commonly experience constipation, dizzy spells, headaches, needless fatigue and poor sleep. Symptoms of long-term undereating include anemia, constipation, electrolyte imbalance, hair loss, inability to concentrate well, insomnia, dangerously low heart rate (fewer than 40 beats per minute), mood swings, social withdrawal and stress fractures—to say nothing of poor performance. After all, you can only perform at your best if you can train at your best. You can only train at your best if you are doing a good job of fueling up before training and refueling well afterward.

Long-term food restriction easily leads to medical complications that involve not just bones, but also the whole body: brain, heart, hormones, intestines, kidneys and reproductive system. It creates psychological stress and depression. Hence, athletes who need to make weight should take the job seriously—not simply resort to starving and dehydrating their bodies pre-event.

### SO WHAT'S A WEIGHT- CONSCIOUS ATHLETE TO DO?

The best time to lose weight is during the off-season. But athletes, being human, often procrastinate until the last minute to complete this task. Here are tips to help you make weight healthfully:

- Avoid losing more than 2% of your body weight via dehydration. That's a loss of 3 pounds of sweat for a 150-pound athlete.
- Find a health professional who can monitor your body fat. If

**W**hile many athletes *yearn* to be leaner and lighter, some athletes *have* to be leaner and lighter. If you compete in a sport with weight classes (i.e., wrestling, lightweight rowing) or in a sport that is sensitive to weight (bike racing, running), you likely put pressure on yourself to achieve a weight that might defy your genetic physique. Some athletes can achieve the demanded lightness healthfully; others struggle with poor energy, lethargy and depressed mood.

It's no secret that disordered eating practices are common among weight-conscious athletes. An estimated 30 to 60% of active women and up to 19% of active men struggle with finding the right balance of food and body-fatness.<sup>1</sup> Their quest to be light easily leads to restrictive food intake, overexercising, and too little fuel to support normal body functions. In women, strict diets trigger amenorrhea (loss of regular menstrual periods). While some women seem content to get rid of that monthly hassle, they lack knowledge that amenorrhea leads to weaker bones, higher risk of stress fractures (today) and early osteoporosis (in the future). It's difficult to be a lifelong athlete when your skeleton won't support your goals.

While the combination of amenorrhea, disordered eating and stress fractures has been dubbed the female athlete triad, today's sports medicine professionals acknowledge that weight-conscious men also experience medical issues. For example, a study of competitive male cyclists suggests as many as 25% had osteopenia (the early stage of osteoporosis) and 9% had full-blown osteoporosis (low bone density). The exact cause of the poor bone health is yet to be determined.<sup>2</sup>

Up to 94% of elite athletes who participate in weight-sensitive sports report dieting and using extreme weight control measures to achieve their desired weight.<sup>1</sup>

# “DESPITE THE DEMANDS OF YOUR SPORT, TRY TO KEEP YOUR LIFE IN BALANCE.”

you are a man, do not drop below 5% body fat. Women shouldn't go below 12% fat.

- Do not eat less than your resting metabolic rate (RMR), the energy needed for your brain, heart and organs to function. You can roughly estimate your RMR by multiplying your body weight times 10 calories per pound. For example, if you weigh 150 pounds, you need about 1,500 calories to simply breathe and be alive. That's the equivalent of three 500-calorie meals.
- Add at least 50% more calories than that for daily activities and sports. To take the guesswork out of calculating your personal calorie budget and creating an effective food plan, you want to partner with a sports nutritionist who is a registered dietitian (RD). To find your local sports RD, use the referral network at [scandpg.org](http://scandpg.org).
- More simply (but less personalized), knock off 300 to 600 calories from your typical (non-dieting) day's intake. Deleting two beers (300 calories) and four Oreos (200 calories) could be an easy start to weight loss.
- To minimize loss of muscle, try to consume 20 to 30 grams of protein every 3 to 4 hours during the active part of your day. That means, three eggs for breakfast, two 6-ounce tubs of Greek yogurt midmorning, a can of tuna for lunch, 1 cup cottage cheese midafternoon, and a chicken breast for dinner. The portion actually depends on your body size. The target is about 0.7 to 1g protein per pound of body weight (1.5 to 2.0 g pro/kg) when you are cutting calories and are in energy deficit.

- Include carbohydrates to fuel your muscles. Target at least 1.5 g carb per pound of body weight (3 g carb/kg). For a 150-pound athlete, that means 225 grams of carbs (900 calories), preferably more. Divided into meals and snacks, that's about 60 g carb/meal and 30 g each for a morning and midafternoon snack. Translated into food, this means enjoy oatmeal with the eggs, rice with the chicken, etc.
- Include a little fat in each meal to add satiety and keep you feeling fed. You also need fat to absorb vitamins A, D, E and K. Choose nutrient-dense fats, such as almonds, avocado, peanut butter and salmon.
- Surround your workout with fuel. That is, eat part or all of your breakfast before you train so that you have the energy to exercise meaningfully. Include both carbs (to fuel the workout) and protein (to minimize muscle breakdown). This could be yogurt and a banana before you work out, and eggs with toast afterward.
- Plan to eat recovery foods soon after you train. To avoid extra calories, simply back your training into a meal. That is, if you train from 3:00 to 5:00 in the afternoon, eat dinner right away at 5:30 (as opposed to having recovery food and then dinner at 7:00).

## DIETING GONE AWRY...

Despite the demands of your sport, try to keep your life in balance. Your whole identity should not be based on being an athlete, but rather on being a person who is athletic and has other interests. After all, if you identify yourself as a marathoner, who will you be if you get badly injured and cannot run?

To determine if you have crossed the line and have an eating disorder, take this SCOFF quiz (an acronym for Sick, Control, Over, Fat, Food):

1. Do you make yourself Sick because you feel uncomfortably full?
2. Do you worry you have lost Control over how much you eat?
3. Have you recently lost Over 14 pounds in a three-month period?
4. Do you believe yourself to be Fat when others say you are too thin?
5. Would you say that Food dominates your life?

If you answer yes to 2 of the 5 questions, seek help from a sports dietitian.

*The bottom line:* You will not be able to be a great athlete unless you take care of your body and fuel it appropriately. Here's to healthful weight management!

AF



NANCY CLARK, MS, RD, CSSD, is a sports nutritionist with a private practice in the Boston area (Newton; 617.795.1875), where she helps both fitness exercisers and competitive athletes win with good nutrition. Her best-selling Sports Nutrition Guidebook, and food guides for runners, cyclists and soccer players, as well as her teaching materials, are available at [www.nancyclarkrd.com](http://www.nancyclarkrd.com). For information about online workshops: [NutritionSportsExerciseCEUs.com](http://NutritionSportsExerciseCEUs.com).

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RECIPE & PHOTO COURTESY OF  
CALIFORNIA FIG ADVISORY BOARD

# CALIFORNIA FIGGY *energy bites (no bake)*

BY CHEF JOHN CSUKOR, KOR FOOD INNOVATIONS, RICHMOND, VA.

## INGREDIENTS

1 cup (dry) oatmeal  
 2/3 cup toasted coconut flakes  
 1/2 cup peanut butter  
 1/2 cup ground golden flaxseed  
 1/4 cup dried California figs, diced

YIELD: 20 balls (2 per serving)

1/3 cup pureed fig (prepare in advance using your processor)  
 1 Tbsp chia seeds  
 1 tsp vanilla extract  
 1/8 cup water  
 1 pinch kosher salt

## INSTRUCTIONS

In a medium bowl, stir all ingredients together or combine thoroughly using a stand (not hand) mixer. Cover and refrigerate for 30 minutes to chill. Remove and roll into 1-inch balls. Store in an airtight container in the refrigerator for up to 1 week.

**Variation:** If desired, roll in sesame seeds as shown.

## NUTRITION FACTS

(Per Serving):

Cal 220, Total Fat 12g,  
 Sat Fat 3.5g, Trans Fat 0g,  
 Chol 0mg, Sod 45mg, Carb 23g,  
 Sugar 10g, Dietary Fiber 6g,  
 Prot 6g

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# Tea Time

## THE HEALTH BENEFITS OF BLACK AND GREEN TEA

BY EVANGELINE YVONNE SAMPLES, MS, RD, LD

Cultivated in more than 30 countries, tea is one of the most popular beverages in the world. Of the total amount of tea produced and consumed throughout the world, 78% is black, 20% is green, and 2% is oolong, according to Chan and colleagues. China, Japan and Taiwan consume mostly green and oolong teas, while black tea is favored in Western countries and South Asia countries, such as India.

### *Antioxidant and Antimicrobial Activities*

Although black, green and oolong teas all come from the *Camellia sinensis* plant, different methods of processing yield different properties. Since green tea under-



goes processing to prevent oxidation and fermentation, it has higher levels of compounds called polyphenols, which possess significant antioxidant activity, according to Shrubsole and colleagues. Although various types of polyphenols exist, a 2000 study published in *The American Journal of Clinical Nutrition* explains that catechins are one type of polyphenol that is present in tea. In addition, Wang and colleagues state that different degrees of fermentation yield different amounts and types of flavonoids. In green tea, catechins make up 80 to 90% of the total flavonoid content. However, catechins make up only 20 to 30% of black tea's flavonoids, and most of the flavonoids in black tea are theaflavins and thearubigins. Additionally, a 2008 study published in the *Journal of Agricultural and Food Chemistry* examined the antioxidant potency of beverages commonly consumed in the United States. Bottled iced black, green and white tea beverages all possessed some antioxidant strength. On average, green tea was the most robust of the iced tea beverages; its antioxidant potency composite index was 24.2. In comparison, the antioxidant potency composite index of orange juice was 19.1; apple juice was 14.6.

A study published in *Pharmacognosy Research* compared antioxidant and antibacterial properties of black, green and herbal teas extracted with hot water. Chan and colleagues ranked green tea as having the most antioxidant properties, black tea as having an intermediate amount, and herbal tea as having the fewest. Moreover, green tea inhibited three gram-positive bacteria: *Micrococcus luteus*, *Staphylococcus aureus*, and *Bacillus cereus*; however, *S. aureus* was found to be the least susceptible.

## The Cancer Connection

Several recent studies suggest that tea consumption may decrease the risk of breast cancer. Epigallocatechin-3-gallate (EGCG) is type of polyphenol that may possess anti-cancer properties. A 2001 study by Kavanagh and colleagues suggested that green tea significantly increased mean latency to first tumor, and reduced the size and number of tumors per animal, also known as tumor burden. In addition, EGCG inhibited human breast cancer cells in culture. Theaflavins, compounds present in black tea, and discussed by Manach, may also aid in prevention. A 2007 investigation by Kaur and colleagues discovered that mice who had either black tea theaflavins or green tea catechins added to their drinking water survived longer than controls. Smaller tumor size was also reported; the size of the largest tumor per mouse was decreased by 40 to 42%.

An association between green tea consumption and decreased breast cancer risk has also been noted in humans. In the Shanghai Breast Cancer Study, Shrubsole observed that drinking green tea on a regular basis was associated with a 12% lower breast cancer risk than was seen in nondrinkers. A dose-response relationship was also discovered in premenopausal women. Further, in the Singapore Chinese Health Study, Inoue found that daily or weekly green tea intake was inversely associated with breast cancer risk, as compared to less frequent intake. Interestingly, this effect was observed even more strongly among women who had lower intakes of folate. No association between green tea consumption and risk of breast cancer was noted among women with high intakes of folate.

DRINKING TEA  
ON A REGULAR  
BASIS HAS BEEN  
ASSOCIATED  
WITH A LOWER  
RISK FOR BREAST,  
PROSTATE, AND  
ENDOMETRIAL  
CANCERS.

A meta-analysis published in the December 2009 *American Journal of Obstetrics and Gynecology* examined the relationship between the consumption of tea and risk of endometrial cancer. An increase in tea intake of 2 cups per day is associated with a 25% decreased risk of endometrial cancer. Green tea consumption was significantly associated with a decreased risk; however, no association was observed for black tea. It is hypothesized that tea's protective effects come from phytoestrogens, which possess anti-estrogenic properties. Antioxidants such as catechins, present in tea, may also be protective. In addition, the large amounts of caffeine in tea have been found to mediate changes in hormone levels.

A 2012 study published in *The Journal of Nutritional Biochemistry* by Henning and colleagues discovered that in mice with prostate cancer, tumor volume was significantly decreased in those consuming green tea. Henning concludes that the inhibition of tumor growth was due to green tea polyphenols mediating oxidative stress and angiogenesis (the growth of new blood vessels).



## Cardiovascular Benefits

Research on drinking tea and cardiovascular benefits has yielded conflicting results. A 2011 meta-analysis of 18 studies examined black and green tea consumption and the risk of coronary artery disease (CAD). Thirteen reviewed black tea, and found no association between its consumption and risk of coronary artery disease. The five studies that dealt with green tea found a significant association between intake and a reduced risk of CAD. Moreover, an increased green tea intake of 1 cup per day was associated with a 10% decrease in the risk of developing CAD. The researchers suggest there may be several explanations for these findings. First, the English prefer to drink black tea with milk, which may reduce the bioavailability of flavonoids. Second, different methods of processing yield different amounts and types of flavonoids. In addition, a 2012 study published in *Food & Function* asserts that in epidemiological studies, black and green tea may reduce the risk of both stroke and coronary heart disease by 10 to 20%, while experimental and clinical trial data indicate either neutral or beneficial effects. Potential mechanisms by which tea can be protective include the regulation of vascular tone, improved glucose metabolism, and inhibition of oxidative stress.

## Healthy Aging

The Ohsaki Cohort 2006 Study examined intakes of black, green and oolong teas and coffee in relation to the risk of incident functional disability in 13,988 Japanese subjects aged 65 or over. Green tea consumption was inversely associated with incident functional disability. Tomata and colleagues observed no association between black tea, oolong or coffee consumption and this type of disability. Causes of incident functional disability are physical conditions such as stroke, myocardial infarction, hypertension or "frailty," which is associated with lower muscle strength. Tomata believes that green tea's healthful effects are due to the large amount of polyphenols it contains. The polyphenols, such as EGCG, reduce oxidative damage to DNA and lipid concentrations.

## Conclusion

Tea is a very healthful beverage. You may wish to encourage clients to substitute tea (especially green tea) for less-healthful beverages, such as soda. AF



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**E V A N G E L I N E  
Y V O N N E S A M P L E S,  
M S, R D, L D,** holds  
a Master of Science in  
Dietetics from Marshall  
University. She is a  
regular contributor for  
American Fitness.

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