

Health  
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Across

# the **GAMUT** of LIFE!

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THE MONTHLY JOURNAL of THE



AMERICAN ACADEMY OF  
**HEALTH AND FITNESS**  
WE INSTILL QUALITY OF LIFE

The resource for health, fitness, coaching,  
physical education, & recreation  
professionals.

Mature Health & Fitness

by *Tammy Petersen*

Youth Fitness

by *Jennifer Green*

Musculoskeletal Issues and  
Post Rehabilitation

by *Wendy Williamson*

Nutrition

by *Nancy Clark*

Training Guidelines and  
Programs

by *Greg Maurer*

Achieving Your Personal  
Best

by *James McPartland*

Across the Gamut

by *Wayne Westcott*

**Create a niche. KNOW. TRAIN. RETAIN.**



# FROM THE EDITOR



“Real knowledge is to know the extent of one's ignorance.”

*Confucius, 551-479 BC  
China's most famous teacher,  
philosopher, and political theorist*

The extent of ignorance, misinformation and overblown egos is far too prevalent in our fitness industry. Though there is a ways to go, we have made progress in upgrading industry professionalism in the areas of valid researched based knowledge, education and certifications. However, there are still far too many practitioners of our services who lack full understanding of what they are doing by not keeping pace

with the sound advances in the industry. Each one of us must constantly strive to learn more and minimize the extent of our misunderstandings and ignorance.

This month we focus on reducing misinformation. Articles address: cautions in mixing supplements and medications, eating gluten free, the uniqueness of training youth, hip functionality assessment and appropriate strengthening exercises, soft surface training stimulus, “standard” versus “functional” training and the importance of pushing ego aside in order to excel. Enjoy and learn!

Be knowledgeable! Be successful!

*Pete*

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# Medications and Nutrient Needs



by **Tammy Petersen, MSE**, the Founder and Managing Partner for the American Academy of Health and Fitness (AAHF). She has written two books on adult fitness, SrFit™ and Functionally Fit™, and designed corresponding training programs. [Contact info](#)

Older adults, specifically homebound elderly, the frail, or those with chronic disease may be at nutritional risk and could benefit from some form of supplementation. In fact, deficiencies in vitamins and minerals have been found in almost a third of elderly people. This can result from 1) a failure to eat regular balanced meals; 2) from interactions that occur with multiple medication use; or, 3) problems with the body's ability to make or use nutrients. What's more, different medications interfere with nutrient absorption. Those taking corticosteroids, anticonvulsants, thyroid hormone, antibiotics, laxatives or diuretics may benefit from some form of supplementation. Specific nutrients that tend to be of concern for older persons include the following: the minerals iron, calcium, magnesium and zinc; B-vitamins like B-12 and folate, and vitamin D.

Medications and old age often go hand-in-hand. Medications can improve health and quality of life, but some of them also affect nutrient needs at any age. Two-thirds of older adults take at least one prescription drug, while one quarter of the elderly population regularly takes multiple prescription drugs. Many drugs affect appetite or absorption of nutrients, so if they are taken over the long term, malnutrition can result. Unfortunately, this is true for many elderly people; they often continue taking prescription drugs for long periods of time before any improvements are noted. These seniors should definitely work with their physicians and pharmacists to coordinate all medications taken. Pharmacists in particular can advise when to take drugs (with or between meals) for greatest effectiveness and the fewest number of side effects.

Drug-related nutritional problems include: 1) increased need for certain minerals or fat soluble vitamins when drugs leach them out of the body prior to absorption; 2) changes in appetite caused

by antidepressant agents or certain antibiotics; and 3) blood loss from long-term use of aspirin or aspirin-like medications which strain iron reserves and can lead to anemia. People who take one or more medications for more than just a few weeks should closely watch their diets, eat nutrient-dense foods, and possibly take nutrient supplements to counteract effects of certain medications.

As a personal trainer, you should not advise older clients on supplements past making them aware of the very basics, such as recommended amounts of calcium and Vitamin D for the generally healthy adult; instead, refer them to their health care provider. A professional who specializes in nutrient and drug interactions should supervise because some supplements can interfere with the function of certain medications, while some medications interfere with the absorption of nutrients.

Some common negative interactions are:

- Calcium can interact with heart medicine, certain diuretics, and aluminum and magnesium-containing antacids.
- Magnesium can interact with certain diuretics, some cancer drugs, and magnesium-containing antacids.
- Vitamin K can interact with blood thinners like Coumadin.
- St. John's Wort is known to adversely affect selective serotonin reuptake inhibitor (SSRI) drugs (i.e., anti-depressant drugs), and birth control pills.

Also, as a trainer, you should be aware of the fact that many people think herbal supplements and vitamins are not harmful because they are "natural" Every year, people poison themselves using minerals, vitamins, and other supplements even though their intent was to maximize health. Your clients should be advised that just like aspirin or any other medi-

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## MATURE HEALTH & FITNESS

cation (prescription or not), vitamins, minerals, and herbs need to be used with caution. There is the danger of overdose and toxicity or interaction with medications. The fat soluble vitamins A, D, E, and K are examples of “natural” substances that can easily build up in the body when taken in excess. Unlike the water soluble vitamins, the kidneys do not filter out fat solubles. Instead, excessive amounts are stored in fat cells throughout the body and in the liver.

Excessive mineral intake can also lead to toxicity, especially with the trace minerals such as iron and copper. For example, chronic iron overload may deposit iron into organs such as the liver and heart, which may cause death due to myocardial siderosis

(the deposit of an abnormal quantity of iron in the heart.) Keep in mind that trace minerals are needed at very low levels, so they can become toxic at doses not much above typical needs. Another issue is that many minerals have similar molecular weights and charges. For example, magnesium, calcium, iron, and copper all have similar size and the same electrical charge, and this causes these minerals to compete with each other for absorption. As a result, taking too much of one can cause a deficiency in another.

In summary, below is a table listing potential drug nutrient interactions for some commonly used drugs:

Drug	Use	Nutrient affected	Potential side effect
Antacids (Maalox)	Reduce stomach acidity	Calcium, vitamin B12, and iron	Decreased absorption due to altered gastrointestinal pH
Anticoagulants (Coumadin)	Prevent blood clots	Vitamin K	Poor utilization
Aspirin	Anti-inflammatory; pain reduction	Iron	Anemia from blood loss
Cathartics (laxative)	Induce bowel movement	Calcium and potassium	Poor absorption
Cholestyramine	Reduces blood cholesterol	Vitamins A, D, E, and K	Poor absorption
Cimetidine (Tagamet)	Treatment of ulcers	Vitamin B12	Poor absorption
Colchicine	Treatment of gout	Vitamin B12, carotenoids, and magnesium	Decreased absorption due to damaged intestinal mucosa
Corticosteroids (prednisone)	Anti-inflammatory	Zinc and calcium	Poor absorption
Furosemide (Lasix)	Decrease blood pressure; potassium-wasting diuretic	Potassium and sodium	Poor utilization
Hydrochlorothiazide (HCTZ)	Decrease blood pressure; potassium-wasting diuretic	Potassium and sodium	Increased loss; decreased absorption
Tricyclic antidepressants (Elavil)	Antidepressant	-----	Weight gain from appetite stimulation

[References](#)

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# Are Personal Trainers the Key to Ending Childhood Obesity?

by **Jennifer Green**, BS in Health Fitness and Rehabilitative and Preventative Programs, MS in Clinical Exercise Physiology, a Visiting Information Specialist at the National Center on Physical Activity and Disability (NCPAD). [Contact Info](#)

September 2010 marked the first-ever National Childhood Obesity Awareness Month in the United States. It was originally introduced by Senator Kirsten Gillibrand of New York in February 2010 and passed on March 26, 2010. This initiative was primarily a response to the rapid increase in childhood obesity in this country. In the past four decades, obesity rates soared among all age groups, and increased more than four-fold among children ages 6-11. This epidemic has put America's children at an early risk for high blood pressure, diabetes, heart disease, and other secondary conditions.



In today's society, families are busier than ever, from work to school to club activities and meetings. So, families are cooking fewer meals at home, and opting to just simply eat out; and the portions you receive at restaurants are larger than you would have at home. Plus, when going through the "drive through" for dinner, it may be hard to find and choose healthy options. This, in combination with television shows, video games, computers, and schools eliminating or cutting down on physical education classes, leaves children with less physical activity. There are now estimates that 22 million children worldwide are overweight, and that number only includes children under the age of 5. The U.S. Surgeon General says that in the past 20 years, the number of children who are overweight or obese has doubled. In response to this epidemic, parents are now beginning to turn to personal trainers to help their children increase physical activity, and learn how to make healthy lifestyle decisions. However, in order to meet this growing trend, personal trainers and fitness professionals need to recognize and understand the different requirements of physical activity for children, as opposed to adults. "Kids are not small adults."

Children and adolescents require special considerations when exercising because of growth, and the immaturity of their physiologic regulatory systems at rest and during exercise. The American College of Sports Medicine's (ACSM) guidelines for exercise prescription establish the minimal amount of physical activity needed to achieve the various components of health-related fitness. ACSM suggests at least 3-4 days per week of physical activity with daily exercise preferred at a moderate to vigorous intensity. Moderate is defined as physical activity that noticeably increases breathing, sweating, and heart rate, while vigorous is described as physical

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## YOUTH HEALTH & FITNESS

activity that substantially increases breathing, sweating, and heart rate. Children and adolescents should accumulate at least 60 minutes of physical activity, half of which should be moderate activity, with the other half more vigorous. These activities, which should be enjoyable and developmentally appropriate for the child or adolescent you are training, may include walking, active games/play, dance, sports, and muscle/bone-strengthening activities.



Both the American Academy of Pediatrics (AAP) and ACSM recommend strength training for children as young as 6 years old. Contrary to a popular misconception, there is no evidence that an age-appropriate strength training program, done under qualified supervision, is detrimental to a child. In fact, research has shown that strength training helps children maintain a healthy body weight, benefits skeletal and joint development, and improves sports performance. Generally, adult guidelines for resistance training may be applied; eight to 15 repetitions of an exercise should be performed to the

point of moderate fatigue with correct mechanical form before the resistance is increased.

There are several special considerations to take into account when training children, and adolescents. Your clients will have immature thermoregulatory systems; therefore, youth should exercise in thermo-neutral environments and be properly hydrated. Also, overweight children may be unable to achieve 60 minutes of physical activity, and therefore a gradual increase in frequency and time is suggested, and intervals may be used to achieve this goal. If a child has additional existing conditions, such as asthma, cystic fibrosis, diabetes mellitus, cerebral palsy, etc., these should be taken into consideration, and a tailored program should be created based on their condition, symptoms, and functional capacity. As the fitness professional, you should also be suggesting ways to incorporate healthy choices (take the stairs...) into everyday activities and reduce sedentary activities.

Fitness professionals who work with children should be creative in their prescriptions, and be aware of psychological and emotional issues that they may be facing. During this time, children's self-esteem, sense of belonging, and independence are still being learned. It is also important to understand the child as an individual, as well as his or her need to fit in with groups. Creating exercise programs for children can be an exciting and fulfilling experience for fitness professionals, as long as they are aware of current guidelines and have the compassion it takes to work with this unique population.

### [References](#)

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# Get “Hip” and Prevent Injuries

by **Wendy A. Williamson, PhD, CPT (ACE and NASM), ACE Advanced Health & Fitness Specialist, Post Rehabilitation Specialist, nationally recognized as a leading educator, writer, author, and consultant.** [Contact info](#)

A healthy hip can support your weight and allow you to move without pain. However, changes in the hip from disease or injury will significantly affect your gate and place abnormal stress on joints above and below the hip.

## Muscles of the Hip

Muscles of the hip allow basic movements/motion mentioned above, specifically the muscles do the following:

- **Quadriceps:**
  - **Rectus Femoris** – flexion of hip; extension of the knee
  - **Vastus lateralis, Vastus intermedius, vastus medialis** – extends the knee
- **Gluteals:**
  - **Gluteus maximus** – hip extension and laterally rotates the hip, assist in maintaining normal tone of the iliotibial band and stabilization of the knee, lower fibers assist in adduction and upper fibers assist in abduction of the hip
  - **Gluteal medius** – hip abductor, anterior fibers medially rotate and may assist in flexion of the hip; the posterior fibers laterally rotate and may assist in extension
  - **Gluteal minimus** – hip abduction, medially rotates, and may assist in hip flexion
  - **Hamstrings** – hip extensor and knee flexor
  - **Semitendinosus, semimembranosus** – flexes and medially rotates the knee. Extends and assists in medial rotation of the hip joint
  - **Bicep femoris** – long and short heads of the biceps femoris flex and laterally rotate the knee joint; the long head extends and assists in lateral rotation of the hip joint.
- **Iliopsoas** – flexes the hip joint by flexing the femur on the trunk and may assist in lateral rotation and abduction of the hip joint
- **Sartorius** – flexes, laterally rotates, and abducts the hip joint; flexes and assists in medial rotation of the knee joint
- **Tensor Fasciae Latae (TFL)** – flexes, medially rotates, and abducts the hip joint; tenses the fascia lata, and may assist in knee extension

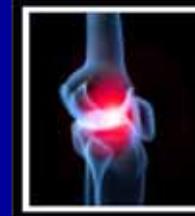
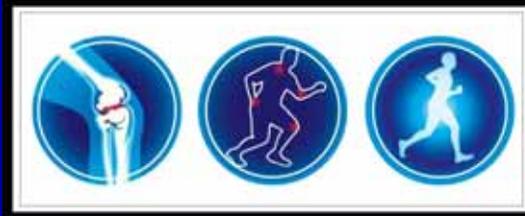
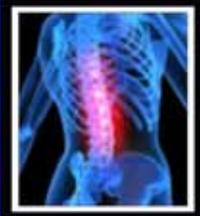
- **Hip adductors (Pectineus, magnus, gracilis, brevis, and longus)** – adduct the hip joint; pectineus, brevis and longus flex the hip joint; the gracilis also flexes and medially rotates the knee joint; magnus may also assist in flexion and in extension.
- **External rotators – (piriformis, obturator internus/externus, gemellus superior and inferior, quadrates femoris)**  
(Kendall et al. 2005, Chai 2004)

Knowing how to determine the strength of and train these muscles is so important, as there will be compensation when there is weakness. Often unilateral exercises are “telling,” though often forgotten. Simple exercises such as a single leg press, or single leg curl can often indicate when one leg is stronger than the other. A lot of machines will not reveal the strength difference as they are bilateral, requiring both arms or legs, and can result in a lot of “cheating”. An example is the most abductor/adductor machines. They require both legs and often one leg is working harder than the other. The “neighborhood muscles are being recruited for help” when a particular muscle is not “pulling its weight”. Another muscle is compensating to help the muscle that is not strong enough to work as hard as the demand.

The single leg press and leg curl help to assess the quadriceps and the hamstrings. The Trandelenburg stance featured in previous articles I have written is helpful with the gluteus medius. Another test is the hip bridge test, done unilaterally, lifting one foot and requiring one leg to lift the entire hip off of the floor. The support leg hip is the hip being tested. In other words, while being in a supine position and lifting the hips through left foot, the left hip is being tested. If the hips waver as lifted, there is an unstable left hip.

Keep in mind, some clients will be quad dominant or glute dominant. While having them demonstrate a squat, determine if their hips “move” backwards (glute dominant) or as they squat, do their knees move forward without their hips moving slightly backwards (quad dominant).

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# MUSCULOSKELETAL ISSUES and POST REHABILITATION

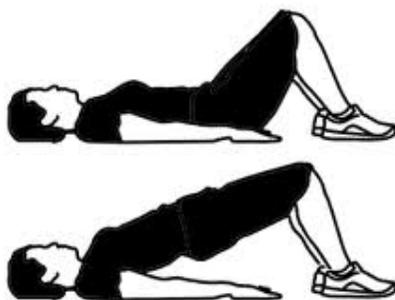
For the abductor muscles, place a rubber band at the ankle or above the knee in a supine position and unilaterally abduct one leg at a time. See which side is weaker.

Healthpages.com (2010) cited that the iliotibial band's (a.k.a. IT Band) function is to prevent dislocation of the hip. If this band is too tight, it can cause hip and knee problems. Because it is a stabilizer for the knee as well, the band also has to overwork if the gluteals are weak. Therefore, if there is knee pain, test the gluteals as the IT band may be tight and overworked.

## Hip Strengthening Exercises

The following hip strengthening exercises are designed to improve strength of the muscles of the hip.

1. **Bridging** – Assume a supine position on floor with hips bent and knees bent. Slowly lift hips by pressing through the feet on the floor of which you are laying and lifting hips off of floor.
  - a. **Bridging one leg** – Press through the right foot while both arms have pulled left knee towards chest as you lift hips with one leg. (Hint: Press through the heels to get more gluteal activation.)



2. **Clams** – Lay on side with hip and knee flexed. Keeping pelvis perpendicular to the floor, raise top knee open (keeping feet together) and close activating the gluteals.

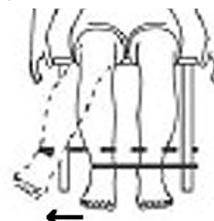
3. **Prone hip extension** – Lay prone and raise one leg at a time and contract gluteals. (Hint: place hips on pillow to avoid excessive lordosis in the low back.)



- a. **Advanced** – Place the therapy band around the ankle and walk backwards
4. **Side leg lifts** – Laying on side with lower leg bent at knee; lift top leg and contract gluteals.



- a. **Advanced** – Place a therapy band above the knee or at ankle. Stand with support and abduct the leg or laterally walk, engaging the gluteals and other abductor muscles.
5. **Seated internal rotation** – Seated on an elevated table so the feet are not touching the floor, place therapy band on ankles. Place a rolled up towel between the knees, press outwards with the ankles. The knees will be forced “in” while the feet are pressing “out”.



Exercises such as the above may not seem like too much work, but you will be surprised when a client has discomfort, indicating muscle imbalance, weakness, and compensation.

[References](#)

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# Gluten-Free Sports Diets: Winning Without Wheat



by Nancy Clark, MS, RD, who counsels both casual and competitive athletes in her private practice at Healthworks in the Boston area, and is author of Nancy Clark's Sports Nutrition Guidebook. [Contact info](#)

*Gluten-free* seems to be the latest sports nutrition buzzword. Gluten is a protein in wheat, rye and barley that must be avoided by people with celiac disease, an inherited autoimmune disorder. Symptoms of celiac vary greatly and can range from digestive problems (diarrhea, constipation, bloating, gas) to health problems such as anemia, stress fractures, infertility in both men and women, migraine headaches, canker sores, easy bruising of the skin, swelling of the hands and feet, and bone/joint pain. The person feels lousy. Yet, some athletes don't even realize they have celiac disease. They feel fine—until they experience iron-deficiency anemia or stress fractures due to poor absorption of iron, calcium, and vitamin D.

How common is celiac disease? More than we once thought! About 1% of the population (athletes included) has celiac and needs to avoid even traces of gluten. Up to 6% have non-celiac gluten sensitivity. The symptoms are similar but without the autoimmune reactions that result in cancer and osteoporosis. No one is certain why celiac disease and gluten sensitivity is on the rise. One theory relates to changes in the composition of our gut bacteria.

## How to tell if you are gluten sensitive

If you and others in your genetic family are plagued with niggling health issues (including those mentioned above), you should learn more about celiac disease and gluten sensitivity. Untreated celiac disease can lead to severe complications including cancer of the gut and osteoporosis. Two websites that offer abundant information include [www.celiac.org](http://www.celiac.org) and [www.glutenfreediet.ca](http://www.glutenfreediet.ca).

If you suspect you are gluten sensitive, don't self-impose a gluten-free diet without first talking with a doctor who specializes in celiac. You need to get your blood tested for specific antibodies and then, to confirm the diagnosis, an intestinal biopsy. Do not eliminate gluten before you get the blood tests, because absence of gluten in your diet can interfere with making the correct diagnosis. If you don't get

properly tested, you might miss a correct diagnosis or other health problems, like Cohn's, an ulcer, or colon cancer. Plus, if undiagnosed, you might be less motivated to strictly follow a gluten-free diet for life.



If you are "simply" gluten-sensitive, your blood tests will report none of the elevated levels of antibodies that signal celiac disease, but you will feel unwell. Hence, if you have intestinal issues, you might want to try a gluten-free diet for a month or so regardless of the blood test results. One athlete plagued with muscle pain stopped eating wheat and her pains disappeared. She reported she simply "felt better." Others report they recover better and have less stiffness and joint pain with a gluten-free diet. This might be due to eliminating gluten, a placebo effect, or eating better overall (no cookies, pastries, junk food). Adhering to a gluten free diet is challenging and expensive, so there's no need to self-inflict the limitations if you notice no benefits after a month of gluten-free eating.

## Going gluten free

So what's a hungry athlete to eat if their favorite pasta, bagels, breads, and baked goods are off-limits? While a sports diet without pasta may seem like a day with no sunshine, rest assured, a plethora of gluten-free carbs can fuel your muscles. You can enjoy carb-rich rice in all forms (brown, white, and basmati), corn in all forms (on the cob, cornmeal, and grits), potato, sweet potato, lentils, kidney

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# NUTRITION

beans, hummus, quinoa, millet, and tapioca. Oats, if processed in a wheat-free plant, can also be safe.

Many fresh foods are naturally gluten-free. They include all plain fruits, vegetables, milk, yogurt, hard cheese, eggs, meats, fish, poultry, nuts, sunflower seeds, edamame, juice, and wine (but not beer). Just be aware that sauces, gravies, and seasoning mixes might contain gluten, as do marinades and soy sauce. Some gluten-free baked goods, pastas, and frozen meals are quite good; others might leave you wishing for something tastier. Two popular brands of gluten-free bread (commonly available at Whole Foods or Trader Joe's) are Udi's and Rudi's. Hint: they taste better when toasted!

## Restaurant and Travel Tips

At home, you can easily control your diet. When on the road, you need to have a plan.

- When traveling, carry "emergency food" that doesn't spoil, such as dried fruit, Lara Bars, and nuts.
- When eating in a restaurant, you'll have to quiz the staff and carefully order your food. Omelets tend to be safe, while salads with croutons are not. Make sure the steak tips are not marinated in a gluten-containing sauce, the turkey was not injected with flavor enhancers, the gluten-free toast is not made in the same toaster used for standard breads, the sandwich is prepared on a paper towel or surface not used for other breads (to prevent cross-contamination), the rice is not cooked in broth with unknown gluten-containing seasonings, the French fries are not cooked in the same oil as the breaded chicken, the hamburger is 100% beef (with no fillers) and not cooked on the same surface as the toasted buns. Some athletes travel with their own gluten-free pasta and request it be cooked in fresh water, in a clean pot, and drained into a clean colander. This all requires a patient waiter and an understanding chef.

## Everyday Gluten-free Sports Food Suggestions

Even the hungriest Ironman triathletes need not go hungry on a gluten-free diet! The trick is to eat less processed foods and be a good label reader. Here are just a few suggestions of foods you'd find in standard grocery stores.

*Breakfast ideas:* Fruit smoothie with Greek yogurt; rice cakes with banana & peanut butter; scrambled eggs, hash browns, and fruit salad; Rice or Corn Chex, milk and berries.

*Lunch ideas:* Tuna salad with baked corn chips; 100% corn tortilla with melted cheese and pinto beans, Crunchmaster Multigrain crackers and hummus.

*Dinner ideas:* baked chicken, potato & beets; salmon, sweet potato & peas; omelet, corn & tomatoes; baked potato stuffed with cottage cheese & salsa; Mexican beans & rice; shish kabob, rice, salad with oil & vinegar; frittata (potato, onion and egg "pancake"); meals with rice, corn, and quinoa.

*Snacks:* apple & cheese, fruit & yogurt, baked potato chips, corn chips, Blue Diamond Nut Thins, rice crackers, trail mix (nuts & dried fruit), peanut butter & banana, baby carrots & hummus, popcorn, corn nuts, raisins, grape juice and all fruit juices, smoothies.

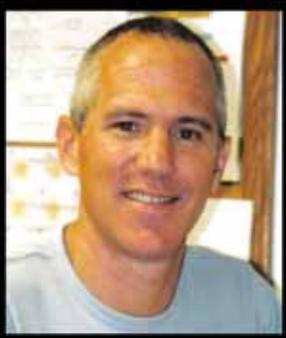
*Commercial sports foods:* Ensure, Gatorade, Powerade; Bakery On Main Granola Bar, Bonk Breaker Bar, Bumble Bar, Enjoy Life Snack Bar, Elev8Me Bar, Extend Bar, Go Raw Bar, Hammer Products (Heed, Perpetuem, Bar, Solids), KIND Bar, Lara Bar, Nonut-tin' Granola Bar, Omega Smart Bar, PB&Whey Bar, Perfect 10 Bar, Pure Bar, PureFit Bar, thinkThin Bar, Quest Bar, Gu, Jelly Belly Sports Beans, Sharkies.

*Wheat-free but may not be gluten-free:* Odwalla, Clif Builder's Bar, Clif Shot Bloks.

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# Soft Surface Training, Part Two



by Greg Maurer, BS Exercise Physiology, CPT (ACE and NASM), an Associate Partner with New Paradigm Partners health club consulting firm.

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## Review of Soft Surface Training Continued

Research has shown that soft surface walking, jogging, and jumping increases overall muscle activation. In fact jumping or hopping on very soft surfaces increased muscle activation by 50% despite similar joint moments and mechanical leg work compared to the stiffest surface. The extreme adjustment to leg mechanics that occurs on softer surfaces helps maintain normal center of mass but requires high muscle activation due to the loss of the normal extensor muscle stretch-shorten cycle.

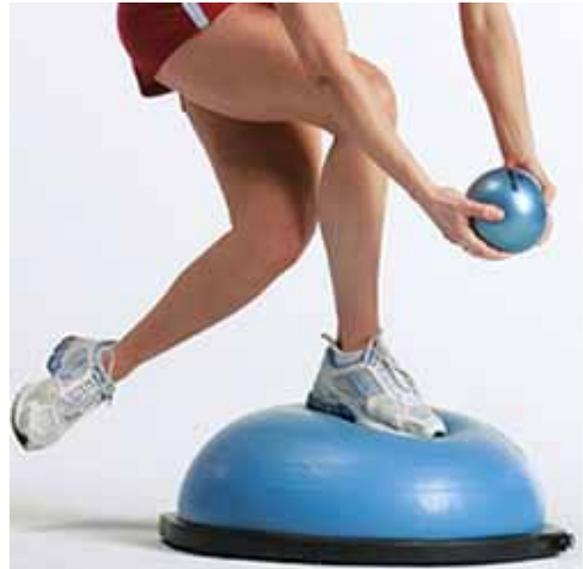
The other characteristic of running on soft surfaces is greatly decreased impact forces. In fact forces equal to 5 times bodyweight can travel up the legs when running on very hard materials. This force drops to less than twice bodyweight on very compliant surfaces. Contrary to popular belief running on most treadmills is not much better than running on concrete in terms of impact.

There is no question that excess impact leads to many injuries and in fact modern running shoes have been designed to shield the foot from some of this impact. However, there is emerging evidence that padded shoes encourage an unnatural heel landing foot strike pattern that actually transmits higher forces to the knee and back than if a runner runs barefoot. This phenomenon has launched an entire line of “barefoot running shoes”. Barefoot running encourages a forefoot landing pattern resulting in significantly softer landing with less impact to knees, hips and low back.

Therefore SST can provide much higher energy expenditure, greater cardiovascular overload, and increased overall muscle activation in the lower body and core – all with significantly less impact to the knees and low back.

That being said, sand running can cause its own set of unique injuries not related to impact; including

plantar fasciitis, Achilles tendonitis, and lateral knee injuries from running on uneven surfaces. Soft surface training and barefoot training require much more work from the muscles of the feet and lower leg which are not initially accustomed to this dramatically increased usage. Therefore, soft surface running and barefoot running need to be approached with particular attention to gradual progression.



## Popular Soft Surface Training Equipment

Bosu is extremely popular training tool and can be seen in most gyms. Bosu provides balance challenge and controlled instability in measurable doses and proprioception is maximized. BOSU® balance training products and exercise techniques allow participants to safely incorporate integrated movement, balance and body awareness into workouts. [www.bosu.com](http://www.bosu.com)

Fitball is the first company to introduce training on Swiss Balls to the training community, and swiss balls are probably the most popular form of unstable training available. They provide a safe, soft, and unstable platform to perform many functional exer-

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## TRAINING GUIDELINES AND PROGRAMS

cises with an emphasis on core activation and stability. [www.ballodynamics.com](http://www.ballodynamics.com)

Balance Discs refer to soft, pillow-like, air filled training tools of varied shapes and sizes. The ability to inflate and enhance soft-surface firmness, as well as deflate and increase soft-surface balance challenge makes these versatile and relatively inexpensive training devices perfect for all ages and ability levels.

Step360 is a relatively new soft surface trainer by SPRI Products that is rapidly gaining popularity. Two stacked, round air-filled chambers with a flat platform on top provides a 360 degree oscillating surface balance challenge while stepping, strengthening, or core conditioning. [www.spri.com](http://www.spri.com).

Foam pads allow for stability and balance training in an unstable environment. These devices are inexpensive and can be an appropriate part of most people's fitness and conditioning programs. [www.airex.com](http://www.airex.com)

Sproing is a new training modality that provides a soft surface training environment including a surface that provides adjustable levels of instability. The range goes from very soft and unstable like sand to very firm with slight rebound at the other end of the spectrum. Research on Sproing shows it has the same level of impact as an elliptical and less than half that of treadmills. Since Sproing uses a harness that is attached to bungee cord mounted to a tower for resisted running the user automatically adopts forward lean and the natural "barefoot" forefoot landing.

The tension on the harness system can be adjusted to allow a wide range of different exercises in a small area. The harness has attachments points on the sides, front and rear so that exercises can be done in every plane of motion including walking, jogging, running to many different resistance training and plyometric exercises. The system also includes two

sets of adjustable resistance bands that can be positioned horizontally and vertically to allow many different upper body and total body resistance training exercise to be done. As such it provides a complete soft surface training environment in the space of a treadmill.



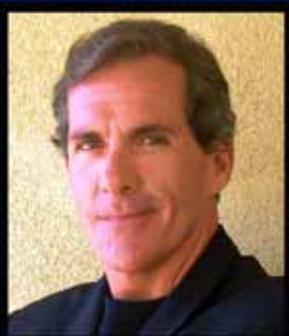
Sproing is also ideal for metabolic conditioning because it allows for seamless transition from functional cardio activities like resisted walking, jogging, running, or sprinting to resistance training exercises like lunges, squats, push-ups, and rows to explosive power movements such as jump squats, split jumps, and plyo-push-ups. By adjusting the level of surface hardness and stability along with harness tension and resistance band tension a trainer can customize the level of difficulty and support to virtually any population from de-conditioned seniors with balance issues to highly conditioned athletes who need to be able to safely work on maximum work capacity without becoming injured. [www.sproingfitness.com](http://www.sproingfitness.com)

As the varied conditioning options and popularity of SST continues to gain momentum it is important to develop training progressions and a selection of training tools which appropriately match each individual's current ability level. Doing so ensures optimal training demand, while providing the body with a safe, efficient, and effective conditioning stimulus.

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# Life Lessons and Leadership on Everest



by **James McPartland**, former President of Star Trac Fitness, author, international speaker and 'wellness ambassador' focused on developing the human potential within business.

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No matter what path you take in life it's going to be laden with risk, from the presumed safety of an office job, to the harrowing feats of a Hollywood stuntman. So whether you're dealing with the existential grind of a typical nine-to-five or the adrenaline pumping thrill ride of something more desirable, the perils of both existences can be mitigated...

But it'll take a tremendous amount of arduous physical and mental work to do so.

Eliminating ego is **the most important aspect of this equation, the accomplishment** of which will then allow you to truly prepare for the challenges you will ultimately have to face.

## A Foregone Conclusion

As a boy Eric Garza loved reading *National Geographic* and *Life Magazine*. He spent countless hours studying the maps of huge mountains and reveling in the adventures he knew scaling them would inevitably bring. But of all the stories that lit up his imagination, the ones that enchanted him the most were those of *Sir Edmund Hillary* and *Tenzing Norgay*. The famed 1953 summit of *Mount Everest* (along with that of *Jim Whittaker*, the first American to do so 10 years later) inspired young Eric. From that moment on it was as if climbing this mystical mountain himself was a foregone conclusion.

## Mount Everest - Goddess Mother of the World

In 2005 Eric Garza turned 42 years old. By this point in life he had climbed mountains all over the United States and Asia and **now he was finally going to get the chance of a lifetime**. Known throughout the world also as "*Goddess Mother of the World*," Mount Everest reaches 29,035 feet into the heavens and is the most sought after conquest of all true mountain climbers.

However, committing to this climb is not taken lightly. There are a myriad of life threatening risks. The plan was to summit Everest from the Nepal side of the mountain, an incredibly dangerous endeavor which because of weather conditions hadn't been accomplished all

year. And, Mother Nature did indeed almost dash these plans.

Jet stream winds blew 100 miles per hour every single day. The severe weather also made it almost impossible for teams to reach the coveted "Death Zone," which begins at 27,400 feet. With monsoon season fast approaching, the Khumbu Icefall was starting to come apart. Lying at the head of the *Khumbu Glacier*, this icefall and its breaking apart makes this stage of their most dangerous route much more deadly. Icefalls move at such speed here that large crevasses open with little warning, towers of ice suddenly collapse, and huge blocks of ice the size of small cars to large houses tumble down the glacier. Estimates had the glacier advancing three to four feet down the mountain every day. Time was slipping away.



## The Final Assault

Once they received a final whether report, which offered a small window of opportunity, the team counseled with one another and decided to forge on. After gathering the necessary supplies and adding two additional Sherpa groups, Eric and his thrill seekers set out to **finish what they started**. Soon they were able to establish lines from the Death Zone to the summit, which would allow others teams to reach the top of the mountain.

*They were the first team to do this in all of 2005.*

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## ACHIEVING YOUR PERSONAL BEST

### Uniting Your Collective Abilities

*"The fight is won or lost far away from witnesses, behind the lines, in the gym, and out there on the road, long before I dance under those lights."—Muhammad Ali.*

That intriguing quote could've been the opening line of a powerful anthem that guided Eric and his team. They trained tirelessly for this expedition and when their time came, **each and every one of them drew from ingrained physical and mental reflexes** which gave them the ability to make split second life and death decisions.

Though this incredible feat took the collective athleticism, expertise, and determination of many driven individuals, what Eric Garza learned reinforced something he already knew. **At the heart of everything was the simple fact that what you did or did not do had a direct impact on those around you.** Uniting their collective abilities allowed his team to **transform themselves from exceptional athletes into accomplished athletes.**

By the time they put their abilities to the ultimate test, all they had to do was to execute their highly-developed skills—**it was as if reaching the top of the mountain was a foregone certainty.**

### Opportunity Meeting Preparation

Growing up Eric had the added benefit of being raised by a father who **understood that in order to succeed in life, you had to be prepared.** Though not even the best of us can take hold of all of life's opportunities, having the odds in your favor is a great advantage to have. I've often heard it said that the outcome of one's life can come down to the way a handful of days play out. Some of us will be blessed with countless opportunities while others may only get a few, so for those who go through their days failing to prepare, they may as well be preparing to fail.

### Letting Go of Ego

Furthermore, Eric knew what the rest of his team did as well, that only ego separated the weaker climbers from

the stronger ones. **Ego in a leader hampers ability on the mountain, much the same way it does in any aspect of life.**

**What a leader really needs is passion and humility.** Possessing the ability to see past yourself so that you can understand and connect with the challenge will allow you to succeed. For three months up on that mountain Eric and his team shared a common goal and respected one another, which time and time again led them past the breaking point, where other teams often failed.

**They worked as a team to achieve their magnificent and awe-inspiring feat.** If you want to do the same, no matter what heights you are striving to reach, the first step down that road requires that you leave all pre-tense behind.

Ego will never get you to the top of Mt. Everest, nor will it get you through any of life's many challenges.

*So, what is your Everest? Where are you trying to take your life? Who are the people that belong on your "team", do you trust them to do all they can to support your climb? Are you prepared, well-conditioned, and equipped for your destination? What fears will you have to face and what obstacles are you determined to overcome? When do you start? When will you arrive? And, can you enjoy the journey and the views along the way? Who will you have to become to "summit"? Who will you be when you return?*

*Who will you share your lessons with and enable to make their own climb? The view from up high is incredible, but not if it is only you who see it. How many people are you meant to inspire to "see" the sights that their journey holds for them? Finally, **what are you waiting for?***

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# Standard and Functional Strength Training

by **Wayne L. Westcott, Ph.D., CSCS**, who directs the Quincy College Fitness Research Programs. He has been a strength training consultant for the US Navy, ACE, the YMCA of the USA, and Nautilus. [Contact info](#)

Like some of you, I have been involved in the fitness profession for a long time, more than 40 years in my case. During those years I have seen a lot of pendulum swings and controversies, especially in the field of strength training. You may recall the sometimes bitter battles in the areas of free-weights vs. machines, multiple set vs. single sets, high repetitions vs. low repetitions, frequent workouts vs. infrequent workouts, high-volume training vs. high intensity training, fast movement speeds vs. slow movement speeds, sports specific exercises vs. total body exercises, and a variety of other training factors associated with optimal strength development.

The present issue of greatest prominence is standard strength training vs. functional training, which is often represented as training muscles vs. training movements. Clearly, there are valid arguments supporting both programs of strength exercise. The research on muscle development uniformly favors standard strength training (free-weights and machines) for most effectively increasing strength in the target muscles. That is, to best strengthen a given muscle or muscle groups you should perform standard and stable free-weight and/or machine exercises (e.g., free-weight bench press or machine chest press to strengthen the pectoralis major, anterior deltoid and triceps muscles).

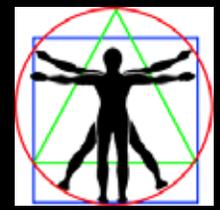
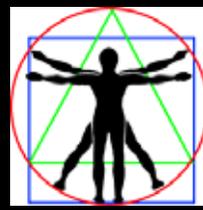
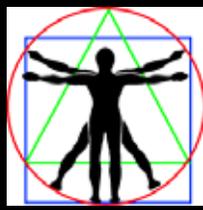
On the other side of the coin, it would appear that various functional training exercises provide more overall muscle communication and coordination which may have greater impact on specific movement patterns, postural factors and physical skills. Consequently, it may make sense to avoid one or the other and consider a sequential muscles and movements conditioning program that begins with standard strength exercise and progresses to various levels of functional training.

Here is an example of how we have attempted to combine standard strength training and a form of functional training in our fitness programs. First, we know that adults respond extremely well to basic and brief strength training sessions consistent with the 2006 American College of Sports Medicine guidelines (one set of 8 to 10 exercises for the major muscle groups, 2 or 3 days per week). Our studies with more than 3000 men and women have shown average strength gains of 40 percent and average muscle gains of 3 pounds after 10 weeks of training in this manner. And, because muscle mass and strength are arguably the most important fitness factors for aging adults we are determined to continue our standard (basic and brief) strength training program, which our participants perform in 20 minute sessions, 2 or 3 days per week.



Second, we know that the aging process is accompanied by muscle atrophy, especially in the more powerful fast-twitch (type 2) muscle fibers. Although standard strength training has produced some improvements in muscle power (approximately 8 percent increase in our studies), it has been hypothesized that faster exercise movements with lighter resistance would have greater impact on fast-twitch fibers and power development.

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## ACROSS THE GAMUT

We recently put this theory to the test by combining our 20 minute standard strength training program with 20 minutes of medicine ball throwing. Our medicine ball throws involved relatively powerful movements of the legs, midsection, torso and arms, culminating in a rapid release of progressively heavier medicine balls. The advantage of medicine ball training is that the momentum developed by the relatively powerful muscular actions to propel the ball does not subject the joint structures to high deceleration forces. This reduces stress and injury risk to the joint structures, while permitting an effective form of fast resistance exercise.



After 10 weeks of combined standard strength training and medicine ball throwing, our program participants experienced a 27 percent increase in

leg power and a 28 percent increase in upper body power. In addition to an injury-free exercise program, the class members (60 and 70 year old men and women) expressed high levels of satisfaction with the medicine ball training.

Because 20 minutes of continuous medicine ball exercise contributes another aerobic component to the training session, we reduced our treadmill walking to 15 minutes. Our program participants also performed 20-second stretches immediately after each weightstack machine exercise for the muscles just worked (e.g., quadriceps stretch following the leg extension exercise; hamstring stretch following the leg curl exercise). The complete workout combining standard strength training and functional training requires less than one hour and includes the following fitness components:

(1) muscular strength; (2) performance power; (3) cardiovascular endurance; and (4) joint flexibility.

We have been pleasantly surprised with both the favorable reception and the excellent results experienced by the participants in our combined basic strength training and medicine ball throwing program. We believe that there are complementary fitness benefits of both training procedures, and feel that doing some of each is preferable to doing one without the other. Clearly, other combinations of standard strength training and various types of functional training (e.g., balance, speed, sport specific, etc.) should produce similar outcomes for more comprehensive physical conditioning programs.

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# Ask the Experts



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## **MINDI ANDERSON – PERSONAL TRAINING**

Mindi Anderson, BS, CPT (ACSM, ACE, and ISSA), also specializes in training for seniors as a leader for the Arthritis Foundation. She has experience as a Fitness Director for Covenant Retirement Communities combined with personal training and wellness coaching through her business, Fit Mystique. Mindi is a nationally-qualified Figure Competitor with the NPC, who moonlights as their online journalist. Her articles have graced several senior publications, newsletters, *Countryside Magazine*, and cumulative fitness websites. Mindi's enthusiasm for wellness is exhibited through both public speaking and her passionate writing.

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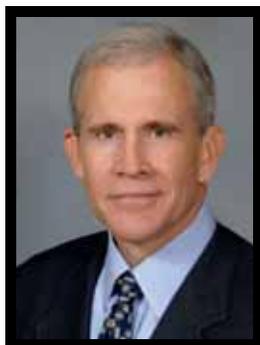


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## **NAOMI AARONSON – MIND BODY**

Naomi Aaronson, MA OTR/L CHT CPI, is an occupational therapist, certified hand therapist, and mat Pilates instructor who believes in the power of exercise in recovery. Naomi's articles have been featured in *IDEA Fitness Journal*, *Occupational Therapy ADVANCE*, and *Women and Cancer* magazines. She is the co-author of the continuing education courses *Return to Life: Breast Cancer Recovery Using Pilates*, *Breast Cancer Recovery: On Land and In Water*, and *The Breast Cancer Recovery Exercise Program*. Naomi offers live courses through *Integrated Rehabilitation and Fitness*.

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Marci Clark, MA, CPT, GFI, is an international fitness and wellness programming presenter with over 20 years experience in the fitness industry, specializing in Pilates exercise. She is the creator of the Foundational Pilates program and owner of Marci Clark Wellness Centers. Marci is widely published in the areas of Pilates, fitness programming and business and consults in the areas of group fitness, programming and business planning.

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Nancy Clark, MS, RD, CSSD (Board Certified Specialist in Sports Dietetics), counsels both casual and competitive athletes in her private practice at Healthworks, the premier fitness center in Chestnut Hill, Massachusetts (617-383-6100). Her Sports Nutrition Guidebook and food guides for marathoners, new runners, and cyclists are available via [www.nancyclarkrd.com](http://www.nancyclarkrd.com). For a list of upcoming events/workshops, see [www.sportsnutritionworkshop.com](http://www.sportsnutritionworkshop.com).

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[www.sportsnutritionworkshop.com](http://www.sportsnutritionworkshop.com)    [community.active.com/blogs/NancyClarkRD](http://community.active.com/blogs/NancyClarkRD)



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### CASEY CONRAD – GROWING YOUR PT BUSINESS

Casey Conrad, BA, JD, President of Communication Consultants WBS, Inc., has been in the health and fitness industry for 26 years. In addition to authoring “Selling Fitness: The Complete Guide to Selling Health Club Memberships,” she has created and published over 25 other sales, marketing and management training products for the industry. She has spoken in 19 countries, is a feature presenter at conventions and trade shows worldwide and writes monthly for numerous international magazines.

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# Ask the Experts



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Cammy Dennis, BS, CPT (ACE and AFAA), is Fitness Director for On Top of the World Communities Inc., a 55-plus adult community and The Ranch Fitness Center and Spa. Her 20 years experience in the fitness industry includes group exercise instruction, personal training, lifestyle coaching and program management. Her specialty is curriculum development for youth and senior fitness. She co-authored Kids In Motion and numerous articles on youth and senior fitness for Asiafit, SCW Fitness Education and ICAA.

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## **BETHANY DIAMOND – WATER FITNESS**

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Sally Edwards, MA, MBA, is a leading expert in business, exercise science and lifestyle living. She created the Heart Zones Training proprietary and branded training system. Sally is a best-selling author and sought after professional speaker with 23 books and 500 articles on health and fitness, including Heart Rate Monitor Guidebook and The Complete Book of Triathlons. She is a 16-time Ironman finisher, a member of the Triathlon Hall of Fame, and Western States 100 Mile Endurance Run winner. She is the founder and CEO of Heart Zones USA, the training, education, health club programming, and coaching company.

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Chris Gellert, PT, MPT, CSCS, CPT, is President of Pinnacle Training & Consulting Systems that provides educational materials to personal trainers via home study courses, minibooks, live seminars and DVDs. Chris has authored the only advanced continuing education course that examines how human movement occurs biomechanically, common pathologies and training based on science and research. As a physical therapist and personal trainer, he lectures, writes and consults, and is pursuing an orthopedic residency in physical therapy.

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Sherri Horner is a radio talk show host, fitness professional, motivational speaker and writer. She is a yoga teacher, and an AFAA certified personal trainer and group fitness instructor. She is trained in Tae Kwon Do and has received specialty training from Empower Training Systems, Yogafit and Silver Sneakers. Her column has been published in a Philadelphia Christian Bodybuilding Magazine and Delaware and New Jersey wellness magazines. She is the founder and president of Health Fitness Broadcast. Since 2004 her interviews with leading experts have resulted in a treasure chest of information.

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Karsten Jensen, MS Exercise Physiology, CPT (CPTN), is a high performance trainer at the University of Toronto. He has trained World Class and Olympic Athletes from 13 different sports since 1993, many winning European Championships and World Championships and Association of Tennis Professionals Tournaments. Karsten is an international speaker, author of several books (most recently The Flexible Periodization Method) and is an educator with the Certified Professional Trainers Network. He also shares “Insider Principles of World Class Strength and Conditioning Methods” through his web site.

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### TIM KEIGHTLEY – THE BUSINESS OF PERSONAL TRAINING

Tim Keightley is V.P. of Fitness for Golds Gym International. He is also an international presenter and motivational speaker. Since teaching his first class in 1983, he has experienced life as an Officer in the British Royal Marines, a Professional Golfer, a ‘Stuntman’, a personal trainer to a Boxing World Heavy Weight Champion, built the largest personal training business in Europe and was V. P. of Fitness for Town Sports International. Tim believes that part of our secret to success is to learn how to have FUN in all that we do, build on our PASSION and show others how PROUD we are of what we can do for them.

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# Ask the Experts



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Susan Lee, MPE, MA, CPT (CPTN), President of the Certified Professional Trainers Network (CPTN) works with leaders and partners to offer education, certification, leadership and advocacy for personal trainers and fitness professionals. Concurrently, Susan develops co-curricular diversity and equity programs for the Faculty of Physical Education and Health at the University of Toronto in Canada.

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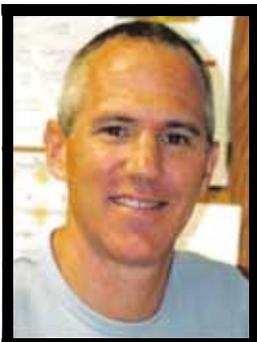
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## **JENNIFER MANNING – INJURY PREVENTION**

Jennifer Manning, DPT, OCS, CPT (NSCA CSCS), was inspired to be a physical therapist after suffering an ACL tear in high school. She is the creator of PrehabFitness.com, a website focused on injury prevention and exercise education. She has had the pleasure to work with people of all ages and talents. Her latest clients include football players preparing for the NFL, a fighter in the UFC and Level 10 gymnasts in the United States and Canada. Jennifer is currently practicing physical therapy at Breakthrough Physical Therapy in Irvine California.

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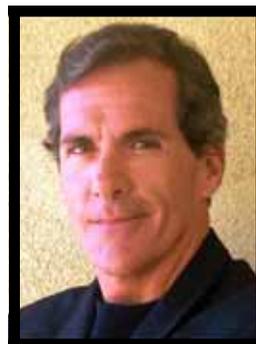
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### **JAMES MCPARTLAND – PURPOSEFUL EMPOWERMENT**

James McPartland, former President of Star Trac Fitness, is an author, international speaker and ‘wellness ambassador’ focused on developing the human potential within business. His present endeavor at The JMac Performance Group has allowed him to further play a leadership role in the health & fitness industry for now more than twenty years. Much of his current business advisory and speaking activity demonstrates a philosophy called Crosstraining for Life™, focusing on uncovering the potential that lies within a company by developing the potential of the people employed inside the business.

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# Ask the Experts



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## TIM ROCHFORD – SELF DEFENSE

Tim Rochford, CPT (ACE, The Cooper Institute and NSCA), 6th degree Black Belt (Kajukenbo Karate), founder and owner of Empower Training Systems (a self defense/martial arts/kickboxing fitness instructor training & certification company), has authored numerous instructor training manuals, including (co-author) the ACE *Kickboxing Fitness Specialty Training* manual and the *Proactive Personal Security Self Defense Instructor Training Program*. He is an ACE and ISSA continuing education specialist.

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## MARK ROOZEN – YOUTH STRENGTH AND SPORT CONDITIONING

Mark Roozen, MEd, certified strength and conditioning coach (NSCA CSCS\*D and CPT, and FNSCA), is Senior Content Editor for STACK Media which promotes safe training and sports enhancement and is Co-Director of the Performance Education Association. He has been in the strength, conditioning and performance field for over 28 years. Mark has worked with teams from the high school to the professional levels as a strength coach; performed as director of a hospital owned fitness and training facility, as well as owned his own training center; and, has worked with over 30,000 youth in sport camps across the country. He has presented, written and consulted worldwide.

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## CODY SIPE – EXERCISE AND AGING

Cody Sipe, PhD, ACSM Certified Clinical Exercise Specialist, ACSM Registered Clinical Exercise Physiologist, is an award-winning industry leader in fitness for older adults with over 17 years of experience. He serves on the editorial boards of IDEA and Active Aging Today and is an advisory member for Canadian Fitness Education Services, WholyFit, the National Posture Institute and the ICAA Visioning Board. Cody is a past recipient of the IDEA Program Director of the Year award. His blog [www.codysipe.com](http://www.codysipe.com) provides innovative fitness and business information for professionals working with older adults.

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### **BRIAN SOUZA – EXERCISE PSYCHOLOGY AND NUTRITION**

Brian Souza, BS, ACSM-HFS, is the owner of Be Fit Personal Training, a company providing theoretically and evidence based exercise to a variety of populations. Brian has been in the personal training industry for 10 years. He is will obtain a Master’s degree in Sport and Exercise Psychology from Springfield College in May 2011 and then will continue his education in a Doctoral level Sport and Exercise Psychology program. His research interests include exercise psychology, applied sports psychology, sports and exercise nutrition, positive psychology, and youth sport. He competes as a recreational triathlete.

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### **JIM STARSHAK – TAI CHI FOR HEALTH**

Jim Starshak, MS, NSCA-CPT, IDEA Elite PFT is the Governing Board Chairman for the international Tai Chi for Health Institute, a Tai Chi for Health Master Trainer, an Exercise Science Adjunct Professor, and founder of The Home Gym, Inc. After 18+ years in US Special Forces (“Green Beret”), Jim is a disabled veteran who promotes tai chi internationally for its functional fitness and health benefits. He certifies Arthritis Foundation Tai Chi instructors and provides continuing education for Health & Fitness Professionals, Athletic Trainers, Physical & Occupational Therapists, and Nurses.

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### **WAYNE L. WESTCOTT – STRENGTH TRAINING**

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# Ask the Experts



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## **MICHAEL WOZNIAK**

Michael Wozniak BS, CPT, is the manager of the hospital-related fitness center at Harbor Hospital in Baltimore, Maryland. He has 13 years experience in the fitness industry working with clients ranging from youth athletes to seniors and special populations. He has a Bachelors degree in Sport Psychology and is an ACE Certified Personal Trainer.

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## **ROSE ZAHNN – YOGA**

Rose Zahnn, CPT (ACE), GFI (AFAA), E-RYT200 (Yoga Alliance), is the founder and owner of Healthy Habits Fitness-Yoga-Pilates Studios, creator of *PilatesFit* and the *Learn to Be Lean Program*, and is a Master Trainer for YogaFit International, Flirty Girl Fitness, and Balletone. A UCLA graduate and a fitness professional for over 20 years, Rose teaches at Healthy Habits in Sacramento, California; presents at conferences, leading teacher trainings and workshops; and is a continuing education provider for ACE and AFAA.

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[Herbal Health Products: What you should know](#) - Describes some common side effects of popular supplements, and what to avoid if you suffer from certain conditions. (American Family Physician)

[Supplements Information](#) - Allows you to look up a supplement by name, and find out background, dosing information, and pertinent research. (Mayo Clinic)

[Tips for the Savvy Supplement User](#) - Overview containing tips for evaluating information (labels, books, internet resources) and guidelines for making informed decisions about whether or not to take supplements and how to purchase wisely. (U.S. Food and Drug Administration)

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