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Come January, a new group of resolution makers will show up at group fitness classes hoping to reach their goals this year. And while members are taking on new fitness goals, fitness instructors can also look to the New Year to set new goals and improve their teaching skills.
Exercise in the Prevention and Treatment of the Childhood Onset of Adult Disease

Last summer the American Academy of Pediatrics (AAP) issued a startling recommendation. In light of the childhood obesity epidemic and the childhood onset of adult diseases such as metabolic syndrome and type 2 diabetes, the AAP advised pediatricians to consider prescribing cholesterol-lowering medications for certain high-risk patients with elevated levels of low-density lipoprotein (LDL) cholesterol (Daniels & Greer, 2008). Now thousands of children as young as age eight may be taking the same medications as their grandparents. While lifestyle approaches such as improved diet, increased exercise and behavioral modification have always been first line therapy, this new recommendation highlights the dire state of childhood obesity in the United States and the growing acceptance of pharmacological, and in some cases even surgical, treatment.

But lifestyle changes should not be underestimated. Childhood obesity results from an imbalance between energy intake and energy expenditure. By improving nutrition habits and increasing physical activity, many children can avert the harmful consequences of obesity and achieve and maintain a healthy weight. Yet children and adults alike struggle to make healthy food choices and incorporate exercise into their daily lives. For children who already are beginning to experience health complications from obesity, exercise is no longer optional. There is no better time for knowledgeable fitness professionals to take action and help these children adopt a safe, fun, effective and sustainable fitness program.

Obesity and its Medical Complications

The latest statistics suggest that rates of childhood obesity may be leveling off, but still an alarming 16 percent of U.S. children are obese and 32 percent are overweight or obese (Ogden, Carroll and Flegal, 2008). The potential long-term consequences of obesity are staggering. Nearly every organ of the body is negatively affected (see “Complications of Obesity,” page 4), causing complications as varied as asthma and sleep apnea to gallstones, fatty liver and bone fractures, and polycystic ovary syndrome in girls (Barlow, 2007). Social marginalization, type 2 diabetes, cardiovascular disease and myriad other morbidities are real threats for overweight children during childhood as well as into adulthood (Lobstein, Baur and Uauy, 2004). In fact, many of the metabolic and cardiovascular complications of obesity common in adults, such as impaired glucose tolerance and insulin resistance, high blood pressure, abnormal cholesterol and low-grade inflammation, already are present in obese children (Weiss et al., 2004). Metabolic syndrome—diagnosed when several of these risk factors cluster together—affects 4 percent of all adolescents and nearly 30 percent of obese children and adolescents according to the National Health and Nutrition Examination Survey (NHANES) (Cook et al., 2003). In adults, metabolic syndrome increases the risk of type 2 diabetes, cardiovascular disease and stroke (Ford, Li and Sattar, 2008; Gami et al., 2007).

Childhood-onset Type 2 Diabetes

Obesity is the major cause of insulin resistance, the precursor to type 2 diabetes. The primary role of insulin is to facilitate glucose entry from the blood to the body’s cells. In insulin resistance, the cells are less able to respond to insulin resulting in more glucose circulating in the blood. Initially the β cells of the pancreas can overcome insulin resistance by secreting more insulin, but eventually the pancreas can no longer keep up and blood sugar continues to rise. When glucose levels rise high enough, a diagnosis of type 2 diabetes is made. While the exact pathway is uncertain, a combination of elevated free fatty acids; inflammatory markers; and low adiponectin, a protein hormone important for glucose regulation, are thought to mediate pancreatic β-cell failure (Cali and Caprio, 2008).

The childhood onset of any diabetes is devastating. Among children diagnosed at age 10, it is estimated that boys will lose 18.7 life years and 31 quality-of-life years, and girls will lose 19 life years and 32.8 quality-of-life years; the loss is greater in minority groups and highest in non-Hispanic black children (Narayan et al., 2003). Blindness, kidney failure, cardiovascular disease and amputations are Continued on page 4
Complications of Childhood Obesity

- **Psychosocial** – low self esteem, depression, decreased quality of life
- **Neurological** – pseudotumor cerebri (severe headaches and sensitivity to light)
- **Cardiovascular** – hypertension, cholesterol abnormalities, increased risk of coronary disease
- **Respiratory** – asthma, sleep problems
- **Endocrine** – type 2 diabetes, polycystic ovary syndrome, hypothyroidism
- **Gastrointestinal** – nonalcoholic fatty liver disease, gallstones, gastroesophageal reflux, constipation
- **Musculoskeletal** – Blunt’s disease (bowing of lower extremity), slipped capital femoral epiphysis (hip or knee pain with walking), fractures and musculoskeletal discomfort
- **Skin** – acanthosis nigricans, chronic irritation and infection in folds of skin

Source: Adapted from Barlow, 2007

among the complications of the disease—and the onset of these complications can begin in childhood (Cali and Caprio, 2008).

**Cardiovascular Disease (CVD) and Stroke**

Atherosclerosis of the coronary arteries (the vessels that supply blood to the heart) is the main culprit behind chest pain (angina) and heart attack (myocardial infarction, or MI). Although the condition is not usually dangerous until middle age and beyond, atherosclerosis begins to develop in childhood (Newman et al., 1986). During the earliest stages of atherosclerosis, “fatty streaks” of oxidized cholesterol and lipid particles accumulate deep in the arterial wall. Due to the typical high-fat, low-fiber diet and sedentary lifestyle favored by the majority of Americans, these fatty streaks develop by their teenage years (McGill and McMahan, 1998). Because fatty streaks do not yet obstruct blood flow, there are no outward signs or symptoms of cardiovascular disease. Over time, however, a cholesterol plaque develops in the artery, which may become susceptible to rupture. If the ruptured plaque blocks blood flow to the heart, an MI occurs. If it blocks flow to the brain, it causes an ischemic stroke.

Research confirms that the severity of atherosclerotic lesions is associated with elevations of total cholesterol, LDL and triglycerides, and low HDL-cholesterol (Berenson et al., 1998). Further, the more CVD risk factors present, such as abnormal cholesterol levels, high blood pressure, and obesity, the worse the atherosclerosis (Berenson et al., 1998). Childhood obesity leaves children susceptible to life-threatening heart disease at increasingly younger ages.

**Fending Off Disease With Exercise**

Exercise is at the forefront in the prevention, control and treatment of diabetes and cardiovascular disease and other obesity-related morbidities. Exercise helps control blood-sugar levels by improving insulin sensitivity and by helping cells take up glucose through insulin-independent pathways. Exercise also decreases blood pressure, modestly decreases LDL-cholesterol, reduces triglycerides and body fat, and increases HDL-cholesterol (Atlantis, Barnes and Singh, 2006; Daniels and Greer, 2008). A review of randomized trials (the gold standard in research design) of exercise studies found that exercise—typically in the form of moderate-to-high intensity aerobic exercise plus behavioral dietary intervention—significantly reduced body fat in preteen obese boys and girls (Atlantis, Barnes and Singh, 2006). Research confirms what fitness professionals intuitively already know: Exercise is an effective treatment for childhood obesity.

**Training the Child with Obesity**

As pediatricians become increasingly more vigilant in identifying overweight and obese children and urging them to adopt a fitness program, and parents become more aware of the importance of recognizing and addressing childhood obesity, more children and their families will seek out fitness experts. Your challenge is to design a safe and effective program that your clients will love.

**Initial Assessment**

Start by getting to know your clients. What kinds of activities do they enjoy? Are there particular skills they’d like to learn? The key to a successful program for children is making it fun. To do that, you have to know what the child likes, his or her commitment to and interest in the program, perceived strengths and weaknesses, and past successes and failures. The initial assessment is also a good time to assess social support; whether current level of sedentary behavior including television and DVD watching, video games, and computer use exceeds AAP’s recommended maximum of two hours per day; and barriers to physical activity. Some research suggests that overweight and obese children face unique challenges that a well-designed program may overcome (see “Top Five Barriers to Physical Activity, page 5”). Seek physician clearance and recommendations prior to program design and implementation.

You may want to consider baseline anthropometric measurements. The AAP recommends that physicians and healthcare providers assess body mass index (BMI) on an annual basis (Barlow, 2007). If the client’s pediatrician regularly assesses BMI, you may be able to obtain recent BMI or growth-chart information from the client’s parents or pediatrician. However, if done in a nonjudgmental and sensitive manner, it is also appropriate for you to collect the data yourself. If you do anthropometric measurements, first become familiar with gender- and age-appropriate growth charts (available at www.cdc.gov/GrowthCharts/). Children with a BMI that is equal to or greater than the 85th percentile, but less than the 95th percentile for age and gender, are considered overweight. Individuals with a BMI equal to or greater than the 95th percentile for age and gender are considered obese. While “overweight” and “obese” are the clinical terms, health professionals are advised to use more neutral terms such as “weight,” “excess weight” and “BMI” when discussing a child’s weight with families (Barlow, 2007). The AAP discourages routine use of skinfold measurements, and does not recommend waist circumference measurements due to uncertainty of appropriate cutoff levels.
and measurement difficulty (Barlow, 2007). Fitness assessments also are useful for measuring the child’s progress; however, be sure to frame the assessment as a “challenge” rather than a “test,” suggests Avery Faigenbaum, associate professor in the Department of Health and Exercise Science at The College of New Jersey. Writing in the “Youth” chapter of Health and Exercise Science at The College of Associate Professor in the Department of

Frame the assessment as a “challenge” rather than feel that they are being evaluated and judged (Faigenbaum, 2008). Faigenbaum recommends using or adapting the Fitnessgram (Meredith and Welk, 2007), which assesses the various components of fitness as follows:

- Aerobic capacity measured with the PACER 20-meter shuttle run, a one-mile run, or walk test
- Upper-body strength and endurance assessed with curl-up or trunk lift
- Core strength and endurance measured by sit-up and end with a 10- to 15-minute cool-down and static stretching (Faigenbaum, 2007). If you choose to incorporate resistance training, keep the following guidelines from the AAP Committee on Sports Medicine and Fitness (McCambridge and Stricker, 2008) in mind:
  - Before beginning a formal strength-training program, require that a medical evaluation be performed by a pediatrician or family physician.
  - Ensure proper resistance-training techniques and safety precautions are in place. Determine whether initiation of a strength-training program is necessary or appropriate.
  - Always begin with a 10- to 15-minute warm-up and end with a 10- to 15-minute cool-down. A resistance-training program is best paired with cardiovascular conditioning to achieve maximum health benefits.
  - Teach exercises initially with no added load. Once the exercise technique has been mastered, increase the resistance. The training program should involve two to three sets of eight to 15 repetitions, two to three times per week and be of at least eight weeks duration.
  - Address all the major muscle groups, including the core, and exercise through the full range of motion.
  - Finally, physical activity from physical education classes, walking to school, riding a bike, recreational activities, sports, chores and playing on the playground all count toward the recommended accumulated minutes of daily activity. By simply substituting a portion of sedentary time typically spent watching television, playing video games or talking on the phone for a few of these

Program Design

The USDA’s Dietary Guidelines for Americans 2005, the recently released 2008 Physical Activity Guidelines for Americans, and several expert committees recommend that children exercise 30 to 60 minutes per day at a moderate intensity most days of the week adding up to 210 to 360 minutes per week (Daniels et al., 2003; Saris et al., USDA, 2005; DHHS, 2008). For previously sedentary children accustomed to television watching and video games, this may seem like a tall order. But there is good news.

First, a summary analysis of the studies conducted on the role of exercise in the treatment of childhood obesity found substantial benefits, including about a 6.5 pound weight loss (3 kg) over 14 weeks at 155 to 180 minutes of moderate-intensity exercise per week—about 20 to 25 minutes per day (Atlantis, Barnes and Singh, 2006). While it’s desirable to build up to an hour of activity per day, children can start slowly with lesser amounts of exercise and still achieve significant benefits. And remember, the goal is not necessarily weight loss, but rather decreased BMI (children “growing into” their weight) and, ideally, a lifelong interest in physical activity.

Second, all of the exercise does not have to be done in one continuous bout. In fact, when designing an exercise program for children you should avoid extended sessions without rest or recovery; kids tend to enjoy games and non-sustained activities and become easily bored with the monotony of treadmills and other exercise machines that adults successfully endure. Choose circuits and games for your training sessions. A one-hour workout session might include 10 to 15 minutes of a dynamic warm-up, 20 to 30 minutes of fitness conditioning, 10 to 15 minutes of games, and 5 minutes of cool-down and static stretching (Faigenbaum, 2008). You also may consider adding resistance training, if appropriate.

While little research has been done on the role of weight training in the treatment of excess weight in children, it has the potential to improve cardiorespiratory fitness, body composition, blood lipids, bone mineral density, motor performance skills and some psychological measures (Faigenbaum, 2007). If you choose to incorporate resistance training, keep the following guidelines from the AAP Committee on Sports Medicine and Fitness (McCormack and Stricker, 2008) in mind:

- Before beginning a formal strength-training program, require that a medical evaluation be performed by a pediatrician or family physician.
- Ensure proper resistance-training techniques and safety precautions are in place. Determine whether initiation of a strength-training program is necessary or appropriate.
- Always begin with a 10- to 15-minute warm-up and end with a 10- to 15-minute cool-down. A resistance-training program is best paired with cardiovascular conditioning to achieve maximum health benefits.
- Teach exercises initially with no added load. Once the exercise technique has been mastered, increase the resistance. The training program should involve two to three sets of eight to 15 repetitions, two to three times per week and be of at least eight weeks duration.
- Address all the major muscle groups, including the core, and exercise through the full range of motion.
- Finally, physical activity from physical education classes, walking to school, riding a bike, recreational activities, sports, chores and playing on the playground all count toward the recommended accumulated minutes of daily activity. By simply substituting a portion of sedentary time typically spent watching television, playing video games or talking on the phone for a few of these...
Training the Middle-aged Back

Jason Tanner is a 42-year-old regional sales manager whose 50-hour weeks largely consist of driving and attending meetings. He suffers from recurring low-back pain at work and while playing sports. His only form of exercise is playing basketball twice a week.

Pam Westfield is a 38-year-old homemaker who also suffers from low-back pain while lifting and carrying her 1-year-old daughter. Her only forms of exercise are daily walks and a weekly yoga class.

Jason and Pam are a part of a growing population of middle-aged adults that suffer from recurring low-back pain. Interestingly, low-back pain (LBP), which equally affects men and women, most often occurs between the ages of 30 and 50. And approximately 80 percent of adults will suffer from LBP at some point in their lives.1

The fitness industry has seen a surge in clients like Jason and Pam, whose lives increasingly reflect the struggle between competing pressures. Too often, exercise takes a backseat to work, family and social commitments. This has resulted in deconditioned individuals with poor postural and ergonomic habits that lead to musculoskeletal problems. These individuals are at high risk for injury and need guidance from fitness professionals to help restore balance and improve their overall health and well-being. The purpose of this article is to provide you with the tools and information you need to effectively address the problem of low-back pain, particularly for your middle-aged clients.

Risk Factors

Prevention is the key for this population, and clients such as Jason and Pam often benefit from identifying or eliminating specific factors that may lead to further musculoskeletal injury. Common risk factors associated with LBP include but are not limited to:1,6

- Heavy lifting, pushing or pulling
- Bending forward while twisting the spine
- Prolonged static postures
- Obesity
- Stress or depression
- Poor physical fitness
- Inherited diseases (e.g., degenerative disc disease)
- Smoking
- Pregnancy
- Other diseases (e.g., osteoarthritis, rheumatoid arthritis, ankylosing spondylitis and cancer)

Causes of Low-back Pain

Understanding the cause of a client’s LBP will help lead to an accurate program design and recommendations. The most frequent causes of LBP include mechanical pain, traumatic injuries and, to a lesser extent, medical conditions and diseases.

Mechanical Pain

Mechanical pain may originate from abnormalities in the vertebrae, intervertebral discs and facet joints. Other causes may include muscle spasm or myofascial restriction.1,6,7 Pain occurs when these injured structures are repeatedly stressed through movement.

Both Jason and Pam fall into this category due to their lifestyle behaviors. Jason continues to sit for prolonged periods, which creates an excessive load to the lumbar spine. Pam repeatedly lifts her child by forward bending and twisting, which causes excessive shear forces to the vertebral joints.

Traumatic Injuries

Acute traumatic events often result in ligament sprains or vertebral fractures, which can be a source of pain. The severity of traumatic injuries varies from a simple ligament sprain caused by improper lifting to a severe fracture from a motor vehicle accident. In older adults, non-traumatic vertebral fractures have been linked to osteoporosis.1,6,7 For example, a fracture can result from repetitive coughing or rolling over in bed. Acute traumatic events should be treated immediately by the appropriate medical professional.

Medical Conditions

To a lesser extent, LBP can be caused by certain orthopedic conditions such as scoliosis, spinal stenosis, osteoarthritis or osteomyelitis (bone infection). Less obvious causes may also include pregnancy, kidney stones, endometriosis, rheumatoid arthritis and fibromyalgia.1,6

Back to Basics

To assist clients such as Jason and Pam, all aspects of their lives must be assessed to ensure a proper program design. Identifying and correcting poor movement patterns and postural changes that occur at home (e.g., activities of daily living, or ADL), work and during exercise are necessary to help reduce the risk for injury.
Activities of Daily Living (ADL)

It is essential that you analyze the client’s movement patterns when they are participating in activities of daily living. In Pam’s case, identifying how she is lifting and holding her daughter will provide some key information. Is she lifting with her legs or low back? Does she hold her daughter on her hip? Does she bend and twist while putting her child in the car? These are some of the questions that should be asked. Recommendations with supporting literature (e.g., handouts, pamphlets) should be provided to the client. While this is within the scope of practice of a fitness professional, it is essential that you not attempt to make a diagnosis. When necessary, refer the client to an appropriate medical professional.

Here are some common ADLs that could be potential risk factors for injury:
- Doing laundry or loading the dishwasher
- Vacuuming
- Changing bedding
- Lifting (e.g., kids, groceries)
- Gardening
- Carrying objects (e.g., up or down stairs)

Work Activities

In Jason’s case, the most important area to analyze is his job. There is a wide spectrum of occupations that can lead to low-back injury. On one end of the spectrum, physically demanding jobs that require repetitive motions such as total-body vibration, pushing, lifting and pulling can result in injury. It is virtually impossible to maintain perfect body mechanics while engaging in certain occupations. Plouvier and colleagues found that individuals who spent more than 20 years working at a job that required repeated bending, twisting and prolonged sitting experienced greater risk for injury.8 In Jason’s case, the combination of prolonged static positions with repetitive movements. Lis and colleagues found that the risk of LBP increases with awkward postures and repeated movements during static sitting.10 In Jason’s case, the static posture is not the sole cause of LBP. Rather, it is the combination of poor posture and movement patterns that could be contributing to his pain. Important questions to ask may include: Is his workstation and car seat ergonomically correct? Does he have poor posture while sitting? Does he use poor movement patterns at work or while driving?

Here are some common work positions that could be risk factors for injury:

The Desk Jockey
- Work station postures
- Talking on the phone
- Typing on the computer

Tips for Heavy Lifting

- Test the load first. Check to see how much the object weighs before attempting to lift it.
- Get close to the load. Get as close to the load as possible—as if you’re hugging the object. Having the object close to your body puts less strain on your low back.
- Maintain your curves. Keep yourself in an upright position while squatting to pick up the object.
- Tighten your abdominal muscles. Tightening the abdominals helps support the spine. Don’t hold your breath while tightening the muscles.
- Lift with your legs. Your legs are the strongest muscles in your body—use them.
- Pivot, don’t twist. Turn with your feet, not your back. It isn’t built for twisting.
- Avoid overhead loads. If a load is above your shoulders, use a step stool to elevate yourself until the load is at least at chest level—preferably waist height. Pull the object close to your body and then lift. Remember to maintain your curves and use your arms and legs to do the work.

Exercise and Sports

It also is important to assess how the client is positioning his or her body during physical activity. It is not uncommon for medical professionals to see clients that have sustained injuries during exercise. Currently, there is no clear epidemiological data on injuries resulting from improper form, poor periodization or overtraining. Therefore, it is your responsibility to ensure that your clients are exercising properly to prevent injury. Some questions that may need to be answered include: Does the client have adequate neuromuscular control in all three planes of motion (e.g., good control with movement)? Do they have muscle weakness and asymmetries that may predispose them to injury (e.g., abdominal core weakness)? Do they have adequate muscle length to accomplish the activity-specific movements (e.g., quadriceps or hamstring tightness)? Do they follow an appropriate training regime that is periodized for their activities (e.g., appropriate training timeline)?

This is where appropriate tests and measures are essential in assessing these clients. The foundations of an accurate and safe exercise program include the following:
- Complete medical screening and history
- Activity-specific movement analysis
- Activity-specific tests and measures (e.g., VO2, local muscular endurance, flexibility)
- Appropriate exercise programming based on the evaluation

The Injured Client

As a fitness professional, you will likely encounter some clients with a history of LBP. Mechanical LBP is the most common cause. With mechanical pain, the weakened back is vulnerable to re-injury due to the lack of support from the injured structures. Poor muscle strength and decreased neuromuscular control often occur due to pain and inhibition. Over time, this can decondition the abdominal core, which increases the risk for reinjury during ADL or exercise. Therefore, Jason and Pam’s deconditioned states could be causing re-injury.

Back on Track: Prevention

As we have explored the different aspects of LBP, it is easy to see how complex this condition can be for the

Continued on page 8
middle-aged client. Corrective exercise, which describes various techniques that address posture, flexibility, strength and movement patterns to improve the client’s overall well being, is the key to prevent LBP. In the realm of prevention, the corrective exercise model can be effective if applied in the right context—home, work and/or recreational activity. The following information is presented to provide you with a starting point for working with these clients. Further study is encouraged to attain an in-depth understanding of this topic. The ACE Advanced Health and Fitness Specialist Manual includes a detailed chapter on low-back pain.

Work
Making corrective recommendations at work can be quite challenging depending upon the client’s job characteristics. For example, Jason is a regional sales manager and travels to different sites for meetings. Each site may have variations in the chairs and workstations, which will directly affect how he is sitting and moving. Thus, the client’s individual characteristics (e.g., height, limb length) and job duties must be considered when recommending corrective postures and movements. Following are some general recommendations for both the desk jockey and the industrial worker.

The Desk Jockey: For this client, the most important recommendation is proper ergonomics at the work station. As mentioned earlier, the tasks done at the desk can be detrimental to the spine. Below are some general recommendations for workstation ergonomics:

- Chair should be adjustable with adequate lumbar support
- Chair should be on rollers to allow for proper positioning and repositioning
- Chair should not have arms, or should have arms that fold down
- Monitor should be right in front of chair, not to the side
- Monitor should be large with display height at eye level
- An ergonomically designed keyboard and mouse should be considered
- Keyboard should be in keyboard tray so that arms are level when typing
- Arms should not rest on a sharp corner or edge of desk
- A footrest should be used by persons whose legs do not adequately reach the ground
- A phone headset is recommended to free up hands and prevent cradling the phone with the neck

Providing general recommendations with supporting literature is appropriate. You may also consider recommending a consultation with a certified ergonomist. Most companies have trained individuals who help with workstation design and modification.

The Industrial Worker: The industrial worker is quite challenging due to the unique tasks that each job entails. Listing specific job descriptions with task demands is beyond the scope of this discussion. The following general recommendations may be beneficial for this client:

- Proper lifting mechanics (see above)
- Obtain an ergonomic consultation
- See a fitness professional for a work-specific exercise program

Recreational Activity
This is the easiest and most direct way for the fitness professional to assist in preventing LBP. Correcting the client during exercise is foundational for all fitness professionals. However, there still are some key principles to follow for preventing LBP:

- Avoid repeated spinal flexion and twisting activities with a deconditioned client. 
  Reason: The client may not have the core strength to support such activity.
- Focus first on proximal stability and then on controlled distal mobility. 
  Reason: Early core strength and control is essential in preventing LBP.
- Progressively load the spine with activity-specific patterns. 
  Reason: It is important to train the trunk and core to handle the demands of the activity.
- Support the spine during exercise activities (e.g., supine with knees bent). 
  Reason: Positioning the client with adequate back support can reduce chances of injury.

Conclusion
This discussion provided a brief overview of LBP and where to begin a prevention program. Preventing LBP in the middle-aged client—or any client, for that matter—should always begin with an analysis of the client’s activities at home and work and during recreational activity. Remember, it is the time when clients are not training with you that may put them at greatest risk of injury. The reader is encouraged to turn to page 7 for a general description of how to lift an object.
Pilates for All: How to Modify Common Pilates Exercises

If you’ve ever taken or taught a Pilates class, you know that the benefits are great. From core development to flexibility and even minimum cardio benefits (see sidebar) Pilates can be a beneficial workout for just about anyone. But, as an instructor, you also know that some of the traditional Pilates exercises—even ones touted as appropriate for beginners—can be too intense for some students. Michele Olson, Ph.D., professor of exercise physiology at Auburn University Montgomery and certified Pilates instructor, confirms this.

“Some Pilates moves can put undue pressure on the neck if done incorrectly—such as the roll-over and jackknife. Some of the abdominal moves, like the teaser, also call the hip flexors into high play. If a person has not progressed properly, moves like these have the potential to cause strains or undue orthopedic stress. Proper progression is the key.”

Olson, who also conducted one of the first studies on Pilates and its effectiveness in strengthening the rectus abdominis and the external oblique muscles, feels that most of the exercises can be modified for beginners or those with musculoskeletal conditions in which certain exercises would be contraindicated. She encourages instructors to consult with a participants’ doctor or physical therapist to discuss safe alternatives.

While certain moves will have to be avoided, there may be a plethora of other ones that can go far to strengthen those muscles that have shut down due to the back issue,” says Olson.

While some Pilates purists may scoff at the idea of modifying the exercises, many fitness professionals agree that it’s necessary to provide safe classes and to make it possible for more people to enjoy the many benefits of Pilates.

The Hundred
Classic Style. Lie on your back, feet off the floor and knees bent to 90 degrees so that the shins are parallel to the floor (this is called “tabletop” position). Arms are resting at the sides. Lift your head and shoulders, and extend the knees so that the legs are at a 45-degree angle to the floor. Inhale and pump the arms, palms down, 3 to 4 inches off the floor, five times. Exhale and pump the arms five more times. This is one breath cycle (or one repetition). Repeat until you have completed 10 breath cycles.

Modification Tips
- Instead of extending the legs at a 45-degree angle, keep the knees bent in tabletop position, or point the legs straight up to the ceiling, keeping the hips at a 90-degree angle.
- If the neck muscles get tired, place one hand behind the head or rest the head on the mat.

Exercises continued on page 10

Some Basic Guidelines
Modifying Pilates exercises follows the same type of rules you would use to modify other types of exercises. With Pilates, the body is the lever. You’ll remember from physics that the longer the lever, the greater the force that is required to move the object. To apply this to the body, the more extended the body is, the more difficult the exercise will be. For example, the hundred (see below) is done in a supine position with the legs lifted up and extended to about a 45-degree angle. The lower you bring the legs down, the more difficult you make the exercise—and the more the core muscles are called upon.

Another basic principle: A wider base offers greater stability, which in turn makes the exercise easier. The plank provides a good example of this principal. If being fully extended with the legs together is too difficult, have students separate the legs to create a wider base of support.

Let’s take a closer look at some popular Pilates exercises and how they can be modified for participants at any level.
Pilates in the Lab

While participants may feel as though they’re working hard during a Pilates routine, it’s not enough to elicit a significant aerobic benefit. According to a 2005 ACE-sponsored study, participants rated the beginning Pilates mat workout at 14.2 on the 6–20 ratings of perceived exertion (RPE) scale, or moderately hard. But heart rates averaged just 54 percent of maximal heart rate—below the ACSM’s recommendation of 64 percent to 94 percent. The intensity was equivalent to walking at a rate of about 2 miles per hour.

The advanced mat routine elicited more of an aerobic response than the beginning routine and, not surprisingly, a higher RPE—16.5, which corresponds to hard or very hard. Maximal heart rates averaged 62 percent, equivalent to the energy requirements of walking 3.5 to 4 miles per hour. In other words, while Pilates will strengthen muscles and enhance flexibility, the heart muscle seems to be minimally affected. If participants want optimal health benefits, they should supplement their Pilates workouts with some form of cardio exercise.

The Roll-Up

**Classic Style.** Lie on your back with legs straight and arms reaching diagonally backward above the head. Contract the abs and then inhale while bringing the arms forward, parallel to the chin. Nod the head forward and try to hit each vertebra as you coil the body up and forward in the shape of the letter C. Exhale and continue to coil forward from the hips, arms extending toward the feet, eyes gazing downward toward the toes. Inhale as you prepare to roll back, and exhale as the back contacts the mat, one vertebra at a time. Perform five to 10 repetitions.

**Modification Tips**

- Place a small, folded towel under the low back to provide support as you learn the exercise (or if you have a stiff back).
- Or come up half-way and roll back down.

The Double Leg Stretch

**Classic Style.** Lie on your back, head lifted, feet up, knees bent with toes pointing down, and hands touching the outer shins. Inhale and simultaneously extend both legs to a 45-degree angle while reaching the arms up and back until they are parallel with the ears. Exhale and circle the arms out and around in order to “cup” the lower legs as they return to the starting position. Repeat for a total of five to 10 breath cycles.

**Modification Tips**

- Place a large medicine ball under the upper back for support, but keep contracting the abs to avoid actually resting on the ball.
- Keep one leg bent, foot on the floor, and perform the exercise with one leg. Switch legs half-way through.
The Criss-Cross

**Classic Style.** Lie on your back, legs in the tabletop position, hands behind the ears. Lift the head and shoulders off the floor. Twist the trunk, bringing the right shoulder toward the left hip, with the left knee flexing inward. Extend the right leg up and out at a 45-degree angle. Repeat on the other side, bringing the left shoulder toward the right hip. Exhale each time you rotate; inhale between repetitions. Repeat for a total of 10 repetitions on each side.

**Modification Tips**
- Keep both knees bent in the tabletop position (90 degrees). This will give the back extra support and help target the obliques as you progress to classic style.
- Or, focus on one side at a time. Place one hand on your stomach and rotate toward the opposite knee for four repetitions. Repeat on the other side.

The Teaser

**Classic Style.** Lie on your back with your legs in the tabletop position. Place your hands above your head, pointing at the ceiling. Inhale. Exhale and roll through the spine and extend the legs until you sit up to a V-sit position. Arms should be parallel to the legs. Hold and inhale. Then exhale and slowly roll the upper body back down, one vertebra at a time, keeping the legs in the air. Return the arms and legs to the starting position. Perform five to 10 repetitions.

**Modification Tips**
- The teaser is very advanced and is heavy on hip-flexor activity. Working on the “balance” point by rocking back slightly and holding the parallel position with knees flexed will help you achieve better control when trying to master the entire movement.

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**Blanket “Rules”**

- For supine exercises that are performed with the legs extended and lifted, the smaller the angle between the legs and floor, the more difficult the exercise will be. This position calls the core muscles more into play, but also places more strain on the spine and its muscles. These exercises can be modified to take pressure off the back by:
  - holding the legs at a 90-degree angle
  - bending the knees
  - performing the exercise with one leg lifted, the other with knee bent, foot on the floor
- Some supine exercises also place a lot of strain on neck muscles because there is no support behind the head. Options include:
  - placing one or both hands behind the head to support the neck muscles
  - resting the head on the mat (note: more emphasis needs to be placed on contracting the abdominal muscles in this case, as lifting head and shoulders off the floor aids in contracting these muscles)
- When deciding how to modify an exercise, consider two things: lever and base. The plank, for instance, is usually modified by bringing extended arms down to the forearms. But it can also be modified by separating the legs (widening the base) or by bringing the knees to the floor.

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Carrie Myers is the fitness coordinator at the Mt. Washington Resort in Bretton Woods, N.H., and has been a freelance writer for 10 years.
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Prospective Study of Physical Activity and Risk of Postmenopausal Breast Cancer


Recently available research findings indicate that women of normal body weight who participate in vigorous exercise are approximately 30 percent less likely to develop breast cancer than their counterparts who don’t exercise vigorously. These results, involving a study of more than 30,000 postmenopausal American women, suggest that a sedentary lifestyle may be a risk factor for breast cancer—even in women who are not overweight.

In this investigation, a team of researchers at the National Cancer Institute of the National Institutes of Health tracked 32,269 women for 11 years and found that vigorous activity may protect against breast cancer even when there is no change in body composition. Vigorous activity was defined to include activities such as heavy housework (e.g., scrubbing floors, washing windows, heavy yard-work, digging, chopping wood) and strenuous sports or exercise (e.g., running, fast jogging, competitive tennis, aerobics, bicycling on hills, fast dancing).

It is important to note that the investigators observed that non-vigorous activity, such as relatively light housework (e.g., vacuuming, washing clothes, dusting, cooking, general gardening) and non-strenuous exercise or sporting activities (e.g., walking, hiking, easy jogging, bowling) did not lower a woman’s risk of breast cancer. Interestingly, vigorous activity was only protective in lean or normal weight women and not in those who were overweight or obese. The investigators offered some possible mechanisms (independent of body mass) through which physical activity may protect against breast cancer, including reduced exposure to growth factors, enhanced immune function and decreased chronic inflammation. All of these factors have been linked to both greater physical activity and lower breast cancer risk.

Separate and Combined Effects of Exercise Training and Weight Loss on Exercise Efficiency and Substrate Oxidation


A recently published study found that a group of sedentary and overweight older adults who participated in a four-month exercise program not only became more fit, but burned more fat, compared to older sedentary individuals who were placed on a diet but did not engage in exercise. In addition, this study also showed that when older people diet without exercising, they lose more muscle mass compared to those who exercise without dieting. Furthermore, when weight loss was achieved by a combination of diet and exercise, the loss of muscle mass was almost entirely prevented. The results of this investigation have important implications because older people tend to lose muscle mass as they age, which can limit their functional capabilities and impair their abilities to perform activities of daily living.

A major objective of the study was to identify the best way for the subjects to get better (i.e., more efficient) at completing a defined exercise task. Specifically, the researchers attempted to determine if a greater level of fitness could be achieved through exercise training, weight loss (through dieting), or both. In addition, the investigation sought to identify which energy source (carbohydrates or fats) the body would rely upon to fuel the activity under these different conditions.

The study involved 64 overweight or obese older adults (age range of 60 to 75), all of whom were sedentary at the outset of the study. The researchers divided the participants into three groups:

- Exercise-only
- Diet-only
- Exercise plus diet

Those subjects who were assigned to the exercise groups could choose to either walk on a treadmill or ride a stationary bicycle. (Note: Most participants chose to walk.) The individuals in the diet-only group reduced their caloric intake to achieve a 10 percent weight loss by the end of the four-month study period. Researchers measured how many calories the participants expended during a pre-established workrate on a stationary bicycle both at the beginning and at the end of the study. Among the key findings of the investigation:

- The exercise-only group expended fewer calories (became more efficient) on the exercise task at the end of the study compared to the beginning of the investigation.
- The exercise-only group relied more on fat stores as the source of their body’s fuel.
- The diet-only group did not gain efficiency in performing the exercise task, even though they weighed less at the end of the study period.
- The diet-only group’s weight loss resulted from a loss of both muscle and fat.
- The exercise-plus-diet group was the most efficient at the exercise task at the end of the experiment. This result suggests an additive effect of both dieting and exercise, but a significant portion of that benefit was due to exercise.

The exercise-plus-diet group, similar to the exercise-only group, relied more on fat stores as an energy source than on carbohydrates.
New Resolutions for Both You and Your Participants

Here they come...do you feel the energy? Can you hear the extra voices? Is there a parking spot left for you? Bustling locker rooms, jam-packed classes, new faces and old faces fill the club right after the holidays. Yes, you may be in the middle of the holiday frenzy, but the real frenzy of the New Year commitment crowd is just around the corner.

This new group of resolution makers will show up at our classes hoping to reach their goals this year. And while members are taking on new fitness goals, we fitness instructors can look to the New Year to set our own goals and improve our teaching skills. Some of us will take on new types of classes, while others may be looking to inject new ideas into the classes we already teach. Still others discover it’s time to freshen up their teaching style in general. Russian playwright Anton Chekhov once remarked that, “Knowledge is of no value unless you put it into practice.” Even the best instructor can continue to improve, so let’s look at some ways in which we can best put our knowledge into practice.

Try a New Format

So, you’ve got every step routine down to a science, you could sub a kickboxing class at the drop of a hat, and you have more indoor cycling playlists planned out than you know what to do with. While teaching something for a long time certainly provides a certain level of comfort, trying something new brings you back to what you learned when you first began teaching: It takes effort to be good. Trying a new format will force you to plan out the class on paper, practice the routine in your head and on your feet, and think through how to teach good form and technique. By becoming a newbie again you avoid the trap of simply going through the motions and instead get your creative juices flowing. Yes, it will require more effort for some time, but it won’t be long before you start reaping the benefits. Self-esteem comes from conquering new skills—I always feel a sense of accomplishment when I tackle a new format and deliver a great class. I taught my first kickboxing classes over a decade ago. In the beginning, I kept pages of notes as reminders, but now teaching kickboxing is as natural to me as driving a car.

Another benefit of taking on a new format is that your body will thank you. Injuries sustained by fitness instructors typically come from overtraining or overuse. Stepping takes a toll on the feet; cycling doesn’t allow you to move in multi-directional planes; and constant plyometrics can be brutal on the back. You may feel great today, but over time too much repetition can come back to haunt you. Trying something new is essentially like cross training for your body. If you currently pound away on a step two or three times a week, you may want to consider offering an aquatics class or a stretch class geared for older adults. The point is to try something new that will complement your current roster of classes.

Branching out of your comfort zone will benefit your participants as well. Many health-club members choose classes as much for convenience as they do for content—that 9:30 a.m. timeslot, for example, may simply fit into their schedules. But if indoor cycling is the only class offered at that time, then indoor cycling is all they are likely to do. Gym goers grow accustomed to their routines, even if that means reaping fewer benefits from their workouts. Switching up your class schedule may cause some turmoil in the short-term, but in time your participants will likely see the benefits. But it won’t be easy—about eight years ago I introduced the notion of yoga to my group of 5:30 am cardio addicts. Were they resistant? That’s an understatement. Did it stick? Yes, and then some. The yoga classes have grown exponentially and my participants’ bodies are more flexible and fit than ever.

Improve the Formats You Already Teach

Of course, changing format isn’t the only way to rekindle your teaching fire. Rather, you may want to explore ways to improve the classes you’re already teaching. If that’s the case, there are many ways to better your current teaching style.
Perhaps the greatest source of ideas and inspiration is your fellow instructors. Go to classes. It may be a challenge to attend another class when your teaching schedule is packed, but observing another instructor can be a powerful motivator. I love being a participant from time to time. I pick up on how the other participants perceive the class and its instructor and it often prompts me to change something I’m doing in my own classes. I also find it fun to follow someone else’s cues and choreography and I generally leave feeling motivated to try one or two of their moves. Remember, copying your peers is the highest form of flattery. I am happy to share my ideas with my co-workers. Every instructor is a unique individual, so even those who “copy” me will deliver it differently based on his or her personality and skills. Picking up one new idea for the warm-up or one new move with the resistance band can make a huge difference in how I feel the next time I teach a class.

The Internet is another great source for fresh ideas and new routines. One popular Web site I’ve turned to on occasion, www.turnstep.com, features instructors from all over the United States exchanging choreography ideas that are easy to access and, often, free. And www.youtube.com is full of video clips with ideas on almost every form of exercise. These are just two examples of sites that make it easy—and free—to liven up your teaching style.

**Improve Your Teaching Style**

New formats and better skills are admirable goals to work toward, but often it’s not what you present, but rather how you present it. Developing and honing your teaching style might be the key to your success.

One way to improve your style is to find a mentor. If there is an instructor you admire, ask if they’d be willing to coach you or attend one of your classes and offer you their thoughts and impressions on your presentation. Be humble and ready for honest feedback. As instructors, it is important to be able to both learn from and help each other. The goal should be to work together as a team so that everyone improves, and you grow to respect and care about each other, too.

Another way to fine-tune your teaching style and technique is to attend one of the many fitness conferences across the country. Not only do you gain knowledge and ideas from leading presenters in the industry, you can network with others, reconnect with new and old friends, and earn all of your needed CECs for the year in one weekend. Attending a two- or three-day conference with hundreds of other people who share your passion for fitness may be just what you need to inject new energy and inspiration into your work.

Robyn Stuhr, who heads up ACE’s Educational Academy, is intimately involved with organizing the annual ACE Symposium. “Our third year was a great success and attendance keeps growing every year,” says Stuhr. “We offer our professionals an affordable and entertaining way to grow in their career development with a range of workshops and lectures that cover a broad range of skills and education.”

If you’ve never been to a conference, then gather up a few peers and plan a trip. At the conference, you’ll have time between classes or during a lunch break to compare notes and ideas with people from all over the world. Fitness conferences are held all over the country throughout the year. Just be sure that the scheduled sessions have been approved for ACE CECs. Check out sites such as www.idealfit.com, www.scwfitness.com or www.acefitness.org for more information.

Finding time to attend a conference can be a challenge for many instructors; fortunately, there are many published and online educational resources aimed at fitness professionals. Browse the bookstore for something interesting or settle into a comfy chair with your laptop and peruse the many online sites that offer education and resources for fitness professionals.

With so many options and resources available to you, there is really no reason you can’t continue to grow and challenge yourself as an instructor. As you prepare for the holiday season and the stampede of resolution-making members into your classes, consider making a resolution of your own—to become an even better instructor. After all, every time you improve your skills, your members improve right along with you, and that’s what it’s all about. 

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Chris Freytag is the author of *Move to Lose* and is the fitness expert and a contributing editor for *Prevention* magazine. She is ACE certified and a member of the ACE Board of Directors, a master trainer for SPRI Products and the creator of numerous fitness DVDs including *Prevention Fitness Systems*. 
Exercise in the Prevention and Treatment of the Childhood Onset of Adult Disease

Continued from page 5

activities, children can begin to not only improve their physical health, but also feel more energetic and self-assured as well.

The Other Side of the Equation: Offering Nutrition Suggestions

For children to be successful in the battle against obesity, they also will have to make some behavioral modifications. While a registered dietitian is best qualified to provide children and their families with a specific eating plan and individualized recommendations, fitness professionals are well positioned to reiterate the following nutrition recommendations from the AAP (Barlow, 2007):

• Encourage families to eat meals together at home as frequently as possible. Restaurant and fast-food offerings often are loaded with hidden calories.

• Limit consumption of 100 percent fruit juice to 4 ounces per day, and minimize consumption of sweetened beverages and energy-dense foods.

• Control portions.

• Promote regularly eating a healthy, balanced breakfast.

• Encourage daily consumption of a variety of fruits and vegetables.

Keeping the Weight Off

Whether an adult or child, weight-loss maintenance can be challenging. When exercise is a major component of a weight-loss program, the benefits are quickly lost when activity lessons lessen (Ferguson et al., 1999). Ongoing physical activity is essential for a child to permanently overcome obesity. A few strategies you can adopt to promote adherence include:

• Incorporate parents and family into your training sessions. Few kids can be successful without family support. Help the family identify ways to be active together outside of the gym.

• Verbal support (e.g., encouragement) and instrumental support (e.g., transportation to physical activity) promote increased activity (Zabinski et al., 2003)

• Follow up. Periodically check in with the kids and their families. Your call or e-mail will serve as a gentle reminder to be active for those who have relapsed, or an opportunity for bragging for those who have maintained an active lifestyle.

• Empower older children and teens to become independent exercisers. Arm them with the knowledge and skills to safely and effectively continue, modify, and adapt their exercise program.

• Encourage replacement of sedentary activities with more physical activities. This could be as simple as trading out the Xbox for Nintendo Wii sports.

Beyond development of a safe and effective exercise program, it is especially important that children be exposed to enjoyable activities that are easily incorporated within the family’s lifestyle. Fun and support from family and friends are essential ingredients to a successful exercise program to treat and prevent childhood obesity.

Counter Culture

As a fitness professional, you can play a key role in countering the culture of childhood inactivity and overweight and subsequent childhood onset of adult diseases. It may not be easy, but with skill and sensitivity you can turn on a sedentary overweight or obese child to the excitement and rewards of physical play and a lifetime of healthy living.

Natalie Digate Muth, M.D., M.P.H., R.D., is a recent graduate of the University of North Carolina School of Medicine and is pursuing a career in pediatrics. She is also a registered dietitian and an ACE-certified Personal Trainer and Group Fitness Instructor, and an ACE Master Trainer.

References


Exercise in the prevention and treatment of the childhood onset of Adult Disease

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Built with both the average consumer and fitness professional in mind, the library serves everyone from the advanced trainer to the novice client. Consumer-friendly language is used for target body parts, along with more scientifically accurate anatomical terms of muscle groups. Integrated and full body exercises are included, along with how to progress between beginner, intermediate and advanced levels. You can also search for exercises based on specific equipment used such as the BOSU® Balance Trainer, TRX, barbell or resistance bands.

Tips are provided throughout the library to note common mistakes to watch out for, easy ways to correct your form and other key pointers. See an exercise you particularly like or find effective for your workouts? Let others know! Rate the effectiveness with the 5-star ranking system and add your comments for others to see. Your remarks will be highlighted as coming from an “ACE Professional” so consumers will recognize your qualifications.

What you will find is only the beginning! The library will continue to grow incorporating more exercises, extra tools and additional features. Check back often as we will regularly add new content. And let us know what you think or would like to see added—we want to ensure the library meets the needs of you and your clients.
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Choose from books about healthy, scientifically proven weight-loss truths, or tips for staying fit while on the road—a great resource for holiday travelers. Or, perhaps you’d like to give an annual subscription to ACE’s bi-monthly magazine ACE FitnessMatters—always packed with the most accurate, up-to-date and consumer-friendly fitness information available.

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Attention ACE-certified Clinical Exercise Specialists, Advanced Health and Fitness Specialists, and Personal Trainers

If you are an ACE-certified Professional with experience working with patients who have metabolic syndrome, diabetes and/or obesity, you can now obtain a subspecialty in clinical lipidology and become a certified Clinical Lipid Specialist. This certification will enable you to formally blend your exercise science knowledge with clinical lipidology and work with healthcare professionals in the care of patients with cholesterol disorders, metabolic syndrome and others with high cardiometabolic risk. First-step therapy for these patient populations is therapeutic lifestyle therapy, particularly exercise. A similar certification is offered to physicians, but now qualified allied health professionals can also demonstrate their professional commitment to the prevention of cardiovascular and metabolic disease.

Join the Accreditation Council for Clinical Lipidology (ACCL) and study to become a certified Clinical Lipid Specialist. Work with patients who have a variety of lipid disorders (e.g., hypercholesterolemia, hypertriglyceridemia, low HDL-C) and the metabolic syndrome (obesity, dyslipidemia, elevated fasting glucose and/or high blood pressure). This is the only professional competency exam and credential that formally addresses the central issues in the diagnosis and management of dyslipidemia and the metabolic syndrome.

The ACCL’s sister organization, the National Lipid Association, provides board exam preparation materials for this exam, as well as a wide variety of professional education opportunities in clinical lipidology. Exam content and competency areas include:
- lipid metabolism
- pathophysiology of lipid disorders and the metabolic syndrome
- NIH NCEP ATP III guidelines
- lipid-altering drugs
- risk assessment
- review of clinical trials
- compliance management
- dietary and exercise prescription for lipid disorders and metabolic syndrome, as well as special populations (women, elderly, HIV, obesity)

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Functional training continues to grow in popularity as the foundation for fitness and sports conditioning programs. Training to improve posture, movement efficiency and overall muscular performance related to a variety of activities defines functional training. Enhance your knowledge and applied skills with the latest tools and techniques in personal training to stay ahead of the game.

The one-day (8.5-hour) ACE Functional Training workshop teaches the important concepts of functional training by instructing personal trainers on how to:

• Conduct postural assessments and movement screens
• Develop core-training progressions
• Design exercise progressions for postural compensations
• Implement effective dynamic warm-ups
• Introduce sport-conditioning principles into your clients’ training programs

For additional information or to register, go to www.acefitness.org/liveprograms

Personal Trainer Exam Review Live Workshop

Cost: $219  CECs: 1.6

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• The Personal Trainer exam content outline
• Applied sciences, test-taking strategies, client assessment, professional roles and responsibilities, program design and program implementation

The course runs from 8:00 am to 5:30 pm on Saturday and Sunday.
Pilates Primer

Are you wondering what all the fuss over Pilates is about? Used traditionally by dancers for deep-body conditioning and injury rehabilitation, Pilates (pronounced Pi-laht-eez) is an 80-year-old exercise technique first developed by German immigrant Joseph Pilates. Only in the last decade has it migrated from its long-held position at the fringes of traditional fitness methods such as aerobics and weight training. Hollywood has been a key factor in turning the spotlight on Pilates, as numerous models and actresses pay homage to Pilates for their beautifully toned, fit bodies.

Focusing on the Core

The abdominal, hip and back muscles are often collectively referred to as the body’s core. Pilates exercises are designed to strengthen this core by developing pelvic stability and abdominal control. In addition, the exercises improve flexibility and joint mobility and build strength.

How can one exercise technique claim to do so much? The Reformer, a wooden contraption with various cables, pulleys, springs and sliding boards attached, lies at the foundation of Pilates. Primarily using one’s own body weight as resistance, participants are put through a series of progressive, range-of-motion exercises. Despite the appearance of this and several other equally unusual-looking devices, Pilates exercises are very low impact. Instructors, who typically work one-on-one or with small groups of two or three participants, offer reminders to engage the abdominals, the back, the upper legs and buttoccks to stabilize the body’s core. Exercise sessions are designed according to individual flexibility and strength limitations.

Pilates exercises are not limited to specialized machines, however. In fact, many gyms across the country now offer Pilates mat-based classes that feature exercises that also stress the stabilization and strengthening of the back and abdominal muscles.

Connecting With Pilates

The mind/body connection associated with yoga and meditation also plays an integral part in Pilates. Unlike exercise techniques that emphasize numerous repetitions in a single direction, Pilates exercises are performed with very few, but extremely precise, repetitions in several planes of motion.

What will all this focus and stabilization get you? Well, according to its adherents, Pilates can help you develop long, strong muscles, a flat stomach and a strong back, and improve posture. Of course, these changes are dependent upon other lifestyle factors, such as a well-balanced diet and regular aerobic exercise. (Though some may claim that Pilates is all you need to develop stamina and endurance as well, an additional cardiovascular component is advisable.)

An initial Pilates session typically includes a body assessment, which allows the instructor to pinpoint strength and flexibility weak spots. This is also the time to become familiar with Pilates’ unique breathing patterns, which don’t always follow the exhale-on-exertion pattern of traditional exercise. Sessions typically run 60 minutes, at a cost of $50 or more for private sessions, and $10 to $30 for group sessions. If you’re more comfortable exercising at home, there are numerous Pilates and Pilates-type videos currently available.

Selecting a Pilates Instructor

Finding a fitness instructor who is a good match for your goals and personality can be challenging. The Pilates Method Alliance suggests asking the following questions of any instructor with whom you are considering working.

• Was the instructor trained through a comprehensive training program?
• Did that training program require a written and practical test, lecture, observation, practice and apprentice hours?
• How many total hours were spent in the training program? (The Pilates Method is a knowledge-based method of exercise and training. Time spent in certification training produces qualified teachers.)
• Does the instructor have any other movement-related teaching experience?
• How long has the instructor been teaching Pilates?
• What is the instructor or studio’s philosophy and specialty? Are they able to handle special needs, injuries and rehabilitation?
• Does the instructor or studio teach the full repertoire of Pilates on all types of apparatus?

Additional Resources

WebMD Video—Yoga Pilates Studies: www.webmd.com/video/yoga-pilates-studies
Pilates Method Alliance: www.pilatesmethodalliance.org

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Put your name and logo in this area, then make handout copies.
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To earn 0.1 continuing education credits (CECs), you must carefully read this issue of *ACE Certified News*, answer the 10 questions below, achieve a passing score (a minimum of 70 percent), and complete and return the credit verification form below, confirming that you have read the materials and achieved a minimum passing score. In a hurry? Take the quiz online at [www.acefitness.org/cnquiz](http://www.acefitness.org/cnquiz) for instant access to CECs.

*Circle the single best answer for each of the following questions.*

1. Due to the increase in childhood onset of adult diseases such as metabolic syndrome and type 2 diabetes, pediatricians are now advised to consider prescribing ____________ for certain high-risk patients.
   - A. Beta blockers
   - B. Cholesterol-lowering drugs
   - C. Blood-pressure medication
   - D. Hypoglycemic agents

2. Which of the following would be considered a mechanical cause of low-back pain?
   - A. Repeatedly lifting a child
   - B. Twisting an ankle while playing softball
   - C. Osteoporotic fractures
   - D. Differences in limb length

3. Which of the following is NOT a recommended approach for reducing back strain during Pilates exercises?
   - A. Holding the legs at a 45-degree angle
   - B. Bending the knees
   - C. Performing exercises with one leg lifted and one foot on the floor
   - D. Placing a towel beneath the lower back

4. Which of the following is NOT considered a long-term consequence of obesity?
   - A. Depression
   - B. Liver disease
   - C. Hypothyroidism
   - D. Hypertension

5. Which of the following is NOT one of the top five perceived barriers to physical activity among overweight and obese children?
   - A. Self-conscious about looks
   - B. Lack of physical education in schools
   - C. Not enough time for physical activity
   - D. Chosen last for teams

6. ____________ is a common risk factor for low-back pain among people who work all day at a desk.
   - A. Talking on the phone using a headset
   - B. Typing on a computer
   - C. Working in a cubicle
   - D. Frequently getting up to retrieve items

7. Children with a BMI that is equal to or greater than the _________ percentile, but less than the _________ percentile for age and gender are considered to be overweight.
   - A. 70th; 80th
   - B. 75th; 85th
   - C. 80th; 90th
   - D. 85th; 95th

8. According to a recent study, which of the following activities were found to have a protective effect against breast cancer?
   - A. Walking
   - B. Easy jogging
   - C. Vacuuming
   - D. Washing windows

9. To prevent low-back pain during physical activity, clients should be advised to ____________.
   - A. First focus on proximal stability and then on controlled distal mobility
   - B. First focus on controlled distal mobility and then on progressively loading the spine
   - C. Perform exercises with the spine unsupported in order to build strength
   - D. Perform spinal flexion and twisting activities to condition the spine

10. In a recent study examining the combined effects of diet and exercise, individuals who dieted without exercising ____________.
    - A. Gained efficiency in performing the exercise task
    - B. Lost both fat and muscle
    - C. Lost muscle, but not fat
    - D. Lost more weight than those who exercised without dieting

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to further explore and study these topics for a more in-depth understanding and application for different clients.

References


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