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Knee osteoarthritis: strength training for pain relief and functional improvement

Here's a basic routine to help clients with mild to moderate knee osteoarthritis

by Phil Page, M.S., P.T., ATC, CSCS

Many people claim the body starts to fall apart at 40. They may be right. At this age, deconditioned individuals experience declines in their muscle strength, increases in their waistline and morning stiffness and soreness. The body also succumbs to normal aging and wear and tear. In many cases, cartilage breaks down and wears out, and osteoarthritis sets in.

Often referred to as a “wearing out of the joints,” osteoarthritis (OA) is the most common form of arthritis in the United States,⁽¹⁾ affecting almost 21 million Americans. Although younger people develop the disease, OA appears most often after age 45,⁽²⁾ and is the second leading cause of disability among older adults.⁽³⁾ The Arthritis Foundation estimates that approximately 80% of people with OA experience some limitation in movement or activities.⁽⁴⁾

Osteoarthritis most commonly affects the hands, knees, hips, feet and back, and involves

a loss of the articular cartilage surrounding the ends of long bones. This strong and stretchy cartilage acts as a cushion between bones. When this material breaks down or wears out, bone rubs against bone. As a result, the OA sufferer experiences mild to severe pain, morning stiffness, joint tenderness, joint instability, swelling and sometimes bony enlargements that can reduce joint motion.

Pain related to OA accounts for 10–26% of primary care physician visits in the U.S. per year.⁽²⁾ And the overall cost of musculoskeletal conditions such as OA is estimated at nearly \$125 billion annually in direct expenses, lost wages and productivity.⁽⁴⁾

Treating knee problems

About 10% of all adults suffer from knee osteoarthritis, which can limit the ability to climb stairs, stand comfortably, walk and even complete regular activities of daily living.^(5,6) In addition to age-related wear and tear, factors that can lead to earlier or rapid progression of knee OA include genetics, obesity, inactivity, history of knee injury, prior knee surgery and decreased leg muscle strength.

Existing treatments for knee osteoarthritis depend on disease severity, as well as patient personality. The American College of Rheumatology's published recommendations for the medical management of hip and knee OA encourage non-pharmacologic modalities.⁽⁷⁾ Ways to manage the condition include patient education, self-management programs, personalized social support, weight loss, aerobic exercise programs, physical therapy range-of-motion exercises, muscle strengthening exercises, assistive devices, patellar taping, appropriate footwear and bracing.

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The pharmacologic alternative of simple analgesics and acetaminophen are widely used for pain relief. Yet many people with knee OA have significantly reduced their pain through both strength training and aerobic exercise.⁽⁸⁾

Muscular strength affects osteoarthritis

Muscles control four functions: movement, stabilization, shock absorption and proprioception⁽⁹⁾ (or the ability to sense the body's position, location, movement and orientation). Research has found weak quadriceps to be a risk factor for developing knee OA.⁽¹⁰⁾ By focusing on improving muscular strength surrounding the knee, primarily the quadriceps muscle, health and wellness professionals can help clients with the disease improve functional ability, reduce pain and deter the progression of OA in the knee.⁽¹¹⁾

In one clinical study, participants reported pain decreases of as much as 58% after performing leg strengthening exercises three times a week for 16 weeks. The study found that resistance exercise relieved OA pain better than over-the-counter medications.⁽¹²⁾ Additionally, the participants' ability to perform functional tasks improved (i.e. stair climbing and descending, getting down to and up from the floor). This being the case, it is prudent for health and wellness professionals to encourage midlife and older adults to begin a strengthening program even before the first symptoms of OA begin to nag.

Resistance exercise for knee OA

Researchers recently reported that strength training using exercise bands decreased pain in individuals with knee OA.⁽¹²⁾ The resistance training program involved strengthening the quadriceps, hip flexors, hamstrings, calves and ankles three times a week. Participants performed 1–3 sets of 8–12 repetitions on each leg of chair squats, calf raises, hip flexion, ankle dorsiflexion, leg curls and leg extensions. Health and wellness professionals can implement this program (see “Resistance exercises to strengthen lower extremities” on page 5) with color-coded, elastic resistance bands.



These bands allow individuals to perform a variety of exercises in any setting.

Clients with OA should begin exercising slowly with a resistance level that allows “moderate fatigue” on the eighth repetition. They can gradually increase to 3 sets of 12 repetitions to moderate fatigue. These clients can then progress to the next color-coded resistance band, decreasing to 2–3 sets of 8 repetitions and working towards 3 sets of 12 repetitions.

Health and wellness professionals should caution individuals with knee OA to refrain from exercising joints that are very painful, swollen or warm to touch, as this may indicate an acute inflammatory period. In addition, these individuals should avoid exercises that cause sharp joint pains. It's important to inform clients that muscle soreness is normal after new exercises and should be alleviated in 2–4 days.

Any client with knee OA should receive medical clearance before beginning an exercise program. Some clients may have other conditions affecting movement, such as osteoporosis, so it's advisable for health and wellness professionals to ask a client for a complete medical history to ensure safety. Finally, physician approval for the accompanying strength training routine is recommended.

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Exercise for long-term improvement

Adherence to any prescription including exercise is always challenging. People may comply more when a program is conducted in a clinical setting or in conjunction with regular telephone contact with a clinician. But home-based programs have proven effective as well.⁽¹³⁾

In the Fitness Arthritis and Seniors Trial (FAST) study conducted at the University of Tennessee and Wake Forest University in North Carolina, a strength training program had slightly greater compliance than aerobic training. The FAST program suggests that frequent bouts of activity of moderate duration achieve the best results.

With clients who have knee osteoarthritis, compliance is crucial. Exercise has been clinically demonstrated to improve knee joint position, quadriceps strength and activities of daily living,⁽¹⁴⁾ but the benefits produced by short-term exercise eventually disappear once exercise stops.⁽⁶⁾ For long-term relief, individuals must continue to exercise. This fact makes it all the more important for health and wellness professionals to encourage clients to stick with their training.

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Resistance exercise to strengthen lower extremities

Chair squats

While standing, hold the end of an exercise band in each hand. Loop the band under the feet. Hold the band at the waist. Keep elbows straight. Slowly lower to a chair by bending the knees and hips, keeping the back straight. Hold. Slowly return to standing position. Perform this exercise 8–12 times.



Calf raises

Begin in the same starting position, holding the band at the waist. Keep elbows straight. Go up onto toes. Hold, and slowly return. Perform this exercise 8–12 times.



Hip extensions

Attach one end of a band to a door or chair, the other to the ankle. Standing, balance on the leg without the band, either on a hard surface or a stability trainer. Extend the hip behind the body. Use a chair for support if necessary. Perform this exercise 8–12 times on each leg.



Hip flexion

While seated in a chair, wrap the band around one foot, cross the body and connect the band around the opposite thigh. Lift hip upward toward the ceiling. Hold, and slowly return. Perform this exercise 8–12 times on each leg.



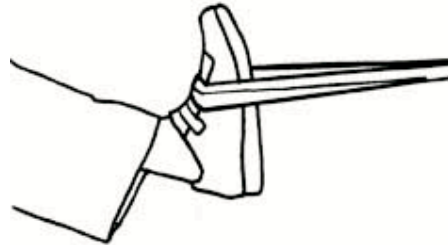
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Ankle dorsiflexion

Attach both ends of the band to a door or chair and loop around the foot. Pull toes back toward the head against the band. Hold and slowly return. Perform this exercise 8–12 times on each leg.



Leg curls

Attach both ends of a band to a door or chair. Seated, loop the band behind the ankle. Bend the knee and pull leg back toward the chair. Hold, and slowly return. Perform this exercise 8–12 times on each leg.



Leg extensions

Attach both ends of a band to a door or chair. Seated, loop the band in front of the ankle. Extend the knee and point the foot toward the ceiling. Hold, and slowly return. Perform this exercise 8–12 times on each leg.



The free squat vs. the chair squat

A recently published study examines the differences between chair squats and free squats performed by mature adults. Researchers from the University of Southern California studied 22 healthy adults ages 70–85 as they performed squats to a self-selected depth and squats onto a chair.

Biomechanical and electromyographical analyses revealed that, without a chair behind them, participants tended to bend more at the knees during squats, placing greater demand on their knee extensors and ankle plantar flexors. In cases where joint issues such as arthritis or a patellofemoral condition are present, this increased demand could make free squats potentially hazardous.

In contrast, chair squats resulted in participants recruiting their hip extensors much more intensively than during free squats. Older adults used more knee and hip effort in rising from a chair squat—perhaps as a result of the greater degree of difficulty in starting the squat from a seated position. Health and wellness professionals may want to recommend that older clients receive help when rising from squats, but descend unassisted.

By knowing how these versions of the squat differ in engaging older adults' muscles—chair squats activate hip extensors more, while free squats involve greater quadriceps and plantar flexors activation—health and wellness professionals can recommend the appropriate exercise to their clients to target specific muscles or avoid aggravating joint problems.

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Screening clients for osteoporosis

by Sara Meeks, P.T., M.S., G.C.S.

About 55% of people ages 50 or above are at risk for osteoporosis, according to the National Osteoporosis Foundation (NOF).⁽¹⁾ Studies of the population at large indicate that most people do not think they have osteoporosis, and even those who know they have the disease are confused about what to do about it. Identifying individuals with osteoporosis or those at risk will help health and wellness professionals to develop safe and effective exercise programs for their older clients.

To screen individuals for osteoporosis, professionals can simply include the following common risk factors and first signs of the disease in a check-off format or short fill-in questionnaire on intake forms:

Risk factors

- Female
- Caucasian or Asian (African-Americans and Hispanics have a lower, but still significant risk)
- Age
- Fracture experienced after age 50
- Fracture in family member within one degree (e.g. mother, daughter, sister)
- Family history of osteoporosis
- Osteopenia (or low bone mass)
- Thin and/or small-boned frame

- Menopause-related estrogen deficiency
- Early menopause (natural or resulting from surgery)
- Amenorrhea (or abnormal absence of menstruation), often resulting from overexercise or eating disorders
- High alcohol intake
- Current smoking
- Lifetime calcium deficiency
- Sedentary lifestyle
- Low testosterone in men (about 20% of people with osteoporosis are male⁽¹⁾)

First signs of osteoporosis

- Loss of height
- Back pain
- Postural change, i.e. kyphosis (or “dowager’s hump”)
- Loss of teeth/periodontal disease
- Stress, wrist or slow healing fracture
- Protruding abdomen
- Transparent skin

(NB: the final two signs, protruding abdomen and transparent skin, may also be related to corticosteroid drug use.)

Numerous medications influence bone health, as do some diseases and surgical procedures. Clients would be well advised to consult a healthcare provider about whether their medications, health conditions or surgeries may put them at risk for osteoporosis.

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Screening serves clients

For some people, an informal screening will provide the first indication they may be at risk for osteoporosis. Individuals can change some of their risk factors by making healthier lifestyle choices (i.e. alcohol use, calcium intake, activity levels and smoking), but some risk factors are beyond a person's control. NOF recommends that people consult a healthcare provider to find out their risk for developing the disease, as well as whether they should have a bone mineral density test.⁽²⁾

By creating a screening form for osteoporosis, health and wellness professionals will help educate people about this condition, identify people with or at risk for the disease and prevent injury among these individuals by altering exercise programs as necessary. They will also provide older adults with great service, which will increase client loyalty and retention.

Sara Meeks, P.T., M.S., G.C.S., owns a private physical therapy practice in Gainesville, Florida, where she specializes in the treatment of osteoporosis, postural dysfunction, the frail elderly and the mature athlete. She can be reached at sara@sarameekspt.com.

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Programming notes

For a comprehensive look at exercise considerations for clients with osteoporosis, check out "Osteoporosis: exercise as prevention and treatment" in the August 2003 issue of Functional U.



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Prescribing and developing strength training programs for older adults

by Wayne T. Phillips, Ph.D., FACSM

In research publications, scientists increasingly report the safety and importance of strength training for older adults. Although this information is beginning to appear in the professional and lay press, it is slow in percolating down to the target population of older adults. National surveys show that less than 10% of people ages 65 years or older routinely engage in activities designed to maintain or increase strength. In individuals ages 75 and above, these numbers are even lower (Surgeon General's Report, 1996).

While this situation may be attributed in part to a lack of awareness and/or communication, this strength-related inactivity can perhaps largely be attributed to a societal conventional wisdom that weight lifting is unsuitable for older adults. There is a long history of such an attitude in both lay and research publications (Phillips and Haskell, 1995). Lingering doubts still exist in the minds of some physicians and caregivers—even in society in general—of the appropriateness of strength training in what has traditionally been regarded as the “declining years.” Such doubts become part of many older adults’ belief system, contributing to a reluctance or antipathy for engaging in such programs.

Perhaps as a reflection of the above attitude, the published literature and guidelines on the prescription of strength training programs for older adults often focus on the science of exercise prescription, i.e. the physical and physiological aspects of strength training, orthopedic and cardiac safety issues, and the impact on exercise Frequency, Intensity, Time and Type (F.I.T.T.). Undeniably, there’s a sound basis for this approach. Scientific evidence supports the fact that older adults tend to be more fragile, adapt more slowly, fatigue more easily, and have more orthopedic limitations and cardiovascular problems than their younger counterparts (Hurley and Hagberg, 1998).

Although science is essential when prescribing a program of strength training for older adults, equally important are nonphysical factors concerned more with the “art” of exercise prescription, i.e. **how** to deliver this science-based information to older adults.

The art of prescribing strength training for mature individuals includes the following:

- Developing an awareness of issues or factors that may resonate with and have relevance to older adults, and which in turn may influence their opinions, attitudes and reactions to strength training;
- The ability to recognize cues and to respond most effectively to counter and/or anticipate the potentially negative aspects of such factors; and
- The ability to act on these factors, to phrase and deliver information and to modify the strength training prescription in a way that has meaning and relevance for older adults.

These factors are broadly categorized below as societal, generational and gender oriented, although a considerable overlap exists between them.

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Societal issues

Society's image of old age—and older adults—has tended to be one of increasing dependence and frailty. You're too old. Act your age. You're not as young as you were. These are typical cautions directed at mature individuals. As if this image wasn't enough disincentive for older adults to be physically active, peer-reviewed scientific studies still reported that exercise training for older adults had "virtually no effect" as recently as the 1960s (Hollman, 1964).

Today, many older men and women retain a sort of internalized caution when contemplating or performing strength training exercise. With this attitude, an older adult's self-perceived, rather than actual, capacity for effort can be **the** limiting factor to commencing a strength training program. In individuals who start strength training, this attitude can manifest itself in a reluctance to exert any more than low to moderate levels of effort in performing an exercise, even when initial low resistances are managed with ease. For example, I have observed older adult participants still performing the same two sets of 10 repetitions with 2-lb. dumbbells after 15 weeks of training three times a week.

Generational issues

Attitudes to exercise and activity are shaped in many ways by the climate and culture of the times. Older adults may well have ingrained differences in this respect, compared to their younger counterparts.

In earlier times, occupations were far more strenuous and labor intensive, so exercising for enjoyment—or even for health—after a hard day's work would have probably seemed laughable. Some older adults may not easily make the paradigm shift from "working" to "working out."

Attitudes towards the "retirement years" have also changed. Until recently, most people saw retirement as a chance to take it easy and watch the world go by—the reward for a hard life's work. Nowadays, some segments of the older adult population view retirement as providing more time to

become or continue to be active. Although this aspect of retirement receives more media attention, it represents a diametric change in what many older adults have experienced as accepted behavior in their later years. In this context, strength training itself may well be the biggest obstacle.

In the formative years of our current 60-plus generation, few people would have performed strength training per se except certain types of professional athletes or circus strongmen. Even in the current athletic arena, strength training has only recently become accepted as an aid to training, taking decades to escape its muscle-bound reputation. How much more powerful a disincentive might strength training itself be for those who were not athletes in the 1930s–50s?

Gender issues

Although strength training was considered unusual for men in earlier decades, this activity was considered dangerous, if not deviant behavior, for women of that time. Society considered exercise of any kind both unseemly and unsuitable for the delicate feminine form.

Even today, the fear of lost femininity through muscular development still exists for many female trainers, both young and old, as shown by a gender-oriented distinction in the vocabulary of working out: men get muscular, but women get toned.

An interesting gender-oriented contrast also exists in perceptions of strength. On many occasions, beginning female exercisers have asked me to put together a strength training program for them—a request often accompanied by a need for reassurance that they will not develop big muscles. This fear can result in participants following a low to moderate intensity program and feeling reluctant to increase resistance progressively, i.e. going from a 3-lb. to a 5-lb. dumbbell. But I have run into some of those same participants as they've exited the grocery store, carrying numerous bulging bags that weigh much more than a 5-lb. dumbbell.

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Applying and improving the art of exercise prescription

- The most important initial art is for a facility's staff members to take the time to get to know older participants and to familiarize them with other staff members, the environment and the equipment. Individuals must be made comfortable by and have confidence in a facility's staff.
- Older adults should have the opportunity to visit a facility first, so they can check out the environment and chat with existing participants. If possible, facility staff should educate and involve an older participant's family and friends.
- Staff members should stress the safety, as well as the appropriateness, of strength training for older adults:
 - Mature participants need medical clearance before commencing. Health and wellness professionals should ask physicians to recommend the program, rather than just sign off on it, then build on this endorsement to encourage and motivate individuals.
 - Where appropriate, peer recommendations from existing participants, photographs and articles can provide useful means of building confidence.
- With older adults, health and wellness professionals should emphasize benefits broader than simply increasing strength. Staff members need to get to know older participants and focus on things that have relevance and meaning to these individuals:
 - Improved ability to lift and carry grandchildren;
 - Increased bone strength;
 - Decreased low back pain;
 - Increased ability to lift the overhead garage door, climb stairs or rise from chairs;
 - Enhanced mobility;
 - Heightened stamina;
 - Increased opportunities to meet and socialize with people of their own generation.
- Facility staff should combat statements such as "I can't do that" or "I'm too old to do that" with patience, mention of active peers and positive reinforcement:
 - **Yes:** Doing this exercise will increase your bone strength.
 - **No:** If you don't do this exercise, your bones will get weaker.
 - **Yes:** This exercise will allow you to lift your grandchildren more easily/ frequently and for a longer time.
 - **No:** If you don't do this exercise, you soon won't be able to play with your grandchildren.
- Health and wellness professionals should design a strength training program to include exercises that participants can see relate to their goals, such as:
 - Leg presses for improving the person's ability to climb stairs or rise from chairs;
 - Ankle and foot exercises to help with falls prevention;
 - Stabilization exercises for low back pain.
- At the start of a strength training program, facility staff should minimize the attention older adults pay to the actual poundage being attempted, as this can intimidate individuals before they become familiar with the exercise. Where possible, staff should use a more weight neutral measure, e.g. the number of blocks per machine.
- To maximize cost-benefit, health and wellness professionals should utilize a single set protocol with older participants.
- When working with older adults, staff members should be aware, listen, learn and empathize.
- Most importantly, health and wellness professionals should be respectful and nonpatronizing towards mature participants.

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Developing the art of exercise prescription is an ongoing process. But when health and wellness professionals successfully merge art with science, they become more effective teachers and more successful working with older adults.

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This article is extracted from Dr. Phillips' book currently in preparation on the art of exercise prescription for older adults.

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Training an active older adult: a personal experience

by Rebecca J. Lloyd, Ph.D. candidate

I have the pleasure of training Ben, an 80 year-old client, every Tuesday at 9 a.m.

Six years ago Ben experienced a silent ischemia, which has limited his cardiovascular capacity and the use of his right arm. Physical activity has been a way of life for Ben, so he decided to hire a personal trainer to help him monitor and guide his healthful progression.

Transcendental moments

One of Ben's goals is to increase his aerobic endurance and capacity. We go for a 30-minute, light power walk/jog/run and look for windows of opportunity to do intervals of increased intensity. We include natural inclines or landmark distances, such as sprinting between benches in the park.

It was one of our special days.

Ben greets me warmly, as I meet him in front of our center's garage door. He is always two to three minutes early, so I do my best to make sure our session starts at 9 a.m. on the dot, if not before. We trek past the smiling front desk staff, and Ben salutes them with his good arm.

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What is a silent ischemia?

A silent ischemia is a painless, temporary restriction in the flow of oxygen-rich blood to a part of the body. According to the Texas Heart Institute in Houston, a cardiac ischemia that lasts too long or is too severe can cause a heart attack.

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At the first crosswalk, we wait patiently and enjoy our weekly update. Ben went swimming twice, played tennis once and saw Jane, his other personal trainer, last Friday. He is feeling good, as we start our steady, light jog.

I angle my shoulders towards him. “Ben,” I say, “can you hear the sound of your right foot? Listen to it as it rolls through and connects with the ground.” Ben changes his heavy-footed impact and lightens the motion. His upper body starts to soften, but his hip flexors appear tight, since his hip elevates slightly as his foot passes from a back extended position to a forward heel reach.

Ben and I approach another crosswalk. He barely stops to look before darting out. There are times I have grabbed the back of his shirt in his moments of glee, when he competes with an upcoming car to get to the other side. Ben even plays games with pedestrians. He likes to be the fastest person on the sidewalk. When another walker is nearby, Ben’s focus is fixated ahead, reaching forward until we pass the individual. I know he is playing a passing game from the way he turns his head and looks back at the walker with a smile and a sense of pride.

The sound of Ben’s jog is a syncopated thud. The right foot often lands flat-footed and the left quickly passes through to complete the cycle. It changes a little when I point out the sound or cue ease in the hips, but requires specific thought to refine—until we get to the traffic light.

Ben asks me to run ahead and press the button, so we won’t have to wait. I touch the button and the light changes immediately. Ben, who is 10 steps behind me, seizes the moment and overtakes me in a joyous stride. I feel the presence of a young, eager boy speeding by my side. He floats across the street, both arms swinging.

Ben’s sprint transcends time, his physical presence, the grounding reality of his heavy right foot and the dysfunction of his right arm. His youthful energy catches him in a glide across the street and beyond. I push to catch up with him, laughing in the

moment. His run flows through his body, creating a sense of childlike youth. He continues to run until the loud breaths catch him, returning us to our walk to slow his heart rate.

I shared my written description of our walk/run outings with Ben. Here’s what he said:

“When I run across the street everything feels different...When I ask you to run up and get the light, [running] is no longer routine. I get incentive in taking a risk like going down a steep ski slope and that I can do it. Running becomes more natural, because I suddenly get the feeling of freedom...It’s not an out-of-body experience, but something that approaches that... Twenty years ago I could do a six-minute mile. Now that’s no longer possible. Any moment I can sort of go back to that feeling and sort of throw myself over the road, figuratively speaking, it feels good. It feels very good.”

Before I wrote about Ben’s youthful run across the street and asked him to read it, he told me he was unaware of his physical transformation. With a little thought, he became increasingly excited with the feeling of moving like a youth again and shortly after decided he would focus on increasing the motion and strength in his right arm. We started incorporating two-arm cable triceps extensions and biceps curls, and range of motion active stretches. His swinging arm motion in that fleeting run across the street filled him with a sense of “I can”.

Sharing lived experience

In a keynote address at a YMCA retreat, I shared this story about Ben, and it moved attendees in a way that figures and statistics could not. People were keen to reflect on similar success stories of active older adults

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in their facilities. I passed the microphone around, and the excitement grew as we heard about real people participating in master swim events, marathons and weekly aquafit classes.

Sharing examples of lived experience humanizes the fitness tips we use to promote activity in the older adult population. I suggested to the audience that we profile our active older adults and celebrate individual experience in our newsletters and on our bulletin boards.

At the end of my presentation, a personal trainer told me he was inspired to work with older adults. I hope my story entices other health and fitness professionals to reflect on their interpersonal interactions. It is easy to be drawn towards the “youthful,” energetic client, who can stick to a go-go-go pace. And it can be somewhat daunting to take the time to appreciate some finer details in human movement, such as a graceful sprint across a street. But helping an older adult find a youthful movement feels good. It feels very good.

Transcendental moments are there in personal training. They jump out from time to time, but they are easy to miss if we are inattentive. Transcendental moments move us through space and time, connecting us with more than just the repetitive nature of our daily tasks. By taking the time to appreciate the aesthetics in life, we experience our body’s mobility in a way that brings us closer to physical spirituality.

Rebecca J. Lloyd, a doctoral student at Simon Fraser University in British Columbia, Canada, is completing her thesis on “Interactive Flow in Exercise Pedagogy.” In addition, she is a part-time professor at the University of Ottawa in Ontario. Rebecca presents regularly for the Canadian Association of Fitness Professionals (CAN FIT PRO) and the YMCA, and she is a Brooks-sponsored active fitness enthusiast and educator. She can be reached at rlloyd@uottawa.ca.

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Breast health: protect yourself from breast cancer

October is Breast Cancer Awareness Month in the United States and Canada. Did you know that breast cancer causes more deaths than any other form of the disease, except lung cancer? And did you know that men get breast cancer rarely, but the disease strikes women more often than any other kind of cancer aside from skin cancer?

We have no sure way yet to stop breast cancer, so the best way to protect yourself is through early detection and reduced risks.

Early detection

About 97% of people with breast cancer are alive five years later when the disease is found and treated early. Breast self-exams combined with clinical breast exams and regular mammograms help find breast cancer in its earliest and most treatable stages.

Breast self-exam (BSE): you should check your breasts once a month for physical changes, especially new lumps, after age 18. The best time to do a BSE is one week after your period starts, or once a month on the same day if you no longer menstruate. Your healthcare provider can show you how to check your breasts if you are unsure. Be sure to see your healthcare provider right away if you find any changes during a BSE.

Clinical breast exam (CBE): your healthcare provider should give you a CBE once a year. This person will look at and touch your breasts to check for any changes, lumps or other warning signs of cancer.

Mammogram: you should have a mammogram once a year from age 40 onwards. Your healthcare provider may suggest these tests before this age if you have a higher breast cancer risk.

Mammograms are X-ray images of breast tissue that can find lumps up to two years before they can be felt. Women who do not have regular mammograms are more likely to find out they have breast cancer later, when the disease is harder to treat.

Warning signs

In its first stage, breast cancer shows up on a mammogram as something abnormal. But physical signs may appear as the disease progresses. See your healthcare provider immediately if you notice any of the following symptoms:

- Swelling, redness or tenderness;
- Changes in nipple color and texture;
- Dimpling or puckering of the skin;
- Nipple pain, discharge or inversion;
- Lump in underarm area; or
- Breast lump or thickening.

Try to stay calm if you find a lump during a BSE. Keep in mind you may not have a tumor and, if you do, 80% of tumors are not cancerous. Your healthcare provider will want to check your symptoms as soon as possible.

Risk factors

You can develop breast cancer even if you have no important risk factors for the disease. But you can reduce your chances of getting the disease when you know your risk factors and understand what they mean. Talk to your healthcare provider about a plan to lower your risk for breast cancer and to find the disease early if you should get it.

The most common risk factors for breast cancer include the following:

Age. Breast cancer is uncommon in women younger than 35, but the risk rises with age. About 82% of breast cancers occur in women ages 50 and older, and the risk is especially high for women ages 60 and above.

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Personal history. Women who have had breast cancer may develop it again. A history of breast disease may also mean a higher risk of developing breast cancer. Your healthcare provider can inform you about breast disease.

Family history. Breast cancer risk increases for a woman whose mother, sister, daughter, or two or more close relatives have had the disease. Be sure to note how old these women were when diagnosed if this risk factor applies.

Breast cancer genes. Some men and women are born with an “alteration” (or change) in the BRCA1 or BRCA2 gene that helps control breast cell growth. These people may pass this genetic change onto their children. Women who inherit an altered gene have a higher risk for breast cancer; in fact, half will likely develop the disease. But scientists think that genetic changes cause just 5–10% of all breast cancers. A genetics counselor can help you figure out the pros and cons of genetic testing if you have this risk factor.

Early menstruation and/or late menopause. Women who had their first period before age 12 or who went through menopause after age 50 have a greater risk of breast cancer. The more menstrual cycles a woman has in her lifetime, the more likely she is to get the disease.

First pregnancy after age 25 or 30. Early pregnancies, especially before age 25, may help lower the chances of getting breast cancer. But these same hormonal changes after age 35 may play a part in developing breast cancer.

Never having children. Women who have no break in their menstrual cycles until menopause have a higher than average risk of breast cancer.

The last three risk factors involve the hormone estrogen, which occurs

naturally in women. The female body makes more estrogen from the start of menstruation until menopause. This hormone doesn’t cause breast cancer, but it may spur the growth of cancer cells.

Lifestyle choices also affect your chance of getting breast cancer. Healthier lifestyle habits may reduce your breast cancer risk and help protect you from heart disease, diabetes and other health problems.

Here is a list of day-to-day decisions you can make to lower your breast cancer risk:

Cut fat intake. Consume less fat, especially saturated or hydrogenated fats. Try eating leaner meats and limit red meat.

Eat fresh fruits and vegetables. Fiber-rich fruits and vegetables have antioxidant properties and micronutrients that may help prevent some cancers. Aim for at least five servings of fruits and vegetables daily, preferably fresh.

Limit alcohol. Your breast cancer risk rises a little if you average two or more drinks per day of beer, wine or distilled liquor. National alcohol experts recommend that women ages 60 or older have no more than one drink per day.

Stay active. A moderate amount of physical activity (such as a brisk, 30-minute walk) on most days of the week can help you prevent health problems and obesity. Strive to maintain a healthy body weight, since excess fat may fuel estrogen production.

Don’t smoke. Smoking doesn’t cause breast cancer, but this habit can increase your chance of blood clots, heart disease and other cancers that may spread to your breasts. Speak to your healthcare provider about quitting if you smoke.

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Making progress against breast cancer

Breast cancer accounts for almost one in three cases of cancer among American women. But the number of women dying from breast cancer has fallen since the late 1980s, thanks to better awareness and detection.

You can take steps to prevent breast cancer. Learn about your breast cancer risk and reduce it where possible. And practice early detection with breast self-exams, clinical breast exams and mammograms to protect your breast health.

This handout was created by the International Council on Active Aging with information from the Cancer Research and Prevention Foundation of America and the National Breast Cancer Awareness Month Campaign.



**Your company
logo here**

Have a mammogram in October

Some radiologists in the United States give discounts on mammograms or do free tests throughout October, which is National Breast Cancer Awareness Month. Contact the following national organization to find out which facilities in your area offer these services:

Y-ME National Breast Cancer Organization
800-221-2141
800-986-9505 (Spanish)

Free or low-cost screening is available to low-income, uninsured women through a program run by the Centers for Disease Control and Prevention. Contact the National Breast & Cervical Cancer Early Detection Program by calling toll-free 888-842-6355. Or visit www.cdc.gov/cancer/nbccedp/index.htm.

Breast cancer resources

- American Cancer Society
www.cancer.org
- Breast Cancer.org
www.breastcancer.org
- Breast Cancer Society of Canada
www.bcsc.ca
- Canadian Cancer Society
www.cancer.ca
- Cancer Research & Prevention Foundation of America
www.preventcancer.org
- National Breast Cancer Awareness Month
www.nbcam.org
- National Cancer Institute's Cancer Information Service
www.nci.nih.gov/cancerinfo
- Y-ME National Breast Cancer Organization
www.y-me.org



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Disclaimer:

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C o m m e n t



Older and wiser?

The bodies of many aging Baby Boomers tell of battles won and lost on the sports field. Long-ago youths filled with jarring and pounding take their toll today, even as “youth-full” individuals continue playing as though it were 1970.

The physical exuberance of Boomers has created new industries and increased profits for others, including healthcare. That’s because medical costs arising from sports-related injuries to Baby Boomers are, well, booming. These costs now top \$18 billion a year, according to the American Academy of Orthopedic Surgeons. Furthermore, Baby Boomers suffered more than one million sports injuries in 1998, the most recent year for which statistics are available. This figure represents a 33% increase in injuries since 1991.

The rise in injuries shows all the signs of a trend that burdens Boomers and presents a potential long-term disaster for healthcare. For example, one in five Americans lives with constant pain today, many as a result of past or present injuries. In this issue of Functional U, physiotherapist Phil Page shows how to strength train clients to relieve the pain of knee osteoarthritis, a condition associated with aging and wear and tear on the body.

This issue of Functional U also shifts gears to look beyond the science of training. Scientist and industry professional Wayne Phillips shows how to blend the art and science of strength training for older adults. And educator and trainer Rebecca Lloyd shares her personal training journey with an 80 year-old client—a journey filled with uncommon rewards—reminding us it’s all about the experience,