Training Seniors, Personally

By: Monique Acton

This workshop was created as a tool to assist you in examining an exercise and learning how to adapt it to seniors who have arthritic conditions or experience balance and postural issues.

In the early to mid1900's the United States had about four percent of American population was over the age of 65 (around three million people). In the late 1900 this number increased to thirteen percent, or about thirty-four million people. According to the fact sheet: *Aging in the United States* by Mark Mather, and the 2016 CBC news article: *Canadian Seniors Now Outnumber Children for the First Time 2016 Census Shows*, by Eric Grenier these numbers are growing:

- 45 million people in the U.S. are 65 and older and 5.9 million in Canada.
- Seniors 65 and older 2060 projection United States:98 million, Canada: 12 million
- 80 percent will have at least one chronic health related symptom, and 50 percent have two or more symptoms.
- Influential limitations of one's activity
    - Arthritis
    - Hypertension
    - Heart disease
    - Diabetes
    - Respiratory disorders

Sensory Perception Changes

As one ages, changes occur with the sensory perception. Eyesight may not be as keen as it once was. One's field of vision may decrease and the ability to judge how fast an object is moving may become hindered as well. Discriminating between sounds can become a challenge. Balance, response time, mobility change as well, due to a slower transfer of data caused by a decrease in the number and size of nerve cells.

What might be some basic programming needs in general for seniors?

_____
_____
_____
_____
_____

Program Design

Program design should include the following:

- Maintaining or improving cardiovascular endurance
- Muscular strength
- Muscular endurance
- Flexibility
- Improving balance and coordination
- Neurobics

An improvement in cardiorespiratory endurance can be seen when exercising in the water. The heart and lungs will work together to deliver oxygen to the working muscles for sustained periods of energy production. An example of this improvement can be seen when a person is only able to work out for a total of twenty minutes before they become fatigued. However, they continue to attend the exercise program every week and are able to progress to twenty five minutes by week 3, thirty minutes by week 5, and so forth.

Muscular strength and endurance can be achieved by really working to use the water. Once our musculoskeletal system becomes accustomed to the extra exertion placed on the muscles by using the water, then they will need to be challenged again. This can be accomplished by bringing in a variety of equipment like drag, rubberized, buoyant or weighted to further enhance muscular strength. Endurance, on the other hand, will be recognized by the ability of the muscles to work for a longer amount of time.

Flexibility should not be overlooked when designing a workout program. The joints should move through their normal range of motion throughout the entire workout. The flexibility portion of the program can be added in once the muscles have been sufficiently warmed up or at the end of the cardio or resistance portion of the workout. It is important for our participants to maintain and improve their flexibility in order to enjoy their normal daily activities. The ability to lift your arm to comb the hair on the back of your head, pull your shirt off over your head, reach your arm back to slide it into a robe, and reach down to put on shoes, are all examples of activities that require some degree of flexibility.

Neurobics is a way to help with memory improvement while adding in a fun element. These can be exercises that cause the brain to have to think about the move such as jumping jack legs with cross country ski arms. The body is use to the basic arm pattern that goes with the jack legs and it just comes naturally but through in another arm pattern, especially one that involves movement in another plane and it can become a challenge to complete.

By implementing cardiorespiratiory endurance, muscular strength, muscular endurance and neurobics into one's workout program, our participants will receive a total body workout that is effective, safe and fun.

Balance

As the body ages, changes will begin to occur. Some changes will be very noticeable, like loss of balance or poor posture, while others will creep up, like muscle loss. There are many more that could be named, but this workshop will address these three concerns.

What is balance? It is the ability to hold and maintain a position. When balance is thrown off falls begin to occur. Once someone experiences a fall, they begin to adjust their gait pattern again for fear of falling. They hang their arms by their sides and begin to shuffle their feet. Now begins the process of reintroducing proper posture as well as learning how to walk again. It takes coordination and balance to move through a series of movements like walking. There are many systems that work together in order for this process to occur. One system is the vestibular system, which is located in the inner ear. Another system is the proprioceptive system, which is located in the muscles, tendons and joints. The visual system is located in the eyes. The ears, brain, eyes, nervous system, and muscles all come into play when walking.

To help improve balance, include exercises like the following:

- Shift weight from side to side
- Stand on one foot
- Stand on one foot with knee bends
- Stand on one leg with arm swings
- Move upper body and lower body in opposition
- Repeat all the above but now "catch a ball" (Hand /eye/ balance coordination)

Work on walking properly. Walking involves two phases: the stance phase and the swing phase.
The stance phase _____

_____

The swing phase_____

_____

Gait training reinforcement

- Walking heel-toe-roll forward
- Walking toe-roll-heel backward
- Walking on tip toes
- Walking on heels
- Walking with the cross-patterning arms

Posture

Posture / body alignment is another area to address. All exercises should encourage proper alignment. Cue to keep the shoulders back, opening up the chest and to keep the wrists in neutral when moving the hands in the water and using equipment.

Which of the following muscles need to be strengthened and which should be stretched to maintain or improve posture?
Upper trapezius
Middle trapezius
Lower trapezius
Rhomboids
Sternocleidomastoid
Pectorals

Benefits of Exercise

The muscles are the joints' first lines of defense for maintaining strength and stability. Ligaments are the second line of defense for maintaining joint alignment and stability, but they do not provide strength. Strength and movement go hand and hand. The muscles need to be strong enough to take a joint through its normal range of motion. If they lack this strength your body will not let it happen. This is why it is important to include some form of resistance training into the workout program.

Resistance training can improve functional performance. Functional performances include having the strength to lift the jug of milk out of the refrigerator, pulling the casserole dish out of the oven or being able to hold a new grandchild. Impaired muscle function has been linked to many problems in older adults.

Resistance training can help improve a person's stamina. One goal might be to have the stamina to walk a few feet from the car in the parking lot to the grocery store without feeling like they must stop and rest. Another goal could be to have enough stamina to climb up and down the stairs at home.

Without resistance training or exercise, one can see a loss of muscle, diminished physical activity, and a loss of function. Every decade, without exercising, 5-7 pounds of muscle are lost. If this was equivocated to an automobile it would be like going from an 8-cylinder engine to a 6-cylinder to a 4-cylinder and eventually a motor scooter. Loss of a person's strength, balance and function can increase the risk of losing their independence somewhere in the near future.

Osteoarthritis

According to the Arthritis Foundation, osteoarthritis affects approximately 27 million Americans and 5 million Canadians. It is estimated that 1 in 4 Canadians will be diagnosed with osteoarthritis, (OA) by the year 2035.

There are at least 100 different forms of arthritis that affect the areas in or around the joints. Visual signs of arthritis are seen in the form of swelling, loss of movement, and pain. While there are many forms of arthritis, we are only going to look at (OA).

When working with arthritic individuals, make sure to follow the Arthritis Foundations' two-hour pain rule. If an individual has exercised and two hours later experiences pain then they probably did too much in the earlier exercise session.

Osteoarthritis (OA) is one of the oldest and most common conditions that occurs in the middle aged and in the elderly, appearing somewhere around the age 55, but is most prevalent in individuals 65 and older. This disease affects both men and women, but is more common in women. It involves the break down of cartilage as well as the degenerating / wearing down of the joints. The cartilage breakdown forces the joints to rub against each other and in return the individual experiences pain. When pain is felt, one tends to move in a way to minimize the effect, which in return is displayed in a loss of movement.

There are several factors that lead to osteoarthritis.

1. Obesity.
2. Genetics.
3. Past injuries/ accidents from work or sports increase the risk.
4. One's work or any job that involves repetitious moves.

Phases of OA

1. The cartilage loses its elasticity and becomes more readily damaged by overuse or trauma. (This will be dependent upon one's heredity, the extent of damage to the joint as well as other factors).
2. As the cartilage deteriorates, it forms bony growth spurs on the surface of the bone.
3. Sometimes pieces of bone or cartilage will float in the joint space.
4. Inflammation sets in due to the deterioration of the cartilage.

Exercise is encouraged to minimize pain and increase joint flexibility, as well as to improve muscular strength. A person with OA will have joints that hurt (those affected by OA) for one of two reasons. One, they have been overused, or two, they have been inactive. You may hear someone say they have difficulty moving when they first get up in the morning or after they have worked the joint more than they usually do (overuse). Exercise is encouraged because if the muscles that surround the joint are not strengthened, then they will only become weaker.

Having weaker muscles will also affect the joints and the individual may not be able to support the joint as well. By not exercising, they will experience more pain in their joints. Balance, coordination, gait, and posture will also be challenged. So an exercise program that can address these issues will help to maintain or improve one's functional ability.

Program Goals for OA

- Decrease pain and stiffness at the joint
- Improve ROM of the joint
- Strive to improve one's ability to perform ADL
- Body Awareness
- Stress Management

Overall Programming Goals for Seniors

- Focus on overall resistance training
- Educate the individual on how to "use" the water.
- Progress to equipment that can be worn verses hand held. Gloves, fins or cuffs are a few examples of equipment that is attached. Hand held can further aggravate the problem of the wrists and hands / fingers.
- Diminish the amount of stress or impact to the joints.
- Balance out the muscles
- Include exercises for flexibility and neurobics

Program design takes into consideration everyone participating in the class. The movements need to be demonstrated to show various ways to perform the exercise so that all will feel confident exercising. Working with OA and other conditions may call for some individuals to work out with less intensity. Each must listen to his / her body. Ways to decrease the intensity of a workout would include staying in place, switching from long levers to short levers, reducing to a slower speed (1/2 water tempo), or reducing impact to low or non-impact.

Take the following patterns and change them to lower impact movements.

Jog forward _____
Leg curls backward _____
Skate in place _____
Jack-knee ¼ turn X4 _____

Cross country ski travel side right _____
Run 3, kick moving forward X3 _____
Cross country ski travel side left _____
Run 3; kick moving back X3 _____

Side kicks, travel left _____

One leg kick in 3's (f, s, b) _____
4 Jacks w/ ¼ turn each _____
Twist side, CB, side, CB _____

References available by request

Pool Practical Workout

Warm up

Cardio Training I
Toe tap R, L, R, L
Jumping jacks ¼ turn R
Knee lifts

Toe taps R, L, R, L
Jumping jacks ¼ turn to front
Knee lifts

Toe taps R, L, R, L
Jumping jacks ¼ turn to L
Knee lifts

Toe taps, R, L, R, L
Jumping jacks ¼ turn to front
Knee lifts

Cardio Training II
(Front) 3 knees to kick w/ safe arms
(Corner) 3 knees to kick w/hands to opposite ankle
Leg curl, leg curl, knee lift, knee lift w/ arms cross front & back
Front kick, (1/2 tempo)

Cardio Training III
Ski 8, level II
Ski together, twist side, center
Side step
Toe taps to back ¼ turn
Step together w/ breast stroke arms travel fwd
Step together w/ reverse b. stroke travel bkwd
Side step

Resistance Training: drag equipment

Stances: center, lunge, one leg, tandem, one foot-heel / one foot toes
Progress: slicing both directions-palm &back of hand-palm both directions

Pectorals & Anterior Deltoid / Middle Traps & Posterior Deltiod
Transverse shoulder adduction / abduction with the emphasis on “adduction”
Transverse shoulder adduction / abduction with emphasis on “abduction”

Latissimus Dorsi / Medial Deltoid
Shoulder abduction, adduction with emphasis on “adduction”
Shoulder abduction, adduction with emphasis on “abduction”

Pectorals, Anterior Deltoid & Biceps / Posterior Deltoid, Middle Trapezius, Triceps
Forward Stir – like breaststroke arms
Reverse Stir

Hamstring / Quadriceps
Knee flexion / extension with emphasis on flexion
Leg is held in hip flexion. Knee flexion / extension with emphasis on extension

Hip Abductors / Hip Adductors
Lunge position to side leg lift

If possible move to shallower water
Squats – both legs
Squats – single leg

Standing on one leg
Single leg stand with arms swinging - one front one back
Single leg stand with arms lifting up as if taking something off their top shelf
Single leg stand – get into a circle

Slide the envelope
Slide whole leg forward
Slide whole leg laterally
Half circle from front to back

Cool Down
Single right leg: hip extension / flexion / extension, move into knee flexion & hold
Single right leg: hip flexion / extension / flexion & hold
Cross lifted leg over and have a seat
Repeat single leg with left leg.

Alternating shoulder circles to the back
Single right arm transverse shoulder abduction / adduction/ abduction & hold
Single right arm transverse shoulder adduction / abduction / adduction & hold
Repeat shoulder circles and switch to the left arm on the transverse shoulder movement
3 Deep breaths