
Principles

And

Guidelines

For

Polio

Survivors

**ROOSEVELT
WARM SPRINGS
INSTITUTE FOR
REHABILITATION**

POOL

EXERCISE

Robbie B. Leonard, M.S., P.T.

Each pool exercise program should be individualized to the person's strengths and weaknesses.

- A doctor and a physical or occupational therapist (preferably familiar with post-polio syndrome) should evaluate the individual.
- In the therapy evaluation, the therapist should note range of motion, flexibility, muscle strength, endurance, ambulatory skills and transfers (especially pool transfers).
- The pool exercise program should be based on the evaluation of the individual and recommended by the doctor and therapist. Not everyone is an appropriate candidate for pool exercise.
- The program should be appropriate for the water. An exercise program designed for land will not be appropriate for the water since buoyancy rather than gravity is the predominating force.

The pool environment should be accessible and conducive to therapeutic exercise.

- The pool should have close, accessible parking. If it takes all of your energy to walk/wheel to the pool, the exercise program will not be beneficial.
- The pool should have a lift, ramp or steps for ease of transfer into the pool. Again, if it takes all of your energy to get into the pool, the effects of the exercise will be negated.
- The pool should be monitored at all times for water safety and individuals should never, under any circumstances, be left unattended.
- The depth of the water where the exercises are performed should be between waist-and chest-high. Water deeper than this could cause heat related problems and will be difficult to exercise in.
- The deck of the pool should not be slippery. If you have an unsteady gait or difficulty with transfers, you should wear tennis shoes or aquatic shoes. The aquatic shoes have become very

popular and can be purchased at discount stores in the summer months.

- The temperature of the pool water should be no less than 85 degrees. Recommended temperature is around 90 to 92 degrees. This temperature is not recommended for someone doing high-intensity aerobic workouts. The high heat can cause injury. Therefore the exercise program should not be a high intensity aerobic workout.
 - Most individuals experiencing post-polio have an intolerance to cold; therefore, the warm water is “a must.” You can conserve heat by using a wet suit or lycra tights.
 - The warm water adds a pain-relieving effect as well.
- The air temperature of the room around the pool should also be warm.

The individual performing the pool exercise should know the physics of water and how it affects the body.

- Buoyancy is the predominant force at work. Buoyancy can resist movement, assist movement or support movement.
 - Movement up toward the surface is Assisted.
 - Movement down toward the pool bottom is Resisted.
 - Movement in a horizontal plane (side-to-side) is Supported.
- Whether to use Buoyancy Resisted, Buoyancy Assisted or Buoyancy Supported exercises will depend on the individual’s muscle strength.
- In general, muscles below a fair grade should do Buoyancy Assisted or Buoyancy Supported Exercises. A fair grade muscle can perform a movement against gravity. For example, the hip flexor muscles are the ones that bring the knee up toward the chest. If you can bring your knee up toward your chest in the sitting position,

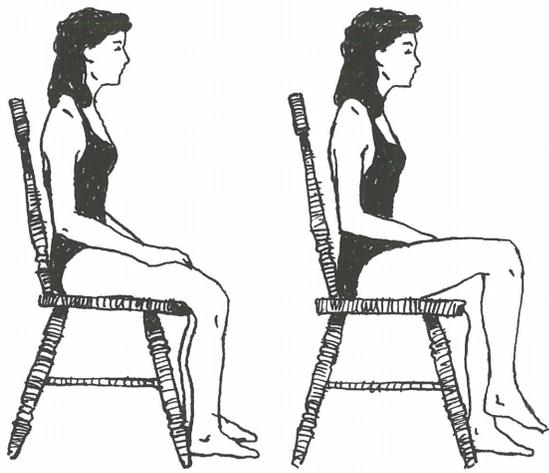


Figure One

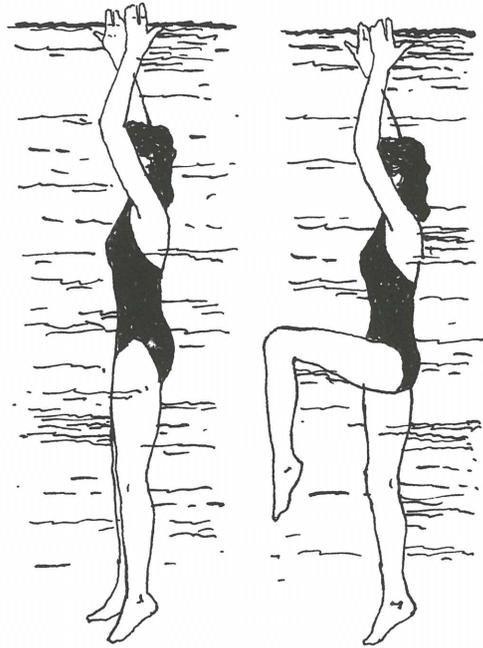


Figure Two

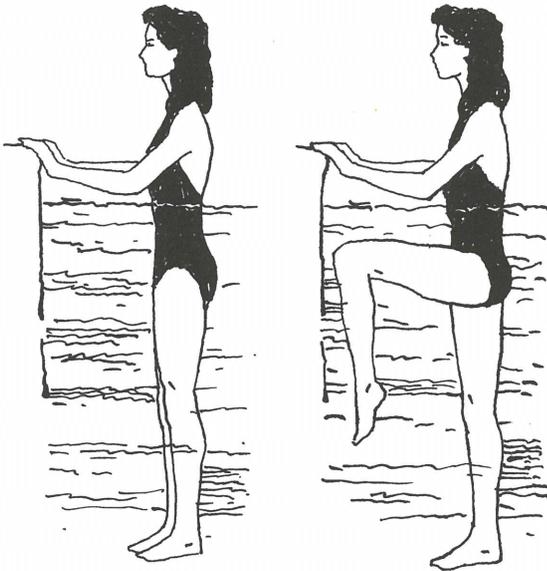


Figure Three

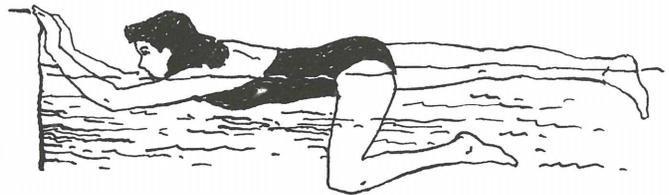
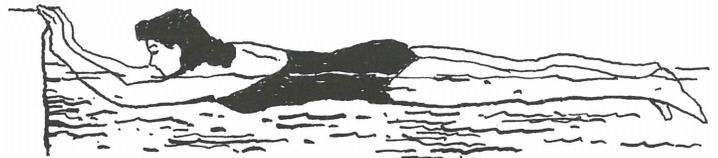


Figure Four

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you have at least a fair grade muscle. (See Figure 1) If you cannot perform that movement, you have below a fair grade.

An example of a Buoyancy Supported Exercise for the hip flexor muscle is to lie on the side in the pool, holding on to the ledge, and move the knee toward the chest and then back. (See Figure 2)

An example of a Buoyancy Assisted Exercise for the hip flexor muscles is to stand at the side of the pool or sit in a pool chair and bring the knee up toward the chest, letting the buoyancy of the water assist the movement. (See Figure 3)

- Muscles fair or greater can perform Buoyancy Resisted Exercises. The degree of resistance will depend on the muscle strength and endurance. Resistance can be increased by adding floats or weights.
 - An example of a Buoyancy Resisted Exercise for the hip flexor muscles is to lie facing the pool bottom on your stomach, holding the pool ledge, and bring the knee toward the chest. The faster the movement, the greater the resistance. (See Figure 4)
- The water is not only an excellent medium for exercise but for stretching as well. Stretches should be done for tight muscles but not to the point of overstretching. Again, these should be recommended individually.
- Remember principle number one. Each individual should have a doctor's recommendation for pool exercise, and each individual exercise should be recommended by a therapist who knows your strengths and weaknesses.

The individual performing the pool exercises should know the physiologic effects of exercising in the water.

- These will depend on the amount of water and the water temperature.
- Potential benefits include:
 - Increased strength and coordination

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- Increased ability to ambulate
 - Decreased pain
 - Increased range of motion and flexibility
 - Immersion in warm water causes:
 - Increased metabolic rates
 - Increased heart rates
 - Increased circulation to the surface and to the muscles
 - Increased respiratory rates
 - Muscle relaxation
 - Persons with respiratory difficulties may find that water helps respiratory function because hydrostatic pressure of the water on the chest wall stimulates chest expansion.
 - This must be closely monitored.
 - Water exercise for an individual with a tracheostomy is generally not recommended.
 - Heart rates are generally lower in water exercise than in land exercise due to compression, temperature and pressure. Heart rate calculations based on land exercise are not applicable in the water.
 - Persons with the following problems should not perform pool exercises:
 - cardiac failure or severe cardiac problems
 - urinary tract infections
 - open wounds/sores
 - contagious diseases or skin conditions

Good exercise principles and good body mechanics should be followed.

- The person should not work to the point of fatigue. The combination of heat and exercise can be fatiguing. Exercise may need to be short (10 minutes) and then lengthened as endurance improves. A person should spend no more than 30 to 45 minutes in water above 90 degrees Fahrenheit.
 - The philosophy of "Use it or Lose it" no longer applies. The philosophy of "Conserve it to Preserve it" is the one to work with. If you start to fatigue, stop the program and do it another day.
- Do the exercise program during your "good part" of the day when you have the most energy.
- An exercise program of two to three days a week will give you the best benefits.
- Be careful not to overstress the joints. For example, you do not want to hold on so tightly to the wall to perform exercises that you get wrist and finger pain and damage.
- Use good body mechanics during exercise. Do not "lock" or hyperextend the joints during exercise.
- Movements in the water should be smooth and slow and controlled. Do not do jerky, fast movements.
- Know your limitations. If at any time you become fatigued, short of breath, dizzy or stressed, stop the exercise. You may need to check with your doctor before resuming the program if you become dizzy or short of breath.
- If any exercise causes pain, do not do it. Listen to your body. "No pain, no gain" is not a good philosophy for persons with post-polio.
- Have fun and enjoy the water. If this exercise program is a negative experience for you, it is not an appropriate program.

If your program is recommended by your doctor and individualized for you by your therapist, and you follow these basic principles, you should have successful pool exercise that will enhance your abilities.

References:

- Haralson, Kathleen M., "Therapeutic Pool Programs", Clinical Management, Vol.5, No. 2, Pg. 10-13.
- "Aquatic Do's and Don'ts", Aquatic Exercise Association.

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A graduate of Clemson University (B.S. in microbiology) and Duke University (M.S. in Therapy), **Leonard** has made numerous presentations and lectured at conferences and seminars throughout the south. Several of her articles have been published in professional publications. She is the recipient of the 1992 Delano Service Award from the Roosevelt Warm Springs Institute for Rehabilitation, recipient of the 1992 Georgia Department of Human Resources, Division of Rehabilitation Services', Director's Citation Award and recipient of the Georgia Department of Human Resources, Division of Rehabilitation Services' Dimensions of Excellence Award in 1992. She recently received the 1994 Annual Leadership Award from RWSIR and was the recipient of the 1994 Dimensions of Excellence Leadership Award from the Division of Rehabilitation Services.

Robbie B. Leonard is a member of the American Physical Therapy Association, the Georgia Chapter of the American Physical Therapy Association and RESNA.

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Founded by Franklin Roosevelt in 1927 as a polio aftercare facility, the Roosevelt Institute today provides medical and vocational rehabilitation and independent living services for people with many different kinds of disabilities. Now a facility of the Georgia Division of Rehabilitation Services, the Institute, through all of its programs, serves more than 3,000 people each year.

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