

PTA 101 Overview of Aquatic Therapy (NCHPAD)

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Aquatic Therapy

The Standards and Steering Committees of the Aquatic Therapy and Rehabilitation Industry Certification define aquatic therapy and rehabilitation as:

"The use of water and specifically designed activity by qualified personnel to aid in the restoration, extension, maintenance and quality of function for persons with acute, transient, or chronic disabilities, syndromes or diseases."

Definition of Hydrotherapy

Hydrotherapy is the use of water by external applications, either for its pressure effect or as a means of applying physical energy to a tissue. The term often refers to the use of water in wound management, such as whirlpool baths, but can be used interchangeably with the term, "aquatic therapy".

Definition of Adapted Aquatics

Adapted aquatics are techniques that emphasize swimming skills modified or adapted to accommodate individual abilities. Usually used with people with disabilities, adapted aquatics focuses on skills including pool entry and exit and swimming skill development. It should also encompass community referral.

Indications for Aquatic Therapy

- Disorders
- Limited Range of Motion
- Weakness
- Poor Motor Coordination
- Pain
- Spasticity
- Perceptual / Spatial Problems
- Balance Deficits
- Respiratory Problems
- Circulatory Problems
- Depression/Poor Self-Esteem
- Cardiac Diseases
- Joint Replacement
- Motor Learning
- Orthopedic Injuries / Trauma

- Obesity
- Prenatal
- Neurological (MS)
- Osteoporosis
- Rheumatology (Arthritis / Fibromyalgia)

Aquatic Therapy Techniques

Ai Chi

Created by Jun Konno of Japan, Ai Chi is a combination of deep breathing and slow broad movements of the arms, legs, and torso, using concepts of T'ai Chi, Shiatsu, and Qigong. Ai Chi is performed standing in shoulder-depth water with an ideal pool temperature of 88F to 96F.

Ai Chi Ne

Ai Chi Ne (pronounced Eye Chee Knee) is a partner stretching program. "Ne" is the Japanese word for "two". Ai Chi Ne involves breathing techniques to increase relaxation and, therefore, enhance the stretch abilities. Using the breathing techniques decreases stress, joint tension, muscular tension, and the stretch reflex response.

BackHab

This is an integrated program that the individual can do on his or her own. It was developed for people with back problems but is now being used by group programs for people with disabilities. Rather than focusing on healing one part of the body, all the body parts coordinate to work on healing and fixing the affected area. BackHab is an aquatic walking program using various strides to accomplish a variety of benefits. It is excellent for gait re-training.

Bad Ragaz

This technique originated in Germany in 1957 and was introduced by a German therapist to the therapeutic thermal pools of Bad Ragaz in Switzerland. The technique has since become more clearly defined as the Bad Ragaz Ring Method. Bad Ragaz is a method of muscle re-education utilizing specific patterns of resistance, endurance, elongation, relaxation, range of motion, and tonal reduction.

The Burdenko Method

The Burdenko Method is used for athletic training and as a therapeutic method for people with disabilities. The basic concepts include integrating land and water therapy, using a vertical position, focusing on the whole body, and homework.

Feldenkrais

Developed by Dr. Moshe Feldenkrais, this method uses gentle movement and directed attention to improve movement and enhance human functioning. This method aims to increase ease and

range of motion, improve flexibility and coordination, and encourage the individual to rediscover innate capacity for graceful, efficient movement. These improvements will often generalize to enhance functioning in other aspects of life.

Halliwick

The Halliwick concept is an approach to teaching people with physical and/or learning difficulties to participate in water activities, to move independently in water, and to swim. The practice utilizes the Ten Point Program, which includes essential components of motor learning, and eventually leads to independence in the water. The Ten Point Program includes the concepts of mental adjustment, balance control, and movement.

Lyu Ki Dou

Lyu Ki Dou developed from studies of various hands-on healing modalities, along with Ai Chi, Tai Chi, and Qi Gong. The name was derived from the Japanese translation of "Floating Life Energy Pathways". Lyu Ki Dou emphasizes the facilitator's self-care, which in turn will benefit the clients/patients that are receiving any type of therapy or exercise programming from an individual who has literally "turned on" this vital life-giving energy source that is inside each of us.

Massage

Massage therapists have moved their practice to the water to expand the benefits and applications of massage. Water massage, the use of soft tissue manipulation and body mobilization techniques in water warmer than skin temperature (92F - 93F), is evolving as a therapeutic method. Practitioners find that the use of massage in water is creative, innovative, and individualized, and no two practitioners have the same approach.

Proprioceptive Neuromuscular Facilitation (PNF)

PNF is an approach to therapeutic exercise which aims to improve motor skill through positive motor transfer, using the principles of facilitation/inhibition, irradiation/reinforcement, and reciprocal innervation. Exercises consist of spiral and diagonal patterns and must incorporate three components of motion: flexion or extension, adduction or abduction, and rotation.

Water Pilates

Pilates exercises have been adapted for the pool. Created by Joseph Pilates, this body conditioning program is designed to improve strength, flexibility, and range of motion, and also encourages musculoskeletal alignment. The main tenets are resisting your own weight, controlled breathing, spine alignment, and abdominal strengthening.

Unpredictable Command Technique (UCT)

Created by David Ogden, a PT from Phoenix, AZ, UCT has a goal of progressing the client(s) so that two or more motor movements are done simultaneously. Improved somatic awareness and motor control can be achieved through the challenge to do a variety of constantly-changing familiar and unfamiliar activities. Using the UCT, the author and others have observed client(s) demonstrating improved voluntary control, awareness of movement and body in space, and enhanced mental concentration.

Wassertanzen

Wassertanzen is a dynamic movement therapy that includes work below the water surface with the aid of nose clips. Wassertanzen means "water dance" and was created in 1987 by Swiss-Germans Arjana Brunschwiler and Aman Schroter. "Wassertanzen is very different from Watsu because of the challenge it presents for a person to surrender control of his breath to go underwater," says Harold Dull, creator of Watsu.

Water Yoga

Hatha yoga poses performed in warm, waist- to chest-depth water develop strength and static balance simultaneously. In addition, range of motion increases in coordination with diaphragmatic breathing and long exhalations.

Watsu

Developed by Harold Dull, watsu (water + shiatsu) is a cradling, one-on-one program that is experienced in a very warm (approx. 94F degrees) pool. The client is held in the water by the practitioner and moved using the water to massage the body. Shiatsu (acupressure) points are stimulated along the meridians of the body during the massage. Watsu is used for pain reduction, increased range of motion, increased circulation, psychological problems, relaxation, and reduction of stress. It has been used in rehabilitation programs for people with orthopedic problems or physical disabilities, for pregnant mothers, and the elderly.

Yogalates

Fluid Yogalates, developed by Dr. Mary Wykle, combines Iyengar Yoga, Pilates, and Ai Chi. Static poses and core stabilization exercises are transitioned with circular movements and emphasis on deep breathing to create a continual fluid program. The objectives are increased body awareness, strength, range of motion, relaxation, and an inward focus.

Adaptations and Modifications

- Equipment.
- Begin slowly.

- Use progressive overload. (In other words, pushing a muscle past its normal capacity. This is a basic principle of exercise and is necessary to increase strength, flexibility, and conditioning.)
- Begin with conservative ROM.
- Consider wearing aqua-shoes for protection and slip resistance.
- Use good technique as tolerated. (Stop the exercise if poor technique is used.)

Exercise Session Format

- Start with 10 to 15 minutes and increase in 5-minute intervals.
- Use deep breathing to increase vital capacity.
- Use GRADUAL progressive overload.
- Work on balance.
- Work on strength.
- Work on flexibility.
- Use a longer cool down.

Program Modifications

- Use fewer reps of the same muscle group when beginning.
- Center the body between transitions.
- Reach across the midline and overhead across.
- Use hands behind head and body.
- Move backwards as well as forward.
- Exercise to improve posture.
- Use slow, controlled movement.
- Begin weight-bearing issues in deeper water and progress to shallower.
- Enter water slowly so all systems have an opportunity to gradually accommodate the environment.
- Keep medications at pool edge.

Sample Aquatic Therapy Exercise Program I

Begin at pool edge with spinal alignment and postural awareness with Water Pilates.

Exercise: The Hundred

1. In waist-deep water at the side of the pool, sit in an imaginary chair. Thighs are parallel to the bottom of the pool and knees align over the ankles. The back is against the pool wall and remains immobile throughout the exercise. Arms are at the sides with palms facing backward and shoulders are relaxed. The head faces straight ahead.
2. Begin pumping the arms forward and back about 6 inches.
3. Inhale for five counts and exhale for five counts.
4. Keep the back against the pool wall.

Challenges: Learning to "scoop" the stomach in to set the back to the wall is the main concern. Encourage full breaths.

Progression: Gradually increase the pumping action with the arms coordinated with the breath until you count to 100.

Exercise: Single Leg Circles

1. In waist-deep water at the side of the pool, sit in an imaginary chair. Thighs are parallel to the bottom of the pool and knees align over the ankles. The back is against the pool wall and remains immobile throughout the exercise. Arms are at the sides with palms facing backward and against the wall. Shoulders should be relaxed. The head looks straight ahead.
2. Lift the right leg about 12 inches and straighten. Turn the leg out slightly from the hip socket.
3. Begin the leg circle by moving the leg across the body, then circling it down, around, and back to the starting position. The back does not move from the wall. Complete five circles. Inhale as you begin the motion and exhale to return to the starting position.
4. Reverse the direction of the circle starting outwards, continuing down, then across the body, and return to the starting position.
5. Repeat the leg circles with the left leg.

Challenges: Emphasize that only the leg moves with the back, hips, and arms staying stable against the pool wall.

Progression: Gradually increase the size of the circles while maintaining control throughout the movement.

Sample Aquatic Therapy Exercise Program II

Use BackHab exercises for integrating cardio, mobility, coordination, balance, range of motion, and motor skills.

Exercise: On Toes

Goal: balance, coordination, experience of axial elongation

Considerations: eliminate leaning forward; keep flowing (not jerky)

Progression: lengthen stride

Exercise: On Heels

Goal: balance, stretch of calf muscles (gastrocnemius), endurance of tibialis anterior

Considerations: keep torso upright, keep flowing (not jerky)

Progression: no arms

Exercise: High Knee

Goal: gluteal and hamstring endurance, flexibility

Considerations: lift both knees equally, press foot back when moving backwards

Progression: heavy, add pause or stop

Exercise: Side Lifts (Hip Abduction)

Goal: strengthen abductors and adductors, balance, structural stability for knee

Considerations: eliminate external hip rotation, equal lift and stride length

Progression: pause or stop

Exercise: Dips (Lunge)

Goal: bending skills, increase muscle tone and flexibility

Considerations: maintain upright stance on lunge, lunge without "slamming"

Progression: use explosive power on abduction

Sample Aquatic Therapy Exercise Program III

Use Fluid Yagalates and Ai Chi for re-patterning and to further develop coordination, balance, ROM, and pain-free movement. These can also be used for relaxation unless a trained practitioner is available to offer Watsu.

Fluid Yagalates

Pose: **Warrior II**

1. In waist- to chest-deep water, separate legs approximately 4 feet.
2. Turn the right foot to the side and come into a lunge position. The right ankle and knee align. The right thigh should be almost parallel to the bottom of the pool. The back leg (left) continues to bear weight, pushing the energy flow up to the torso.
3. The torso remains upright and facing forward. It does not rotate.
4. The arms extend out from the shoulders. Extension continues through the fingertips. The shoulders remain relaxed and down.
5. The head turns to look through the fingers of the leading arm. Maintain this position for five or more slow breaths.
6. Repeat to the left side.

Challenges: It is difficult to adequately separate the legs and maintain balance. The leading knee has a tendency to rotate inward. The body leans forward or backwards if the weight is not distributed between the legs.

Progression: Hold for longer periods. Add variations such as Side Angle Pose.

Pose: **Warrior I**

1. In waist- to chest-deep water, separate legs approximately 4 feet.
2. Turn the right foot and leg to the side. Rotate the entire body to the same side. The left leg and foot also turn in the same direction. Insure the pelvis is squared to the side.
3. Bend the right knee, aligning the knee over the ankle. The left leg remains straight.
4. Extend the arms above the head with palm facing each other and hold for approximately five breaths.
5. Repeat to the left side.

Challenges: Maintaining balance in the water with the arms extended out of the water. Caution to limit extension of the back and discourage hyperextension.

Progression: Extend the left (back) heel to the bottom of the pool. Progress to other poses such as Warrior III.

Pose: **Tree**

1. Stand erect in waist- to chest-deep water. Look straight ahead.
2. Balancing on one leg, flex the knee of the opposite leg and lift that foot to the inside of the supporting leg.

3. Arms bend into prayer position at chest level.
4. Gradually extend the arms overhead, keeping the palms together. Body stays straight and appears to lengthen.
5. Begin by trying to hold the position for five breaths.
6. Repeat on the other side.

Challenges: Do not place the foot of the bent leg against the supporting knee. Extend the arms overhead only when balance is secure. Watch the body position because of a tendency to shift one hip to the side to assist with balance.

Progression: Hold for longer periods. Lengthen body and arms upwards.

Ai Chi

Accepting

1. Exhale easily through your mouth, turn your palms down, bring the right arm over to the left so the thumbs of both hands touch each other, while pivoting both feet 90 degrees left so you're facing the left side. Your weight is evenly balanced between both legs.
2. While still facing left, inhale through your nose, turn your palms up, and pull both arms back so that your rib cage feels fully opened. At the same time, shift your weight back on the right leg so that you're leaning back slightly. The trunk must be stable.
3. While still facing left, exhale through your mouth, turn your palms down, and bring both arms together so the thumbs of both hands touch each other. At the same time, shift your weight forward onto the left leg so you're leaning forward slightly.
4. Repeat steps two and three, flowing smoothly 5 to 10 times.
5. Inhale through your nose, turn your palms up, bring the right arm back to the right side, while pivoting both feet 90 degrees right so you're facing front.
6. Exhale easily through your mouth, turn your palms down, bring the left arm over to the right so the thumbs of both hands touch each other, while pivoting both feet 90 degrees right so you're facing the right side. Your weight is evenly balanced between both legs.
7. While still facing right, inhale through your nose, turn your palms up, and pull both arms back so that your rib cage feels fully opened. At the same time, shift your weight back on the left leg so that you're leaning back slightly.
8. While still facing right, exhale through your mouth, turn your palms down, and bring both arms together so the thumbs of both hands touch each other. At the same time, shift your weight forward onto the right leg so you're leaning forward slightly.
9. Repeat steps seven and eight, flowing smoothly 5 to 10 times.
10. Inhale through your nose, turn your palms up, bring the left arm back to the left side, while pivoting both feet 90 degrees left so you're facing front.

Rounding

1. Exhale easily through your mouth, turn your palms down, bring the right arm over to the left so the thumbs of both hands touch each other, while pivoting both feet 90 degrees left so you're facing the left side. Your weight is evenly balanced between both legs.

2. While still facing left, inhale through your nose, turn your palms up, pull arms back so that your rib cage feels fully opened. At the same time, step your right leg back and shift your weight back so you're leaning back slightly.
3. While still facing left, exhale through your mouth, turn your palms down, and bring both arms together so the thumbs of both hands touch each other. At the same time, lift your right leg straight in front of you and lean forward slightly. Bring toes to fingertips.
4. Repeat steps two and three, flowing smoothly 5 to 10 times.
5. Inhale through your nose, turn your palms up, bring the right arm back to the right side, while pivoting both feet 90 degrees right so you're facing front.
6. Exhale easily through your mouth, turn your palms down, bring the left arm over to the right so the thumbs of both hands touch each other, while pivoting both feet 90 degrees right so you're facing the right side. Your weight is evenly balanced between both legs.
7. While still facing right, inhale through your nose, turn your palms up, pull arms back so that your rib cage feels fully opened. At the same time step your left leg back and shift your weight back so you're leaning back slightly.
8. While still facing right, exhale through your mouth, turn your palms down, and bring both arms together so the thumbs of both hands touch each other. At the same time, lift your left leg straight in front of you and lean forward slightly. Bring toes and fingertips together.
9. Repeat steps seven and eight, flowing smoothly 5 to 10 times.
10. Inhale through your nose, turn your palms up, bring the left arm back to the left side, while pivoting both feet 90 degrees left so you're facing front.

Balancing

1. Exhale easily through your mouth, turn your palms down, bring the right arm over to the left so the thumbs of both hands touch each other, while pivoting both feet 90 degrees left so you're facing the left side. Your weight is evenly balanced between both legs.
2. While still facing left, inhale through your nose, turn your palms up, and press both arms down and back (bilateral shoulder extension) with hands supinated. At the same time, lift your right (back) leg forward and lean forward slightly.
3. While still facing left, exhale through your mouth, turn your palms down, and lift both arms forward and up (bilateral shoulder flexion with hands pronated). At the same time, stretch the right leg back but do not step it down. Lean forward.
Repeat steps two and three, flowing smoothly 5 to 10 times without stepping the right leg down. Inhale through your nose, turn your palms up, bring the right arm back to the right side, while stepping the right foot down and pivoting both feet 90 degrees right so you're facing front.
4. Exhale easily through your mouth, turn your palms down, bring the left arm over to the right so the thumbs of both hands touch each other, while pivoting both feet 90 degrees right so you're facing the right side. Your weight is evenly balanced between both legs.
5. While still facing right, inhale through your nose, turn your palms up, and press both arms down and back (bilateral shoulder extension with hands supinated). At the same time, lift your left (back) leg forward and lean forward slightly.

6. While still facing right, exhale through your mouth, turn your palms down, and lift both arms forward and up (bilateral shoulder flexion with hands pronated). At the same time, stretch the left leg back but do not step it down. Lean forward.
7. Repeat steps seven and eight, flowing smoothly 5 to 10 times without stepping the left leg down.
8. Inhale through your nose, turn your palms up, bring the left arm back to the left side, while pivoting both feet 90 degrees left so you're facing front.