



Section on Women's Health

American Physical Therapy Association

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**AQUATIC GROUP EXERCISE A COMPONENT OF  
BREAST CANCER REHABILITATION**

COMBINED SECTIONS MEETING 2004  
OPRYLAND, TN  
FEBRUARY 4-8, 2004

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12 pages



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Breast Cancer Rehabilitation Services  
Rehabilitation Patient Benefits

Pre-operative

- Education
  - Lymphedema prevention
- Scar Management
- Exercise
  - Diaphragmatic breathing
  - ROM
  - Conditioning
  - Strengthening
- Posture

Pre-operative

Breast Reconstruction

- Diaphragmatic breathing
- Stretching – trunk, chest, back
- Strengthening – abdominals
- Stabilization – posture, body mechanics

Breast Cancer Rehabilitation Acute Care

Inpatient Rehabilitation Consult

- UE ROM and strength
- Functional Status – Level of independence with bed mobility, transfers, ambulation and balance, upper and lower extremity bathing, dressing, and general hygiene
- Adaptive Equipment – Education in and provision of equipment as necessary
  - Instruction on incorporating affected UE functionally
  - Instruction on how to apply precautions during functional activity
  - Assessment of edema
  - Instruction in UE and cervical exercises
  - Recommendations

Breast Cancer Rehabilitation Services

Informational/Fact Sheet Outlining Components of Program

- What is breast cancer rehabilitation
- Who can benefit
- What are the goals and corresponding interventions (for example)
  - Supple & pain free scar mobility
    - Scar management – scar massage techniques, silicone gel strips and soft-tissue mobilization
  - Increase mobility
    - Stretching activities – to lengthen muscles & tissues tightened by surgery & adjuvant therapies

- How to make a referral

#### Breast Cancer Rehabilitation Outpatient

##### Scar Management

##### Exercise

- Postural
- Mobility/Range of Motion
- Strengthening
- Aerobic Conditioning/  
Cross Training

##### Strengthening

#### Breast Cancer Rehabilitation

##### Lymphedema Management

- Skin Care/Hygiene
- Abdominal Breathing
- Manual Lymph Drainage

##### Lymphedema Management

#### Complete Decongestive Therapy

**Before**

**After**

##### Lymphedema Management

- Compression Bandaging
- Exercise Program
- Compression Garments

#### Water Pals II

An Aquatic Exercise Program for Individuals Who Have Experienced Breast Cancer

##### Properties of Water

- Buoyancy: an upward force, opposite of gravity that support, assist or resist a motion
- Hydrostatic Pressure: pressure exerted on any fluid at rest, equal on all sides of body, increases with depth
- Viscosity: resistance of a fluid to its adjacent fluid layers sliding freely by one another
- Inertia: tendency for masses to resist changes in motion
- Leverage: length of the moving body part will determine the resistance for its motion in water

##### Buoyancy

- ↓'s weight bearing forces/compression forces on joints
- Improves dynamic support of joints
- Increases functional abilities

- Eases active movement
- Provides psychological boost to patients with pain limitations

#### Hydrostatic Pressure

- 3-D joint stabilization
- Participant controlled variable resistance to movement
- Assists in stimulating circulation
- ↓'s edema/all soft tissue compressed
  - Water acts as a total body compression sleeve (22.4mm of pressure/ft. submerged)

#### Viscosity

- Allows water to be resistive medium
- > the viscosity = > the resistance to movement
- Viscosity ↓'s as the temperature ↑'s

#### Inertia

- Stationary inertia: resistance felt when beginning to move from stationary position
- Moving inertia: length of time needed to bring a body to rest under the action of a constant force; momentum
- Inertia lag: loss of forward momentum due to drag or friction

#### Weight Bearing – Effects of Immersion

- Amount of body weight which you support is reduced in water
- Standing, weight bearing drops as water deepens, refer to diagram

#### Temperature

- 82° - 86° for vigorous exercise
- 91° - 95° for therapeutic effects

#### Indications/Contraindications/

#### Precautions for

#### Aquatic Exercise

#### Indications for Aquatic Therapy/Exercise

- Inability to participate in a land-based exercise program
- Weight-bearing restrictions
- Severe pain or weakness limiting mobility
- Postural and proximal instability limiting extremity exercise
- Mobility restrictions unresponsive to conventional stretching
- Inability to tolerate resisted exercise programs
- Properties of water will advance rehabilitation as compared to land rehabilitation

### Contraindications

- Open or draining wounds
- Incontinent of feces (unpredictable bowel program)
- Any upper respiratory infection
- Uncontrolled seizure activity (if it is medically controlled, this is not in effect as long as there is a plan in place by the therapist and caregiver in the case of a seizure)
- Uncontrolled hypertension or hypotension

### Precautions

- Sensitivity to pool chemicals
- Radiation therapy
- Fear of water

### General Goals of

#### Aquatic Exercise

#### Increase Mobility

- Buoyancy assists in ROM (shoulder flexion in sitting)
- Flotation & buoyancy cuffs
- Potential for overstretching

#### Increase Muscle Function

- Utilize buoyancy - assisted, supported or resisted exercises
- PRE's - utilize turbulence as resistance
- Speed/sets/repetitions - ↑ challenge
- Drag/equipment
  - Dumbbells
  - Noodles
  - Hand mitts

#### Increase Endurance/Conditioning

- Cardio training activities
  - Water walking/jogging
  - Aerobics
  - Bicycle/flutter/cross country/scissors
  - Hand sculling
  - Vertical kicking
  - Lap swimming (timed)

#### Decrease Pain

- Water bombards participant's nervous system with sensory input and pain perception is "gated" out/blocked
- Water is a distracting medium, it's fun and thus takes individual's mind off pain

## Decrease Depression

- Water: morale builder – provides opportunities to succeed
- Ease of movement in water allows success
- Water exercise: “normal” recreational activity not a special therapy or treatment
- Water: medium in which social reintegration can occur
- Water activities: promote competition and motivate participants

## Prevent/Reduce

### Adhesive Capsulitis

- ↑ Mobility/normalize movement
  - Stretching - walking with exaggerated arm swing, utilize side of pool like ballet bar
- ↑ Strength and endurance
  - High repetition, low resistance, strengthening exercises through available range utilizing buoyancy and turbulence

## Cool Water Class Design

- Multipurpose Pool - Temperature 84° F to 88° F
- Considerations
  - Excellent for improved muscular and cardio respiratory endurance
  - Excellent opportunity for cardiovascular training and strength training
  - More appropriate for individuals with heart conditions, obesity and pregnancy
  - Muscles do not stretch as easily
  - Participants may need to wear neoprene suits, T-shirts, bathing caps, etc., to stay warm

## Breast Cancer Rehabilitation

### Water Pals II

- 1-hour group water fitness class
- Class is 2 times per week for 6 months
- Water temperature is below 85 degrees
- Focus on strengthening chest, shoulder and back muscles

### Water Pals II

#### Breast Cancer Pool Program

- 10-minute thermal warm-up – walking in waist to chest-deep water, variety of progressive hand/arm movements
- Basic breathing throughout
- Cardiovascular conditioning - variety of stretches, jogging and/or walking in pool – low impact aerobics
- 10-minute cool-down – Upper and lower body stretching

## Instructors

- PT/PTA

- Lifeguard
- Advanced aquatic training
- Aquatic experience

#### Program Informational Packet

- Includes:
  - Program flyer/fact sheet
  - Informational letter
  - Medical Clearance form
  - Enrollment form

#### Medical Clearance Form

- Required
- Statement indicating no conditions that preclude participation
- Participant last seen/examined on
- Limitations identified
- Medication types identified
- History that may affect participation (cardio, respiratory, diabetes, ortho)

#### Enrollment Form

- Participant's demographics
- Physician/practitioner
- Breast CA diagnosis
- Surgery type and date
- Therapy (chemo, radiation, hormonal)
- Node dissection
  - # removed - positive or negative
- Breast reconstruction
- Swelling
- Physical limitations prior to surgery
- Medical needs/limitations

#### Program Design

- Community based
- Multiple locations
- Participant registration
- Self pay – punch card

#### Program Considerations

- Availability of Pool
- Accessibility
- Monthly fee/membership vs. individual class
- Facility licensure issues

#### Water Pals II

## Program Goals

- Decrease body fat, while increasing lean muscle mass
- Improve cardiovascular fitness
- Increase ROM in chest & shoulders
- Strengthen shoulder & back muscles

## Water Pals II

### Program Goals

- Prevent shoulder adhesive capsulitis
- Reduce stress & risk of lymphedema
- Promote lifetime wellness
- Provide interaction & socialization

### Class Considerations

- Cooler pool temperatures
  - ↑ importance of warm-up --- movement
  - Stationary/static stretches last component of class
- Time based activities/movements vs. # of repetitions
  - Participants work at own pace
  - Don't try to keep up with others
- Focus on whole body approach
  - Secondary to de-conditioning from treatments
  - Trunk/abdominals/LE's
- Diaphragmatic breathing

### Warm-Up

- Head & neck circles, rotation, flexion
- Shoulder shrugs/circles
- Scapular adduction
- Reaching up with hands (climbing the ladder)
- Trunk rolls (hula hoops)
- Heel raises/toe raises
- Leg raises straight in front
- Hip abduction
- Squats

### Cardio Training/Conditioning

- Turbulence - ↑ resistance
- Change direction – go against current
- Walk in circle
  - Long strides with straight arms
  - Shuffle step
  - Jog
  - High knees

- Breast stroke
- Cross country

#### Cardio Training/Conditioning

- Stepping/jogging in place combined with arm movements
  - Backstroke
  - Crawl
  - Sidestroke
  - Figure 8's
  - Boxing
  - D1 and D2 water patterns
  - Elbow to knee
  - Finger to heel
  - Rows
  - Arm Crosses

#### Monitoring Heart Rate

- Perceived exertion index/scale (Gunnar Borg)
- Target heart rate:
  - $220 - \text{age} = \text{maximal heart rate}$
  - Multiply maximal heart rate by .60 or .70 (intensity level) = moderate zone (60 or 70%)

#### Strengthening

- Dumbbell's (DB's)
  - Jogging DB's  $\uparrow\downarrow$
  - Jumping Jacks
  - Lunge with punch
  - Open circle singles (horizontal/vertical)
  - ABS/Obliques
- Noodle
  - Push/pull
  - Pendulum with straight arms
  - Drive the bus
  - Around back hands in/out
  - ABS/Obliques
- Push-ups with partner (utilize wall)

#### Cool Down

#### Stationary Stretches to Address

#### Major Muscle Groups

- Gastroc/soleus
- Quadriceps
- Hamstrings

- Triceps
- Deltoids
- Pectoralis
- Latissimus
- Trunk
- Hands
- Cervical

#### Assessment/Function

- Shoulder
  - AROM
  - Muscle strength
- Grip strength
- Functional Impairment
- Pain

#### Water Pals II

##### Initial 12-Week Pilot

##### Results/Findings

- Function improved 32%
- Pain decreased 67%
- AROM
  - Flexion ↑5°
  - Abduction ↑5°
  - External rotation ↑14°
  - Internal rotation ↑13°
- Grip strength increased 8%

##### Additional Support/Education

- Presentations
  - Lymphedema
  - Scar management
- American Cancer Society
  - “Look Good, Feel Better”
  - Color consultation

#### Water Pals II:

##### Program Evaluation

Since attending Water Pals II Program:

- 10/10 strongly agreed/agreed feeling of well-being improved
- 10/10 strongly agreed/ agreed physical comfort improved
- 9/10 strongly agreed/ agreed felt more relaxed and less tense
- 9/10 strongly agreed /agreed level of activity in daily life increased
- 8/10 strongly agreed/agreed level of pain decreased

#### Water Pals II:

### Program Evaluation

- 10/10 noted program allowed opportunities to share experiences and exchange info
- 10/10 felt program instructors were understanding and supportive
- 10/10 very satisfied with program
- 9/10 very likely to recommend Water Pals II to other women with breast cancer

### Getting the Word Out

- Flyers/fact sheet
- Newspaper articles, advertising
- Presentation
  - Tumor conference
  - Breast cancer support groups
  - Cancer Care Committee
  - Community – Councils On Aging
- Physician/practitioners
  - General surgeons
  - Medical oncologists
  - Radiation oncologists
  - Primary care
  - Plastic surgeons
  - Breast care coordinators

### *In their own words...*

***“...The program was great!” ... “The instructors are knowledgeable, caring and compassionate” ... “A second class weekly would be great!” ... “I feel that Water Pals has helped me accept my condition very much”... “I hope to continue in the program for more improvement in my physical activities” ... “Excellent program! Look forward to it weekly and continue exercises during the week on my own”***

## Biography

Patricia Wolfe, PT, MS, is the Administrative Director of Rehabilitation Services for Cape Cod Healthcare, Hyannis, Massachusetts. She earned her Bachelor of Science in Physical Therapy at Indiana University School of Medicine in Indianapolis, Indiana, and has a Master of Science in Physical Therapy from Boston University. For sixteen years, she served as Administrative Director of Rehabilitation Services at Portsmouth Regional Hospital, Portsmouth, New Hampshire, where she was responsible for the Women's Health Program. In Portsmouth, she was an active member of the American Physical Therapy Association for the New Hampshire Chapter and actively served as President, Vice President, Chief Delegate and Member of the Board of Directors. At Notre Dame College in Manchester, New Hampshire, she was Adjunct Faculty Member of the Physical Therapy Program where she taught Women's Health Throughout the Lifespan.

Presently, she is the APTA Director of Practice for the Section on Women's Health. She is an educator and activist in women's health serving on the Section's Federal Governmental Affairs Committee and attending federal government affairs forums. In addition, she provides educational programs addressing women's health issues. She was recently elected APTA Delegate of the Massachusetts Chapter.

As the Administrative Director of Rehabilitation Services of Cape Cod Healthcare, she oversees and manages all inpatient and outpatient rehabilitation services offered there: physical therapy, occupational therapy, speech and language pathology, massage therapy, open heart cardiac rehabilitation, aquatic therapy, occupational rehabilitation, day rehabilitation, pediatric rehabilitation, pain management, total joint replacement, and sports medicine. She developed two aquatic exercise programs: Joint Effort aquatic exercise program providing treatment to individuals with joint dysfunctions, and Water Pals II aquatic breast cancer rehabilitation. In addition, she has implemented rehabilitation programs to treat urinary/fecal incontinence, osteoporosis, pelvic pain, and prenatal and postpartum exercise classes.