CLINICAL REVIEW

Hydrotherapy: Watsu

Indexing Metadata/Description

› **Procedure:** Hydrotherapy: Watsu
› **Synonyms:** Aquatic therapy: Watsu
› **Area(s) of specialty:** Orthopedic Rehabilitation, Neurological Rehabilitation, Aquatic Therapy, Pediatric Rehabilitation
› **Description/use**

- Hydrotherapy uses water (water, ice, steam) in order to promote health and provide a treatment option for various diseases[11]
  - For detailed information on hydrotherapy, see *Clinical Review…Hydrotherapy: A Focus on Pool-Based Therapy;*CINAHL Topic ID Number: T708957
- Watsu – A type of hydrotherapy that combines stretching and acupressure while the patient floats in a warm pool. The name is derived from *water* and *shiatsu*
  - Based on Eastern medicine theories that the smooth and continuous flow of life energy, or "qi," can be facilitated using stretches, massage, and pressure point manipulation[7]
  - Watsu was developed as a relaxation technique by Zen shiatsu teacher Harold Dull in the early 1980s, and was not initially intended for persons with physical disorders.[7] The approach has since been applied by rehabilitation therapists to patients with various physical disorders, including chronic musculoskeletal problems and neurological disorders
  - In general, a one-on-one approach is used, with the patient remaining passive. The therapist stabilizes or moves one body segment while moving through the water, creating a drag effect that stretches other segments.[7] Specific sequences of movements are used
- Principles of watsu
  - Watsu consists of a series of passive, structured sequences ("flows") that incorporate stretches of the neck, trunk, and extremities.[7] Deep-breathing activities are also emphasized to promote relaxation
    - The therapist guides the patient through a sequence of alternating stretches applied in a symmetrical manner, side to side
    - The basic sequence can be varied to adapt to the individual patient's muscle tension
  - Benefits of an aquatic environment include:
    - Buoyancy
      - Minimizes the impact of gravity; lessens stress placed on joints[11]
      - Facilitates greater ROM in impaired joints[11]
    - Provides support, decreasing balance impairment
    - The clinician can use buoyancy to facilitate or oppose movement during treatment
    - Viscosity
      - Resistance is increased the more rapidly an extremity is moved through the water[1]
    - Hydrostatic pressure
      - Might assist in reducing edema within the extremities[11]
    - Temperature
      - Warm water has been associated with pain reduction[7]

Author
Ellenore Palmer, BScPT, MSc
Cinahl Information Systems, Glendale, CA

Reviewers
Diane Matlick, PT
Cinahl Information Systems, Glendale, CA
Suzanne VanderKooi, PT, DPT
Cinahl Information Systems, Glendale, CA
Rehabilitation Operations Council
Glendale Adventist Medical Center, Glendale, CA

Editor
Sharon Richman, DHSc, MSPT, PT
Cinahl Information Systems, Glendale, CA

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- Physical properties of fluid in motion
  - Laminar flow – movement in which molecules move parallel to one another (typically slow movement)
  - Turbulent flow – molecules move in all directions (typically faster movement)
  - Drag – cumulative effects of turbulence and viscosity acting on an object in motion
- Ease of movement
  - The continual rhythmic movement from one position to the next promotes relaxation

– Principles of shiatsu
- Shiatsu techniques are based on the manipulation of pressure points along energy meridians that are thought to run through the body[12]
- Finger pressure and other stretches and massage techniques are applied

› **CPT codes**
- Aquatic therapy with therapeutic exercise 97113

› **Reimbursement**
- The clinician is advised to check with the patient's specific insurance carrier to obtain reimbursement information
- The term "aquatic therapist" has no legal definition or scope of practice. PTs who perform physical therapy in a pool might be identified as "physical therapists with expertise in the field of aquatic therapy" in an attempt to differentiate for payers the different aquatic services available

Indications for procedure

› Watsu was originally developed as a wellness technique to facilitate relaxation. Use of the approach to treat patients with various physical disorders such as acute and chronic pain, neuromuscular disorders, head injury, soft tissue dysfunction, chronic headaches, chronic fatigue, fibromyalgia, and joint disease has been reported, largely anecdotally

› Hydrotherapy might offer a useful treatment medium for patients who have poor tolerance of land-based intervention

› Watsu therapy may provide the benefits of reducing muscle tone and pain as a result of rotational movements of the trunk accompanied by general rocking of the body. This leads to a dampened muscle tone due to the activation of the vestibular system

› Other general indications for watsu include the following:
- Impaired circulation[1]
- Impaired functional mobility[1]
- Poor stress tolerance and insomnia[7,10]
- Pain[1,7]
- Decreased ROM[1]

Guidelines of procedure

› Watsu differs from other forms of hydrotherapy in that patients are held afloat throughout the entire treatment by the support of the therapist[7]
- The patient typically is supported under the back and head by the therapist's forearm[7]
- Patients are moved in water with rhythmical movements[7]

› A typical session is 40–60 minutes long, but duration will vary depending on patient's condition and tolerance[7,8]

› A focus on the emotional experience of the treatment is also common
- The need to place trust in the practitioner to hold and cradle the head is considered key and is thought to contribute to the relaxation achieved

› Techniques might be modified to accommodate patients' needs
- One modification is the introduction of flotation devices, which might be more appropriate for persons with disabilities because they offer more precise support of the body

› Pool temperature
- Watsu pools are kept at or slightly below body temperature 95°F (35°C)[7]
- The warm water is thought to contribute to the relaxation
- See *Contraindications/Precautions* to procedure, below, for more information on recommended pool temperatures

- For more information regarding pool operation guidelines, the clinician is advised to check with his or her state or local health department[2]
- The clinician can refer to guidelines from the Aquatic Therapy & Rehab Institute at http://www.atri.org/articles/Standards.pdf [2,3]

Contraindications/Precautions to procedure

› The clinician must take care when applying equipment such as floats to increase the buoyancy of the lower extremities; this equipment might prohibit placing feet on the pool floor, possibly placing the patient at risk (e.g., a patient who cannot swim might be at risk for drowning if not properly supervised/assisted)

› **Clinicians should receive proper, comprehensive training on the implementation of watsu prior to initiating this method of intervention with patients. The rationale for the use of watsu and hydrotherapy in general is extensive and beyond the scope of this Clinical Review. This Clinical Review is meant to serve as a guide/overview and is not a substitute for clinical training and instruction**

› **Warm-water hydrotherapy** contraindications

- Uncontrolled seizure activity[1,4]
- Unstable medical conditions[4]
- Severe cardiac precautions[1] (e.g., symptoms of shortness of breath, chest pain, dizziness, nausea, or extreme fatigue)
- Acute fever[1]
- Infectious diseases (e.g., flu)[5]
- Upper respiratory infections[1]
- Severe mental disorders[1]
- Severe pulmonary conditions (e.g., vital capacity < 1 L)[1,5]
- Behavior that creates safety concerns[4]
- Open wounds (without proper occlusive dressings)[1]
- Incontinence[1]
- Skin infections[1]
- Menstruation (without internal protection)[1]
- Individuals on isolation precautions[1]
- Severe peripheral vascular disease[5]
- Risk of hemorrhage[5]
- Severe renal disease[5]

› **Hydrotherapy** precautions

- Pregnancy
  - Clinicians should use caution when treating pregnant women; a pool temperature > 102.02°F (38.9°C) might pose a risk to the fetus. The safest temperature is 89.6°F (32°C), well below the temperature at which there is risk to the fetus[5]
  - Complicated pregnancies are a precaution[4]
- Temperature of the pool
  - Immersion in temperatures < 77°F (25°C) or > 98.6°F (37°C) might pose serious risks to the patient[5]
- Compromised cardiovascular system[1,4]
  - Patients with current cardiopulmonary impairment and older adult patients: Begin hydrotherapy with sessions lasting 10 minutes. Time spent in pool may be increased as indicated and appropriate; however, it should not exceed 20 minutes[1]
  - Patients with history of cardiopulmonary impairment but not currently compromised: Total time in water should be limited to 20 minutes; might also want to begin program spending only 10 minutes in the pool[1]
- Severe/chronic ear infection[4]
- Open wounds[4]
- COPD[4]

- Any over-ground exercise precaution[4]
- Inability to recognize when overexerting[4]
- Anxiety/fear of the water[1,4]
- Low body fat (reduced capacity to produce heat)[4]
- Neurological disorders[5]
  - For patients with ataxia, volitional movement in the water might become even more cumbersome
  - Patients with multiple sclerosis – temperature of the pool should not be > 91.4°F (33°C), as fatigue can set in quickly (especially in patients with heat intolerance)
  - Controlled seizure disorders; clinician must determine that any prescribed medications are taken before beginning therapy
- Ostomies[1]
- G-tubes[1]
- Open lines (e.g., intravenous)[5]
- Suprapubic appliances (e.g., catheter)[1]
- Autonomic dysreflexia[1]
- Orthostatic hypotension[1]
- Fatigue

› See specific **Contraindications/precautions to examination** and **Contraindications/precautions** under **Assessment/ Plan of Care**

Examination

› **Examination will vary based on underlying disorder**

› **Contraindications/precautions to examination**

- Record any adverse reactions to pool-basedevaluation/therapy[1]

› **History (History-taking might vary depending on the age of the patient and nature of condition; adjust accordingly)**

- **History of present illness/injury for which the procedure is indicated**
  - **Mechanism of injury or etiology of illness:** What is the nature of referral?
  - **Course of treatment**
    - **Medical management:** What medical procedures, surgeries, and/or inpatient hospital stays has the patient undergone? Medical management will vary widely depending on underlying condition/reason for referral
    - **Medications for current illness/injury:** Determine what medications the physician has prescribed; are they being taken? Are they effectively controlling patient's symptoms?
    - **Diagnostic tests completed:** Diagnostic tests will vary depending on nature of condition
    - **Home remedies/alternative therapies:** Document any use of home remedies (e.g., ice or heating pack) or alternative therapies (e.g., acupuncture) and whether or not they help
    - **Previous therapy:** Document whether patient has had occupational or physical therapy for this or other conditions and what specific treatments were helpful or not helpful. Document any prior hydrotherapy
  - **Aggravating/easing factors:** Document any noted aggravating or easing factors
  - **Body chart:** Use body chart to document location and nature of symptoms
  - **Nature of symptoms:** Document nature of symptoms (e.g., constant vs. intermittent, sharp, dull, aching, burning, numbness, tingling).
  - **Rating of symptoms:** Use a visual analog scale (VAS) or 0–10 scale to assess symptoms at their best, at their worst, and at the moment (specifically address if pain is present now and how much)
  - **Pattern of symptoms:** Document changes in symptoms throughout the day and night, if any (a.m., mid-day, p.m., night); also, document changes in symptoms due to weather or other external variables
  - **Sleep disturbance:** Document number of wakings/night, if any
    - Insomnia has been cited as an indication for watsu, with improved sleep patterns reported as one of its positive effects[10]
  - **Other symptoms:** Document other symptoms the patient is experiencing that could exacerbate the condition and/or symptoms that could be indicative of a need to refer to physician (e.g., dizziness, bowel/bladder/sexual dysfunction, saddle anesthesia)

  - **Respiratory status:** Is there any history of respiratory compromise? History of supplemental oxygen use or the need for a mechanical ventilator? Any history of asthma? Chlorine by-products in the air at pools (indoor in particular) can be irritants that can aggravate asthma and other respiratory conditions(6)
  - **Barriers to learning**
    - **Are there any barriers to learning? Yes __ No __**
    - **If Yes, describe _____**
- **Medical history**
  - **Past medical history**
    - **Previous history of same/similar diagnosis:** Document history of same/ similar diagnosis
    - **Comorbid diagnoses:** Ask patient about other problems, including diabetes, cancer, heart disease, complications of pregnancy, psychiatric disorders, and orthopedic disorders. Inquire about conditions that are contraindications/ precautions for hydrotherapy, including incontinence
    - **Medications previously prescribed:** Obtain a comprehensive list of medications prescribed and/or being taken (including OTC drugs)
    - **Other symptoms:** Ask patient about other symptoms he or she is experiencing
- **Social/occupational history**
  - **Patient's goals:** Document what the patient hopes to accomplish with therapy and in general. Is the patient specifically seeking hydrotherapy/watsu?
  - **Vocation/avocation and associated repetitive behaviors, if any:** Does the patient participate in recreational or competitive sports? Does the patient attend school or work? Inquire about patient's experiences with swimming and comfort level in water
  - **Functional limitations/assistance with ADLs/adaptive equipment:** Include any noted limitations with self-care, home management, work, and/or community leisure
  - **Living environment:** Document information about the living environment including stairs, number of floors in home, and with whom patient lives (e.g., caregivers, family members). Identify if there are barriers to independence in the home; any modifications necessary? Identify what community resources are available and whether patient is able to access them

› **Relevant tests and measures: While tests and measures are listed in alphabetical order, sequencing should be appropriate to patient medical condition, functional status, and setting.** Evaluation procedures should be modified according to the patient's age, diagnosis, and any unique circumstances; the information listed below is meant to serve as a guide only. Complete a general evaluation as indicated and appropriate

- **Anthropometric characteristics:** Assess edema as indicated (e.g., circumferential measurements)
- **Arousal, attention, cognition (including memory, problem solving):** Assess orientation as indicated. Mini-MentalState Examination (MMSE) might be used to screen for cognitive impairment
- **Assistive and adaptive devices:** Does the patient require the use of any assistive or adaptive devices?
- **Balance:** Complete a balance assessment in sitting and standing. Examples of standardized tests include the Berg Balance Scale (BBS) and the Functional Reach Test
- **Cardiorespiratory function and endurance**
  - Assess respiratory rate and pattern during rest and throughout treatment session
    - Watsu therapists are trained to coordinate movement with the patient's breathing
  - Assess blood pressure and heart rate before and after activity as indicated
  - Borg Rating of Perceived Exertion (RPE) Scale might be used to assess perceived intensity of exercise
  - 6-minute walk for distance test (6MWT) can be used to assess endurance
- **Ergonomics/body mechanics:** Assess general body mechanics throughout assessment
- **Functional mobility:** Complete a full assessment of mobility; use standardized tests such as Timed Up and Go (TUG) test or FIM as indicated. Assess transfer ability with consideration of how patient will enter and exit pool. Depending on facility, patient might be required to walk in or maintain balance in unsupported sitting while being lowered in
- **Gait/locomotion:** Depending on reason for referral, a gait assessment might be indicated. The Dynamic Gait Index (DGI) might be used to assess safety
- **Joint integrity and mobility:** Assess the integrity of any involved joints
- **Motor function (motor control/tone/learning):** Complete an assessment of motor function as indicated by reason for referral
  - Assess muscle tone and coordination. Modified Ashworth Scale might be used to assess tone
  - Assess voluntary motor control and for presence of obligatory movement patterns

- **Muscle strength**
  - Assess core muscle strength
  - Complete a full strength assessment as indicated and appropriate
  - Might need to assess strength through function in some situations
    - Manual muscle testing (MMT) is not valid where tone is abnormal
- **Observation/inspection/palpation** (including skin assessment): Are there any open wounds? Any surgical sites? Inspect skin before and after treatment, making note of any adverse reactions to chlorine
- **Perception** (e.g., visual field, spatial relations): Complete a perceptual assessment as indicated
- **Posture:** Assess posture, noting any asymmetry in weight-bearing in sitting and standing. Assess anteroposterior spinal curves, noting any excess lordosis or kyphosis
- **Range of motion:** Complete a full active and passive ROM and flexibility assessment as indicated and appropriate
- **Reflex testing:** Assess reflexes bilaterally and compare
- **Self-care/activities of daily living** (objective testing): Assess ADLs as indicated. Note amount of assistance required for dressing
- **Sensory testing:** Complete a sensory assessment

Assessment/Plan of Care

› **Contraindications/precautions**

- Watsu has been reported to elicit emotional responses in some individuals. Patients might be vulnerable and impressionable in this medium, so a high standard of awareness in the practitioner is needed[6]
  - The personal and professional development of the therapist is important in order to be prepared to deal with emotional issues that might arise[6]
- Routine cleaning/treating of the pool should occur in order to prevent bacterial infection[1]
- **Patients who are treated with hydrotherapy might be at risk for falls; follow facility protocols for fall prevention and post fall-prevention instructions at bedside, if inpatient. Ensure that patient and family/caregivers are aware of the potential for falls and educated about fall-preventionstrategies. Discharge criteria should include independence with fall-prevention strategies**

› **Diagnosis/need for watsu:** Indications for the use of watsu and the diagnoses behind these indications are many. Please see *Indications for device/equipment*, above, for more details

› **Prognosis:** Prognosis depends on the underlying condition

› **Referral to other disciplines:** Refer to other disciplines as indicated and appropriate

› **Treatment summary:**

- Authors of a controlled pilot study in Switzerland who investigated the effects of passive hydrotherapy watsu in the third trimester of pregnancy concluded that there are significant benefits of watsu, including decreased stress, decreased pain, and improved mood and quality of life[7]
  - Seventeen subjects participated. Nine healthy pregnant women were assigned to the intervention group and received watsu. Eight healthy pregnant women served as a control group and did not receive watsu
  - Participants in the intervention group received 60-minutesessions of watsu on day 1 and day 4
  - The motion sequence utilized was watsu transition flow. During watsu treatment, participants rested in a supine position supported by the therapist at the back of the head as well as the knees and pelvis. Floatation devices were attached to the thighs to support the participant's lower back. The participants were slowly floated back and forth in the water in large circular patterns. They remained in constant contact with the therapist throughout the entire session
  - Outcome measures included the Perceived Stress Scale (PSS), the Medical Outcomes Study 36-Item Short Form Health Survey (SF-36), visual analogue scales (VAS) for assessment of pain and stress, Multidimensional Mood Questionnaire (MDMQ), ultrasound, and a qualitative questionnaire regarding their watsu experience
  - Significantly lower levels of stress and pain were reported by the watsu treatment group. Significant improvements were also found in mental-health-related quality of life and mood. Qualitative data indicated that the participants found watsu enjoyable and deeply relaxing. The intervention group also reported significant reduction in perceived stress from day 1 to day 8
- Authors of an RCT conducted in Chile have found that watsu therapy can improve quality of life, decrease pain, and improve the functional health status of patients with juvenile idiopathic arthritis[8]

- Forty-six patients with juvenile arthritis were randomized to either the watsu group (n = 24) or conventional hydrotherapy group (n = 22)
- Both groups received one 45-minute session weekly for 10 weeks
- Results show that the watsu group had significant improvements in health- related quality of life (HRQoL), disability index, distress index, and functional health status as indicated by the Childhood Health Assessment Questionnaire (CHAQ)

• Watsu therapy treatment is associated with improvement in quality of life and pain reduction in older adult women with fibromyalgia[9]

- Seventeen older adult women with fibromyalgia were included in this study
- Participants had 40-minute watsu sessions twice weekly for a total of 10 sessions n
- Results show significant improvements in functional capacity, vitality, and quality of life

• A similar study on the effects of watsu therapy for patients with fibromyalgia showed a reduction in pain during sitting, walking, driving, standing, and lying down and also improvement in sleep quality[10]

- Twenty patients with fibromyalgia were randomized to either the watsu therapy group (n = 10) or aquatic activities (n = 10)
- Both groups received their respective therapy once a week for 8 weeks

Problem	Goal	Intervention	Expected Progression	Home Program
Pain Edema	Reduce pain Reduce edema	**Hydrotherapy – Watsu** Lower extremity edema is reduced while in the water[11] (Please see *Treatment summary*, above)	Progress each unique individual as indicated and appropriate	Make recommendations for a home program as indicated and appropriate
Impaired ROM and/or flexibility Spasticity	Improve ROM and/or flexibility Reduce spasticity	**Hydrotherapy – Watsu** (Please see *Treatment summary*, above)	Progress each unique individual as indicated and appropriate	Make recommendations for a home program as indicated and appropriate
Decreased balance/ postural reactions Decreased tolerance for certain positions	Increase balance/ postural reactions Improve function	***Hydrotherapy*** Water can be used to support the body and allow freedom of movement not available on land (Please see *Treatment summary*, above)	Progress each unique individual as indicated and appropriate	Make recommendations for a home program as indicated and appropriate

Presence of safety risks in pool environment	Maintain the patient's safety at all times	**Safety strategies** Proper staff present during aquatic intervention. Proper pool maintenance Equipment (as indicated) to assist in aiding the patient in and out of the pool Constant supervision during therapy	N/A	N/A

Desired Outcomes/Outcome Measures

› Relaxation
› Reduced pain
  • VAS
› Reduced edema
  • Circumferential measurements
› Improved ROM and/or flexibility
  • Goniometric measurement of ROM
› Reduced spasticity
  • Tone Assessment Scale (TAS)
  • Modified Ashworth Scale
› Improved gait
  • FIM
  • 6MWT
  • Rivermead Visual Gait Assessment (RVGA)
  • DGI
› Improved balance
  • Berg Balance Scale
› Improved sleep patterns
› Improved quality of life
  • SF-36
› Increased endurance
  • Borg RPE Scale

Maintenance or Prevention

› Relaxation techniques and ROM exercises to maintain improvements obtained during watsu sessions might be beneficial

Patient Education

› More information on watsu therapy can be found at https://www.watsu.com/ and https://iswatsu.com/what-is-watsu

Coding Matrix

References are rated using the following codes, listed in order of strength:

M	Published meta-analysis	**RV**	Published review of the literature	**PP**	Policies, procedures, protocols
SR	Published systematic or integrative literature review	**RU**	Published research utilization report	**X**	Practice exemplars, stories, opinions
RCT	Published research (randomized controlled trial)	**QI**	Published quality improvement report	**GI**	General or background information/texts/reports
R	Published research (not randomized controlled trial)	**L**	Legislation	**U**	Unpublished research, reviews, poster presentations or other such materials
C	Case histories, case studies	**PGR**	Published government report	**CP**	Conference proceedings, abstracts, presentation
G	Published guidelines	**PFR**	Published funded report		

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