

Guidelines & Standards For Aquatic Therapy India



An Initiative by

ATNI

(Aquatic Therapy Network of India)

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Preface

India is a rapidly progressing country in health care. Physiotherapy in the past decade has been making tremendous mark in the Therapy sector. There has been growth in terms of awareness, acceptance, and skill set of therapists and a great turnout of patients for therapy. As physiotherapists we are constantly driven to be highly motivated, self driven, creative and empathetic professionals. Over a period of time, the therapy has grown to involve a large sector of medical conditions and development of variety of therapeutic clinical applications to handle multitude of problems diagnosed by medical fraternity.

Physiotherapy has been working complimentary to medicine in many aspects and is also growing to become an autonomous therapy with many therapists having first contact practice. In such a scenario, Aquatic therapy which is a realm of Physiotherapists is making its initial impact in India with many therapists getting trained in all the concepts and are getting wet to handle the patients in water. The effort has been going on since almost a decade now and it seems just the right time that we bring in a guiding tool or a reference manual for all the therapists in India to help them establish Aquatic Therapy. This is an honest and sincere attempt by a group of Aquatic therapists to establish such guidelines for India.

Knowledge is everybody's right, no one can prevent somebody from learning. India is a diversified country with ancient system of medicine of Ayurveda to recent advances in Allopathy Medicine & Surgery. At present, Aquatic therapy is being practiced by many professionals in India, some well trained, some not. Our intention is to bring everyone under one umbrella and establish clear competency boundaries in handling various diseased population Sectors. This will ensure a good standard of practice in all fields of aquatic therapy application as well enable each professional to be part of supporting group that will help universal growth. The growth will be as per industry standards worldwide. Hence, Aquatic Therapy Network of India will have all professionals that includes; Physiotherapists, Occupational therapists, Fitness professionals, Watsu Practitioners & Special Educators under its umbrella.

The first edition will enable practicing therapists to lean on the guidelines for some key information regarding the Education, Standards of Safety, and Standards for Pool environment, water quality standards, certain clinical screening and emergency drills. Ideally all therapists can use this manual.

As this is the first edition, care has been taken to keep the information with relevant references. We have taken help from many professional bodies across the globe as well as in India. Our primary reference has been the guidelines set by Australian Physiotherapy Association - Aquatic Physiotherapy therapy group, along with IATF, WHO, European standards and American standards. The contents have been adapted to Indian regulations setup by Government of India. After the first edition has been in use over a period of time there will be opportunity to provide comments and suggestions for change. Feedbacks on the guidelines are welcome. The email address is given elsewhere. This Guideline & Standards manual should be followed by therapists working in the field of Aquatic Therapy. It helps the concept to grow in the most systematic way. However if certain details cannot be managed as per the guidelines & standards mentioned in this manual, a note can be made and brought to the notice of the team.

Definition

Aquatic Therapy had to be defined for India as there are many professionals involved in applying water for therapeutic purpose. We have made an attempt to keep the definition comprehensive so that it will involve all sectors of population that includes normal healthy people and also diseased individuals. The definition has been designed keeping ICF parameters in the foreground, so as to make it appeal even to international standards.

Aquatic Therapy

“Aquatic Therapy is a set of therapeutic procedures applied in a (therapeutic) pool by a certified practitioner in bringing about Physical, Physiological, Psychological and Therapeutic changes in an individual using the properties & hydrodynamic principles of water to maintain, improve or restore body structure & function, to overcome activity limitations and facilitate participation to fulfil their roles independently in daily life to the maximum extent possible in their current environment.”

Aquatic Therapy Professionals

Individuals with degrees in Medicine, Physiotherapy, Occupational therapy or any registered allied branch of medicine that deals with diseased individuals, having undergone Aquatic therapy education; show competency in clinical reasoning for developing a therapeutic plan and executing them to achieve desired results.

Aquatic Therapy Education

The Education, that enables a student to learn about the basic fundamentals of water properties and hydrodynamics which will help them to develop an insight in adapting such fundamentals to design a therapy that has therapeutic value.

Aquatic Therapy Concepts

The concepts that use the principles of hydrostatics, fluid dynamics and physiology of immersion in water, developed through a systematic approach having clear rationale with an intention to bring about therapeutic benefit and feeling of wellness.

Therapy Pool

An indoor or well covered regular / heated / a temperature controlled pool with appropriate depth for a range of therapeutic activities and with appropriate access, designed to treat individuals having conditions that can benefit from water. The Pool needs to be maintained with high standards for hygiene and have all the essential facilities.

Aquatic Therapy Equipment

The equipments that can bring about change in resistance at different velocities of movement and aid in developing endurance, strength, balance, coordination & flexibility by taking advantage of buoyancy, drag & gravity. Or simply put devices that assist, resist or support body structures in water for therapeutic purposes. There can be another category of playful equipment that can be used for achieving the objective of therapy.

Aquatic Therapy Education standards

Aquatic therapy, otherwise known as Hydrotherapy at undergraduate level of education in Physiotherapy has limited hours of teaching with only the basic education on properties of water, hydrodynamic principles, physiology of immersion, advantages & disadvantages of water, across all universities in India. There is no practical hours involved and absolutely no clinical decision making process included in developing therapy plan. Hence it became essential to establish a certain amount of basic education as standard to handle patients in water with clear therapeutic goals. This will ensure a minimal required qualification to handle people in water. This basic education comes highly recommended for all the practicing aquatic therapy professionals. It is possible that some individuals may practice without these educational standards, such individuals will not be entertained by ATNI and no inter professional references will be forwarded to such individuals, but they will be encouraged to get educated for professional growth.

The educational standards have been divided under two broad categories as per the area of practice in terms of clinical and non clinical. There are many professionals who can be brought under these two categories, based on further queries decision can be taken. At present this classification holds until next revision of the manual.

Aquatic Therapy Professionals (ATP)

- a. Physiotherapists
- b. Occupational Therapists

Aquatic Bodywork Professionals (ABP)

- c. Watsu Practitioners
- d. Fitness Professionals
- e. Special Educators

Aquatic Therapy Professionals (ATP)

Physiotherapists & Occupational Therapists

1. The Current education at the undergraduate level at all the courses across various universities does not suffice the therapists to handle the patients clinically in water. As the curriculum does not involve practical aspects of handling patients in water, it is important to have appropriate education & clinical handling in aquatic therapy before the therapists can handle patients in water. It is recommended as a guideline to have a minimum of 32 hours of education with peer group handling and a case demonstration. However, as the professional education entitles them to handle patients independently on land they become naturally eligible to carry forward the treatment transition from land to water / water to land.
2. They should be having educational hours that cover the following topics.

Theory

History, Definition, Principles of hydrodynamics and Properties of water, Physiology of immersion, physiological & Therapeutic benefits, Precautions and contraindications, Safety aspects for therapists and clients including screening, Basic Information on various Aquatic therapy concepts like Water Specific therapy, BRRM, Watsu, Ai Chi, Aqua Aerobics & Aqua Jogging, Assessment, observing progress by recording, understanding the use of aquatic rehab equipments, Integrating Aquatic Therapy into

practice with support by evidence, clinical reasoning in planning aquatic therapy, merits and demerits of water.

Practical

Entries & Exits to pool, safe handling, the use of buoyancy & drag in exercise and facilitated movement, the rotations of Halliwick and its clinical importance through water specific therapy, Metacentric effect to develop reactive muscle contractions, Few patterns of BRRM, Strengthening & Endurance with resistive aids, Basics of Ai Chi/Watsu, Patient handling in water, using outcome tools to measure progress.

The scope of practice for Aquatic Therapy Professionals

The therapists who have completed their education as Physiotherapists and Occupational therapists are eligible to assess, identify deficits, use outcome tools, setup a plan of action for aquatic therapy, execute the therapy in water, reassess, record and document the clinical conditions that they clinically rationalize will benefit from aquatic therapy as defined elsewhere in this manual after completion of the aforesaid educational hours in Aquatic Therapy.

Aquatic Bodywork Professionals (ABP)

WATSU Practitioners

Watsu is a wellness concept and not therapy per se. The education standards to be WATSU practitioners will be as depicted in the WATSU India. The educational hours required to be a watsu practitioner are as mentioned elaborately in www.watsu.in. Students will be recognized worldwide as Watsu practitioner after fulfilling the following requirements. The Total educational hours required to complete to become a watsu practitioner will be **563 hours** of Education. This learning program is estimated to be completed within about 3 years.

Continuing training: After completing the certification process, 50 hours of training is required every 3 years to keep the practitioner status valid.

Watsu Education to Physiotherapists & Occupational therapists

Physiotherapists & Occupational therapists cover some of the basic topics like Anatomy and Physiology in their education. Hence these subtopics under WATSU learning program can be skipped and they can earn a practitioner status with lesser educational hours. This is at the discretion of the WATSU India Teachers.

1. The concept is oriented to wellness of an individual, they essentially can give sessions to clients who are suffering from conditions that can benefit with such work with consent of the individual after clear explanation that the session is not a therapy and they are not therapists. Approach of any person with a clinical condition that requires medical line of management has to be referred to the concerned specialist. For WATSU practitioners to offer the session as therapy they need to complete the educational hours as required of a Physiotherapist/ Occupational therapist as per the local university educational curriculum.

2. However they will be screening the population for contraindications or precautions for the WATSU Session.
3. Physiotherapists & occupational therapist however on the other hand after completing the necessary educational hours as depicted in the WATSU India to be a practitioner would be eligible to use techniques of WATSU that they seem fit would benefit their clinical population.

Aquatic Fitness Professionals

1. The educational hours included are mentioned as below. To develop fitness in normal individuals is the goal of such an education. There should be minimum educational qualifications before enrolling for the aquatic fitness training module (define). They should already be a fitness trainer on land with relevant certifications. The education in aquatic fitness training program allows them to handle normal population who are consulting them to improve their fitness in terms limited to strength, flexibility, muscular endurance, cardio-respiratory endurance and overall fitness.
2. The educational hours required

General anatomy
Scientific principles of Aqua fitness.
Aqua safety & management
Exercise physiology in aqua
Aqua environment & its management various aqua movements
Lifestyle screening
Special population
General nutrition & basic sports nutrition
Cardio & muscle conditioning
Use of music
Class room set-up & planning
Teaching skills & movement choreography methods various aqua equipment's
Examination - Theory & Practical

Total Hours 32 hours

3. The Physiotherapists & Occupational therapists having exercise planning in their curriculum are eligible to design an exercise plan but will have to undergo training for choreographing an aerobic class with Music. After covering the required hours they become eligible to hold a fitness training program for the general population as well as for clinical conditions.

Special Educator

1. Special Educator is trained specifically to educate the special population and understand the various disabilities and problems posed by a handicapped individual. Though they undergo education on various issues associated with developmental delays and special population, they are not trained to address sensory motor issues and various other clinical conditions in terms of therapy.
2. They can use Aquatic therapy that will aid in the process of Learning in the special population. After undergoing the stipulated educational hours of basic Aquatic therapy as

specified for Physiotherapists & Occupational therapists they can apply this concept for enhancing learning using water as a medium for people with learning disabilities.

3. Their training does not involve in developing a therapy plan to address various motor issues come across many clinical conditions. This limits their scope of practice only to education and not to therapy for learning disabilities.

Scope of Practice of Aquatic Bodywork Professionals

1. The present prerequisite for learning WATSU or Aquatic Fitness is a basic education without clinical application or clinical practice. Further, the curriculum of both Education does not cover handling of clinical conditions in water and neither does it have any prerequisite of Health/Medical education to obtain the status of practitioner, it is only imperative that they are **not** eligible to handle any people having clinical condition that requires them to assess, identify deficits, use outcome tools, setup a plan of action for aquatic therapy, execute the therapy in water, reassess, record and document the clinical conditions.
2. However they will be doing a screening program before the individual is taken into water to understand the potential contraindications & precautions. If such a case presents itself they will be under the supervision of a Physiotherapist for planning an exercise regimen. Example being patient having Hypertension/diabetes. If any person with a medical condition approaches them for a fitness program they need to be referred to a concerned specialist like physiotherapist for further follow up or obtain permission from medical practitioner to be eligible to participate in the fitness program. If any injury takes place during the session they should be directly referred to the concerned specialist. The Aquatic Bodywork Professionals are not Medical consultants but can administer First Aid to the injured individual after having received necessary training.

The Educational standards mentioned above have been designed with due concern of patient population. As healthcare professionals we owe ourselves a sense of responsibility in having appropriate education before we can make clinical decisions on health of the patient. It is important to understand we cannot afford to make any mistakes in clinical decision because of lack of education. Having the basic professional competency and keeping ourselves constantly updated with latest developments enables for delivery of quality health care.

Note:

1. The purpose of this Guideline is to delineate the cognitive, affective and psychomotor skills deemed essential for completion of this program and to perform as a competent Aquatic Therapist who will be able to examine, evaluate, diagnose, plan, execute and document Aquatic Therapy treatment independently and along with the multidisciplinary team as per red and yellow flags.
2. Evaluate patients for impairments and functional limitations and able to execute all routine Aquatic Therapy procedures as per the evaluation.
3. Able to provide patient education about various Aquatic Therapy interventions to the patient and care givers.

Aquatic Therapy Safety

As therapists will be using a totally different environment for the patients to develop therapeutic goals, and the known dangers of drowning in water, we have to place a set of safety standards for all the practitioners involved in treating people in water. This will involve the patients, therapists and as well the pool environment itself. It is also important to keep in place a set of emergency drills and protocols to ensure, even if something goes wrong, the therapists and the helpers exactly know what needs to be done. Keeping a holistic perspective of safety, they have been put under the following headings.

- Safety for Patients
- Safety for Therapists
- Safety of the pool Environment
- Emergency Drills/Protocols

Safety for Patients

The Patient being at the point of reference for the aquatic therapy concept, a certain set of safety parameters needs to be followed.

- Permission from the doctor for taking Aquatic therapy
- Presence of normal sensation across different segments of the body.
- Any prior incidences of drowning that can influence being in water.
- Open wounds needs to be checked, to prevent infection water proof patch to be applied
- If on urinary catheter/ nasogastric tube/ PEG, appropriate measures to be taken to keep it firmly fixed.
- Prior intimation of bladder and bowel problems; if present – water proof diapers or clamping of catheter or other measures to be used.
- Any breathing difficulties to be taken into account.
- In a female patient, if menstruating, using of Tampons, avoid therapy on days of heavy flow.
- To notice signs of dehydration prior as well as during the session, hydrating sufficiently before & after therapy.
- Supervision / assistance during movement around the pool area.
- To undergo a screening test/questionnaire to rule out possible contraindications.
- Essential to observe any untoward effect and bring it to the notice of the therapist.
- Necessary to take a shower before and after the therapy session
- Importance of applying moisturiser after the pool session to keep the skin well hydrated.
- Choosing appropriate swimming costume & dressing that is easy to remove & wear.

The list is not exhaustive but will ensure certain level of minimal safety for the client. As per the situations, the therapist should be able to apply wisdom in framing safety guidelines for patients entering into the pool. It is also possible to have a separate list of safety features the therapist wishes to enforce at his/her centre.

Safety for Therapists

It goes without saying that if therapist is safe he will be able to handle the safety of the patient. Some basic parameters are listed out to ensure therapists safety

- General health screening of therapist to ensure he is healthy to carry out session in water
- If need to be in pool for long, ensure sufficient rest periods and water intake.
- To routinely check oneself for any chemical reactions on hair and skin.
- Important to document the therapy sessions regularly to resolve any queries that might arise later.
- Speaking in the right pitch or usage of microphones to ensure safety of vocal cords.
- If immersed in water for long duration, take care of joints and muscles by doing some general land based exercises to feel grounded.
- To be well educated about all safety parameters for client safety and keeping oneself regularly updated on current concepts and safety issues.
- Presence of a supervisor or an assistant or a helper during all times to help the therapist if any untoward event happens to the therapists.
- Access to an alarm or phone in case of emergency.

Safety of the pool environment

Along with patient and therapist, it is essential to keep the pool surrounding and environment also in a way that is safe for all the people transiting through it. The measures do not mention about pool standards but highlights certain basic important elements to ensure safety of client and therapist in almost all possible areas.

- Accessibility to shower, changing and pool area should be patient friendly.
- Ensure good lighting at all places to enable good visibility.
- Signage at appropriate places of relevant areas and instructions.
- Tiles should be slip resistant, and sufficient grab rails placed at appropriate places.
- Transfer of patients into and out of pool should have relevant structures like a hoist or stairs with railing.
- An area to place all the aquatic therapy equipments used during the therapy for easy accessibility.
- Controlling the room temperature, water temperature and humidity in the pool area to appropriate levels.
- Ensuring good ventilation for circulation of fresh air.
- Water should be maintained at industry health and safety or government standards as mentioned in the annexure.
- It should be routinely checked for chemical balance and for micro-organisms.
- Pool should be designed as per therapy requirement and follow industry standards as mentioned in the annexure.
- Safety procedures and drills should be displayed that is visible to all.
- Storing all the basic emergency equipments & CPR devices in the pool area and a routine check for ensuring smooth functioning of such devices.
- Cleaning the deck area routinely to keep it dry and anti slippery.

- A place to be allocated to keep all the walking aids that the patient might use for ambulation.
- Changing and shower area to be designed as per the patient population visiting the centre.
- Contact details /contact person of nearby health care centre to be made available.

Above mentioned list should be followed. Apart from the above mentioned any other issues can be modified or adapted as per the local laws and requirement.

General safety Instructions

These are certain set of general safety instructions for all individuals using the pool area. It is to enable certain basic standards for availing therapy services.

- To take a shower to remove all dirt and oil before getting into pool.
- Nail to be cut or trimmed so that it does not hurt anybody during therapy
- To walk slowly around the pool deck area.
- Foot wear that have enough grip and that does not slip in smooth surface to be used around the pool area.
- Do not enter the water until your therapist tells you to.
- No diving into shallow water
- Do not attend if have had gastroenteritis in the last 2 weeks
- Do not attend if feeling unwell (flu etc)
- Bring any fast acting medications poolside
- Notify the therapist of any changes in your medical condition.

It has been attempted to cover major safety aspects under different headings, having too many safety instructions can make the therapy / concept become difficult to apply. At this stage highlights are given on some basic requirements of safety that needs to be mandatory at any therapy setting as per international standards.

Emergency Drills/Protocols

Establishing emergency drills or setting up a protocol in case of emergency is essential.

Emergency kit should be made available at the centre and all the personnel should be trained in CPR. The role of each person in case of emergency should be educated and a mock drill to be carried out to check the competency of the team.

The typical emergency situations may arise during the following conditions.

- Cardiac Arrest.
- Epileptic seizures.
- Syncope.
- Unexpected fall causing bleeding injury.
- Autonomic dysreflexia
- Bowel and bladder accidents.
- Hypoglycaemic shock
- Hypovolemic shock

There can be other emergency situations arising, the staff and the therapist should be educated and trained to respond to such situations. The training can be obtained from a medical training facility. The certification needs to be renewed as per requirement.

RESPONSIBILITIES OF AN AQUATIC THERAPIST

Aquatic therapist plays multiple roles in the aquatic therapy pool. The therapists act as a point of coordination for various areas of operation of the therapy pool. Some of the basic responsibilities are highlighted here.

Client/patient based

- Responsible for screening of patients before therapy begins
- Evaluation of the individual and set up client's and their goal separately.
- Develop plan of action or choreograph a session as per the set goal with clear rationalisation
- Explanation of the action plan to the client/ patient.
- Obtain a consent form before the therapy starts, after explaining the safety issues.
- Look for specific contraindications for the therapy.
- Document all the findings and record the therapy session in a predetermined prescribed format mentioned in the annexure.
- Take a note of any untoward incident during the session.
- Ensure good hydration of the patient by instructing fluid intake after the session.
- Ensure proper dress code of the client for the therapy session.

Therapist based

- As an Aquatic therapist, should set high standards of practice.
- Is responsible for maintaining an active CPR certification.
- Should ensure client to therapist ratio based on the type of concept being used.
- Should keep updating the clinical skills of practice by attending a CME or a learning program of 25 hours in a span of three years.
- Is responsible for execution of emergency drill procedure in case of any eventualities during the therapy at the centre.
- Is responsible for maintaining a ledger/book of all the cases seen along with the record of therapy details.

Centre based

- Co-ordinate with pool manager to ensure pool is free of fall – risk
- To check water chemistry on a set frequency time frame.
- To carry out the routine of pool filtration process everyday along with pool manager.
- Maintaining cleanliness of the centre with the help of janitors.
- Maintenance of the emergency equipments on a regular basis to ensure functioning of the same.
- Maintaining contact details of all individuals visiting the centre.
- Keeping in contact with the local health care centre on time to time to note any changes in handling the emergency care of that centre.

ETHICAL CODE OF CONDUCT

- All patients have the right to know the therapy that will be given to them, so an explanation to be given in the patient's own/ understandable language.
- Professional courtesy to greet the patient, and being cordial in explaining the client's problem and understanding their goal, to arrive at mutually benefitting goals.
- Maintaining confidentiality of the patient's identity and his condition.
- Any documentation audio, visual or written must be done with the written consent of the patient.
- Maintain professional relationship with the patient and any type of advances that are sexual in nature needs to be differed. This will be considered as a serious offence.
- The details of all the patients visiting the facility must be documented.
- The patient should be discharged after the said therapeutic goal is achieved or at the discretion of the patient.
- Therapist should take care of the patient while he is in the facility.
- Any event that happens during the therapy or patients presence at the facility, the therapist is responsible to take care of such situation. It needs to be managed along with the trained team present with the therapist.
- Therapist should always possess a valid CPR certificate and also hold indemnity insurance for them.
- All the risks/dangers present at the premises or in the therapy needs to be explained to the patient or the care taker to ensure they take an informed decision.
- Therapist should make all his clinical decision based on sound rationale and not on a commercial entity.
- If a patient benefits from land therapy, rather than aquatic therapy the same needs to be conveyed in an understandable language to the patient. They can be then allowed to take a decision to decide further course of action.
- Professional fees for the therapeutic services that will be rendered needs to be mentioned prior to the therapy. The negotiation of such fees is at therapist's discretion, but the decision to render the services should not be decided only on the basis of patients ability to pay, it needs to be decided on the clinical condition and how influential aquatic therapy can be in altering the clients life.
- Therapists in exceptional situations can decide to offer their services free of any professional fees but frequency of such offers should not create challenges for any nearby practicing professionals.

ROLE OF AQUATIC THERAPY POOL MANAGER

Presence of a pool manager is essential to run a facility. Therapist will not be able to pay attention to all the events that are happening while they are in a professional session with a client. It is therefore essential to appoint a person to look into many details of pool management and maintaining pool environment. The following responsibilities or functions have been assigned to the pool manager, but this is a minimal benchmark list and can be modified as per the requirement of the facility. This is only a guide to enable functioning of the facility in a smooth and efficient manner.

- Maintaining cleanliness of the facility.
- Ensuring the presence of all signage at the appropriate place.
- Taking care of the pool filtration setup and to check routinely for any leaks at any of the plumbing.
- Checking water quality by sending it for testing at a fixed regular frequency and tally with the local standards of water quality for pool.
- If not in par with the standards, then taking essential steps to bring the water quality to the mentioned standard.
- Taking appointments of the patients and scheduling therapy sessions in coordination with practicing aquatic therapist.
- Maintaining contact details & location of the nearby health care centre.
- Ensuring stock of all the necessary chemicals required for pool maintenance.
- Working in coordination with janitors to keep the deck area dry and slip free.
- Assist the clients if they need any help within his/her capacity.
- Ensuring availability of drinking water at all times in the facility.
- Controlling the foot fall into the pool area as per need of the therapy.
- Taking care of storing all the documentation at an appropriate location and be an integral part in maintaining confidentiality of the patient.
- They should also possess CPR certification.

CLINICAL GUIDELINES

The guidelines are to assist the Aquatic therapist in clinical decision making. These are also to ensure the therapist is aware of all the possible health issues to be considered before the patient is taken into the pool. The clinical guidelines have been divided into screening of the patient and certain information to be considered in a given clinical condition of the patient. The screening is not an evaluation of the problem. This is merely to identify the presence of a problem.

SCREENING:

The following systems are routinely screened.

Cardiovascular System

- Cardiac conditions
- Blood pressure
- Peripheral vascular disease.

Respiratory System

- Chronic and acute diseases
- Shortness of breath at rest or on exertion
- Vital capacity
- Tracheostomy
- Respiratory tract infections
- Pseudomonas aeruginosa.

Central Nervous System

- Epilepsy/fitting/history of seizures
- Swallowing defects, abnormal movements
- Fluctuating tone
- High dependency clients.

Gastro-Intestinal Tract

- Faecal incontinence
- Diarrhoea, gastroenteritis
- Colostomies

Genito-Urinary Tract

- Urinary incontinence
- Infection
- Discharges
- Menstruation
- Pregnancy.

Infectious Conditions

- Airborne infections
- Herpes simplex

- AIDS, Hepatitis
- Methicillin-resistant Staphylococcus aureus
- Vancomycin-resistant Enterococcus
- Hepatitis A
- Blood Borne infections:
- Hepatitis B o Hepatitis C o HIV/AIDS/

Skin

- Surgical wounds, open wounds
- Tracking bone sinus
- External fixators
- Altered sensation
- Rashes
- Chemical sensitivity.

Feet

- Tinea
- Plantar warts.

Eyes and Ears

- Visual impairment
- Contact lenses
- Hearing impairment
- Infections
- Tubal implants/Grommets

Other Conditions

- Acute inflammatory conditions
- Heat sensitive conditions (multiple sclerosis, lymphoedema)
- Radiotherapy
- Morbid obesity
- Fear of water
- Clients who are intoxicated
- Clients who have psychiatric problems
- Behavioural/cognitive problems
- Spinal cord injury (especially T6 and above).

Other information not covered elsewhere in assessment

- Swimmer, non-swimmer, water confidence
- Falls history
- Special precautions (eg, painful joints, weight bearing status)
- General mobility on land, assistance required for dressing or transfers
- Mode of entry to pool
- Diabetes

- Lymphoedema.

However, each potential client must be individually assessed. Then, taking the person's condition and the physiological effects of immersion into consideration, an informed decision can be made as to whether hydrotherapy treatment/activity is contraindicated or whether adequate precautions can be taken to allow the client to be safely and effectively managed in the aquatic environment.

Where a high risk for the client and/or other pool users exists, consultation with other informed professionals may be required. In particular, regarding infection control, staff and medical practitioners/specialists may be consulted. Consultation with peers working with similar clients can also be of value where uncertainty exists. If unsure, never put yourself or the client at risk.

Once screening is performed, then a detailed assessment would be essential, after collecting the demographic data and noting the chief complaint of the patient.

Medical history-

- History of pre existing conditions & medications
- High dependency Vs independent clients
- Allergies
- Febrile or afebrile
- Seizure

Functional status-

- Pain
- strength
- gait
- Postural strategies
- Functional independence
- Pre existing aerobic capacity
- Medications

Vital Parameters:

- B.P
- RR
- Heart Rate
- Peripheral Pulse

CNS Parameters:

- Consciousness
- Orientation to Time, place & person
- Cognitive and intellectual parameters

Hygeine Parameters:

- GI- diarrhoea, fecal incontinence
- Genitourinary- incontinence, discharge, menstruation, infections

Skin Parameters - skin, eyes & ears

- Skin- Sensory status, wounds, allergies, sensitivity, rashes
- Eyes- visual impairment, contact lenses, eye infections

It has to be noted that these are general evaluations, a specific evaluation as per the medical condition is must.

MANAGEMENT OF SPECIFIC CONDITIONS

The information on specific conditions will only highlight certain main parameters to be considered while deciding therapy protocols for the patients. The physiological changes that can occur during water immersion and its effect on the various systems needs consideration before planning of therapy.

Cardiac Conditions

Assessment

Assessment of cardiac clients should include:

- Cardiac diagnosis
- Relevant investigations (eg, cardiac echo, angiogram, ECG)
- Current symptoms and recent change of symptoms
- Chest pain, SOB, dizziness, peripheral oedema, weight gain (fluid retention)
- Recent changes in medication (eg, increased beta blocker medication may lead to symptomatic dizziness)
- History of hypertension/hypotension
- History of dizziness/fainting/falls
- Clinical observations
 - BP, HR, SpO₂
 - Weight (for heart failure patients).

Equipment

For facilities that treat higher risk clients, equipment that may be used includes:

- Sphygmomanometer and blood pressure cuffs (small and large)
- Stethoscope
- Weighing scales
- Oxygen therapy
- Defibrillator
- Glucometer.

Recommendations

- Liaise closely with the treating doctor if there are any concerns about the stability or severity of the clients Cardio Vascular (CV) condition.
- Any relevant medications should be available poolside.
- Utilize positioning to minimise CV effects of immersion (depth, body position).
- Initially clients may commence treatment in shallower water and progress to deeper water.
- Exercise intensity levels should be monitored using tools such as the Borg Scale.

- Ensure adequate rest periods throughout treatment.
- Supervise clients on exiting the pool and during showering if they are at risk of hypotensive episodes.
- Advise clients to inform staff if they feel unwell or have any new or changing symptoms (eg, chest pain, dizziness, shortness of breath, nausea, cold sweats).

Management of adverse events

Angina may present in numerous ways including:

- Central chest pain (often described as heaviness, crushing, or tightness)
- Neck pain
- Jaw pain, tooth ache
- Interscapular pain
- Shoulder pain or radiation of pain/ heaviness down one or both arms.

If the client experiences any adverse symptoms, cease the activity immediately. In the event of angina, the patient should be encouraged to take their usual medication (GTN spray or tablet) and monitor symptoms (BP, HR, and SpO₂). If pain persists, medication should be repeated at five mins and again at 10 minutes if it still continues. An ambulance should be called if symptoms persist at 10 minutes.

Clients with cardiac conditions are often prescribed beta blocker medication to decrease the work of the heart. These clients will traditionally present with low blood pressure and a slow HR. Provided the patient is asymptomatic, there is usually no cause for concern. If the client experiences dizziness during the exercise session, this may be secondary to a drop in cardiac output (particularly heart failure patients), dehydration or other causes. The client should be removed from the pool and positioned in sitting or lying. Blood pressure should be monitored. If the blood pressure does not return to pre-exercise levels, medical management should be sought.

Specific conditions

Consideration of cardiac disease and accompanying co-morbidities (ie, insulin dependent diabetes, morbid obesity, severe pulmonary disease, pregnancy) must be given in formulating a management plan and determining the level of supervision for each client.

Heart Failure

For clients with heart failure, early decompensation may present as:

- Worsening exercise tolerance or dyspnoea at rest over the previous 1-3 days
- Increased in weight by more than 2kg in the previous 1-3 days.

If either of these symptoms occurs, the client should not exercise and should be referred to their medical practitioner.

Permanent pacemakers (PPM) and implantable defibrillators (AICD)

PPMs and AICDs do not exclude clients from attending aquatic exercise programmes. It is important however to determine the specific reason for insertion of the device. This may include management of specific arrhythmias (usually PPMs), prevention of adverse

events in clients at risk of fatal arrhythmias (AICDs) or resynchronisation therapy to increase cardiac output in patients with heart failure (biventricular AICDs). The reason for the device will determine the risk of undertaking an aquatic exercise programme and should be discussed with the treating medical specialist. Other considerations include:

- Avoid aquatic exercise following device insertion until the wound site is fully healed
- Clients should be referred to a medical specialist if the wound at any time appears infected
- Avoid vigorous upper limb activity at extremes of range on the side of the device
- Clients should always seek medical attention if the device fires at any time (during exercise or external to the exercise programme).

Atrial fibrillation (AF)

AF is associated with heart failure, valvular disease, coronary artery disease, hypertension and hyperthyroidism. AF (especially AF with rapid ventricular rate) often reduces exercise tolerance and results in fatigue. Haemodynamic compromise may also predispose the individual to thromboembolic events. AF may be intermittent. Clients with new AF may report palpitations; worsening SOB and HR may be irregular. The following considerations should be made for those supervising patients with AF:

- Clients with new symptoms (eg, irregular HR compared to previously regular HR, palpitations) should seek medical advice
- Ensure AF clients are compliant with all medications, especially those that help control heart rate
- Heart rate at rest should be adequately controlled (<100 bpm)
- Pulse oximetry will be inaccurate in patients with AF. HR should be assessed manually in these patients.

Contraindications for aquatic exercise in patients with cardiac disease

- Unstable conditions with activity restrictions
- Decompensated heart failure
- Myocardial infarct less than 6 weeks
- Myocarditis less than 6 months
- Unstable ischaemia
- Uncontrolled arrhythmias
- Severe and symptomatic aortic stenosis
- Hypertrophic cardiomyopathy
- Severe pulmonary hypertension
- Active or suspected myocarditis or pericarditis
- Suspected or known dissecting aneurysm
- Thrombophlebitis
- Recent systemic or pulmonary embolism
- Resting systolic blood pressure above 200mmHg
- Resting diastolic blood pressure above 110 mmHg
- Resting heart rate above 100 bpm.

Diabetes

Clients with diabetes should be screened for:

- Cardiac conditions
 - Cardiovascular autonomic neuropathy (CAN) Clients with CAN should have physician approval prior to commencing exercise. Stress testing is recommended due to the likelihood of silent ischaemia, heart rate and blood pressure abnormalities
- Renal Disease
- Retinopathy
 - Physician approval for exercise is recommended prior to starting an aquatic program.
 - Activities that greatly increase intraocular pressure are contraindicated when proliferative retinopathy is active. Jarring activities increase haemorrhage and risk
- Peripheral sensory and motor neuropathy
 - Sensation testing of feet is recommended to determine risk of diabetic foot ulcers (DFU)
- Musculoskeletal conditions
 - Charcot's foot presents with impaired architecture and pressure loading of the foot.
 - Cheiroarthropathy may decrease ability to independently manage foot care.
- The diabetic foot
 - Ulceration of the high risk diabetic foot is the most common diabetes-related cause of hospitalization and amputations. Peripheral sensory and autonomic neuropathy, vascular impairment, impaired immunity and alterations in foot structure are risk factors. Comprehensive foot care is recommended for prevention and early detection of sores and ulcers.
 - Feet should be checked prior to entering the pool, with particular attention paid to between the toes. If redness, cracks, swelling, bruising or blisters are evident immediate help should be sought from a doctor or podiatrist.
 - Feet should be washed and dried gently and thoroughly after immersion.
 - Patients should avoid going bare footed. The wearing of thick socks and / or well-fitting shoes in the pool may be beneficial.
 - Wound management guidelines should be followed if the integrity of the skin is compromised.

Clients with Hypoglycaemia

- Individuals should self-monitor their BGLs before, occasionally during and following exercise to inform modifications of medication and diet to enable good glycaemic control and prevent hypoglycaemia.
- Clients with Type 1 on insulin or T2DM on insulin or oral medications may need to alter their dosage and diet dependent on their response to exercise.
- Physiotherapists should ensure the client has a hypoglycaemia action plan, testing kit and fast release glucose available.
- Practitioners should have hypo kits and first aid strategies available.

Clients with Hyperglycaemia

- Clients with Type 1 diabetes with a BGL higher than 15 mmol/L should check their urine for ketones. Moderate physical activity is safe if no ketones are present and the BGL is trending down.

- BGLs should be tested every 30 minutes of physical activity. If BGLs are climbing or ketones present physical activity should be stopped. Clients should initiate their hyperglycaemia plan. This may be administration of short acting insulin, low calorie fluids and rest.
- Clients with T2DM and a BGL above 16.7 mmol/L can engage in physical activity if ketosis is not present, they are adequately hydrated and they feel well.

Recommendations:

- Specific screening for Diabetics as listed above
- Any patient with poorly controlled hypoglycaemia, recent /frequent periods of drowsiness, unconsciousness, slurred speech or similar signs of a severe hypoglycaemic event should not exercise alone in the aquatic environment. One-on-one supervision with a physiotherapist or suitable responsible person is required.
- All patients at risk of hypoglycaemia should have a personal action plan. A personal hypo kit is central to this action plan.
- Where appropriate facilities should have a hypo-kit available.
- A health service should monitor the need to have on site BGL testing equipment.
- All patients at risk of hyperglycaemia should have a personal hyperglycaemia action plan.
- Suggest appropriate footwear to protect skin.

Respiratory Conditions

Chronic Obstructive Pulmonary Disease (COPD)

COPD is a long term lung condition commonly known as emphysema and chronic bronchitis. It is characterised by airway narrowing, leading to limitation of airflow in and out of the lungs, causing shortness of breath (SOB).

Equipment

- Relevant medications and equipment should be available pool side (bronchodilators, spacers, nebulizers).
- Nasal prongs and oxygen therapy could be made available pool side in the acute setting.
- For patients with a productive cough, tissues and a disposable cup should be available poolside.

Oxygen Dependent Clients

- Ensure oxygen cylinders are appropriately secured (i.e. on a portable trolley or crate) so that they cannot tip over on the pool deck or fall into the pool.
- Oxygen tubing needs to be of sufficient length for the patient to be able to move about the pool (up to 20 metres).
- Staff should inspect oxygen tubing for cracking and the regulator function on a weekly basis.
- As oxygen tubing can be difficult to see in water, ensure there is sufficient space around the patient so that another swimmer does not pull the tubing.
- Pulse oximeters can be used to measure oxygen saturation (heart rate is not a reliable measure of exercise intensity-(refer to Appendix IV – cardiac conditions). Dry the clients finger prior to placing it in the finger probe.

Clients with Tracheotomies

- Ensure that adequate floatation equipment is available to keep the tracheotomy site out of the water.
- The therapist should be competent to handle such cases in water

Recommendations

- If clients feel unwell, have a fever, increased SOB or change in the colour of their sputum, they should immediately contact their care manager (ie, Nurse Practitioner, Doctor) and should not attend the pool.
- If required, clients' should use their bronchodilator medication prior to exertion and entering the pool and have it available poolside.
- Advise clients that SOB may initially increase when entering the pool as their chest becomes submerged and this can be relieved by elevating their chest out of the water.
- Clients may initially commence treatment at the shallow end of the pool and slowly progress in depth or level/type of exercise (eg, where variations in depth are not available, squatting to immerse will increase respiratory load, as will progressively adding in upper/lower limb exercise).
- Treatment sessions may initially be of a short duration. The amount of time required needs to be assessed on an individual basis (may be as limited as a few minutes).
- Ensure adequate rest periods for shortness of breath management.
- Allow clients to choose the position most comfortable for them to recover their breath i.e. elevating their chest out of water, leaning on the poolside, sitting on the steps, sitting on the hoist in the water.
- Assessment of COPD clients should include the level of SOB at rest and on exertion. Scales for rating the level of breathlessness can be useful in checking that these individuals are working at an appropriate and safe level of exercise intensity. Subjective rating scales which can be used include; the Modified BORG Dyspnoea Scale or the Modified Research Council Dyspnoea Scale.

Asthma

A respiratory disorder characterised by recurring episodes of paroxysmal dyspnoea, wheezing on expiration and/or inspiration, caused by inflammation and constriction of the bronchi, coughing and viscous mucoid bronchial secretions. Individuals with asthma will often have skin conditions such as atopic dermatitis or eczema.

Recommendations

Assess whether the clients asthma is well controlled. Refer them to their Medical Practitioner if they complain of:

- Waking up at night wheezing, short of breath or coughing
- Having difficulty with normal activities
- Using their reliever medication more than three times per week

- Being unsure about their medication use

(Note that some clients will have asthma and COPD and they will need management plans to reflect this)

Assessment should also include the client's triggers for asthma which may include:

- Inhalation of allergens, pollutants and irritants (in some poorly managed pools, pool chemistry and air management systems may be factors)
- Infections (colds and flu)
- Cold air (Some pool change rooms can be unheated and cold. Changing on the poolside with a curtained off area may overcome this issue.)
- Changes in air temperature and humidity (such as when moving from the moist, heated pool area to the external environment)
- Vigorous exercise
- Emotional stress

If indicated, monitor asthma symptoms using a peak flow meter or an asthma assessment tool such as Asthma Score.

All clients with asthma should have an asthma plan from their doctor which may include:

- How to manage their asthma symptoms
- How to use their medications
- What to do if their asthma gets worse
- Trigger avoidance strategies
- What to do before exercise (ie, slow warm up, medication)
- When to seek medical help
- When to implement emergency first aid

If during the pool session the patient reports or displays worsening symptoms of asthma (cough, wheeze, breathlessness, blue lips), cease activity and immediately implement their first aid plan. Do not wait until their symptoms are severe.

Exclusions

If a client is having an acute asthma attack they should not be permitted in the pool and their first aid response should be implemented.

If a client is undergoing a modification of their asthma management plan to help stabilise their asthma, it may be preferable to delay treatment until their new plan has been agreed and implemented.

Equipment Recommendations

- The client's Asthma Management Plan should be available in the pool area.
- Relevant medications and equipment should be available pool side (bronchodilators, spacers, nebulizers).
- For clients with a productive cough, tissues and a disposable cup should be available poolside.

Cystic Fibrosis

Cross infection of resistant strains of bacteria can occur between clients with cystic fibrosis. Whereas once group activities of children with similar conditions (land or water) may have been encouraged for social and support purposes, such groups are now generally discouraged.

Recommendations

- Children /adults with cystic fibrosis should not attend the same group session in a hydrotherapy pool, or attend the pool at the same time to perform independent exercise
- Pools should be monitored according to state, council and health regulatory bodies to ensure adequate disinfection and water quality.
- In some children diving should be avoided as it may increase the risk of pneumothorax especially in patients with more severe disease.

Renal Conditions

With immersion in thermo neutral water, sympathetic nervous system activity and systemic peripheral resistance are decreased and arginine vasopressin (AVP) and the renin-angiotensin-aldosterone axis are suppressed. This causes a reduction in anti-diuretic hormone (ADH) thereby increasing diuresis (urine output) and a release of Atrial Natriuretic Peptide (ANP), which is a vasodilator hormone and helps elicit natriuresis (excretion of sodium). Some studies have also shown a reduction in proteinuria as a result of normalisation in blood pressure.

These effects may be beneficial to clients with renal disease. With immersion there is stimulation of renal blood flow. The decrease in plasma rennin activity causes a decrease in renal sympathetic activity which in turn decreases renal vascular pressure and increases urine, sodium and potassium excretion. These effects increase with increased depth and immersion time. It should be noted that in thermo-neutral water glomerular filtration rate (GFR) is altered very little. However in cooler water temperatures the GFR increases, further increasing diuresis, placing greater strain on the kidneys and increasing the risk of dehydration.

Recommendations

Encourage clients to comply with medications and dietary requirements including those clients on fluid restrictions.

Initially treat in shallower depths and limit immersion time. Gradually increase depth and immersion time as tolerated.

Clients should inform the physiotherapist if they:

- Feel too tired to maintain the level of activity
- Have unusual shortness of breath

- Have chest pain or pressure
- Feel nauseated
- Experience irregular or rapid heartbeat during or after treatment
- Leg cramps
- Dizziness or faintness

If a client reports any of these symptoms, activity should be ceased and if they do not resolve immediate medical assistance should be sought. For milder symptoms, clients should be referred to their medical practitioner for review.

Urinary Incontinence

Urinary incontinence is an accidental or involuntary loss of urine from the bladder. There is an increased risk of urinary incontinence with:

- Increasing age
- Residents of aged care facilities
- Pregnancy, childbirth, parity, menopause
- Obesity
- After some types of surgery

And a wide range of chronic conditions such as:

- Respiratory conditions
- Diabetes
- Arthritis
- Neurological conditions
- Heart Conditions
- Prostate conditions
- Osteoporosis

Recommendations

- Clients should empty their bladder prior to treatment sessions.
- In those at risk of incontinence, they may be encouraged to hydrate after immersion rather than before or during immersion.
- Catheter bags should be emptied prior to treatment and secured firmly to the leg i.e. via a strap, tubigrip, short leggings.
- Catheters may be spigotted if appropriate (refer to Appendix V).
- Delay treatment if client has a urinary tract infection (UTI). (refer to Appendix V)

Autonomic Dysreflexia

Autonomic Dysreflexia (AD) is a **medical emergency** that can lead to death. It is a condition that commonly affects people with spinal cord injury (SCI) at or above T6. It is a reaction of the involuntary (autonomic) nervous system to stimulation.

Screening of patients for aquatic physiotherapy should highlight those at risk. Aquatic

physiotherapists should be familiar with common causes, symptoms and management of the condition. This information can be found in the references below.

Any patient who is deemed at risk of AD should have a self-management plan.

Prior to aquatic physiotherapy it should be ensured that all the necessary resources are available to carry out the self-management should an episode of AD occur. Some self-management plans will require a carer to assist, and thus, a carer will be required during the therapy session.

Epilepsy

Physiotherapists will consider aquatic physiotherapy for clients with a range of neurological problems and other conditions which have significant risk factor for epilepsy. Whilst epilepsy poses risk in Aquatic Physiotherapy settings, a variety of management strategies can be implemented to effectively mitigate risk, allowing people with epilepsy to benefit from recreational water activities, hydrotherapy and swimming.

Recommendations

- If routine screening identifies epilepsy further questions should define the usual seizure symptoms including the type and frequency, the treatment required (medication, hospitalisation, etc), the usual duration and possible post seizure issues (e.g. fatigue, sleep, low temperature)
- An appropriate management plan outlining the risks and their mitigation strategies should be negotiated with the client / family and documented.
- The level of client supervision should directly reflect the previous seizure risk with high frequency, recent seizure activity necessitating close “standby” supervision or assistance by suitably trained staff, family, disability carers or volunteers throughout the entirety of the session.
- Levels of supervision may be progressively stepped down where there is a stability of symptoms and no seizure activity. Recommendations should align where possible with those given in other activities / environments eg, driving restrictions.
- Conversely, where there is uncontrolled frequent seizure activity but no significant risk to the client due to having effective handling and management strategies in place, it is possible for hydrotherapy to continue even after a seizure.
- Avoiding underwater activity is generally recommended in uncontrolled epilepsy (status epilepticus).
- Breath holding should be avoided (hypoventilation may be a trigger for seizures)
- Maintain hydration; dehydration may be a risk factor for seizure activity in some individuals.
- Be aware that some medications for epilepsy may cause drowsiness and diminish attention span, adding to risk factor in a pool situation.

Management of a seizure in the Hydrotherapy Pool:

If a client has a seizure in the pool

- Get the client quickly to a safe breathing position (generally supine) with their mouth

out of the water

- Firmly support the head; in some cases a person having a seizure will extend their head backward. Hydrotherapy collars may not be enough to prevent immersion of the head in this circumstance. Resting the client's head on the therapist's or carers shoulder in a modified head lock position, as used in pool rescue, will prevent immersion of the mouth
- If the client has not breathed in or aspirated water, there is no immediate urgency to get them out of the pool
- The client should be assisted to exit the pool, in the safest way, as soon as feasible after a seizure
- Follow the individual's seizure management plan once the event is over

Lymphoedema

Physiotherapy prescribed aquatic exercise has gained support with growing evidence supporting its role in the management of swelling and other positive evidence based outcomes. Hydrostatic pressure provides a consistent compression gradient that also assists in returning lymph fluid into the vascular system.

Water temperature may play a role in the best outcome for aquatic based lymphoedema exercise. Various articles suggest that water temperature should not exceed 34.5 degrees, other suggest 32-33 degrees as an optimum temperature. Some articles also suggest that too cool a pool may have a detrimental effect on limb volume by increasing muscle tone. In considering water temperature the ambient air temperature and humidity should also be considered, as these will influence the effect the water temperature has on the temperature regulation of the immersed client.

- Recommendations
- Monitor skin integrity to minimise risk of infection.
- Monitor pool temperature and patient specific outcomes to ensure positive results.
- Encourage careful drying of the limb and where appropriate refit compression garment immediately after aquatic therapy
- If lower limb lymphoedema socks or pool specific shoes are recommended to avoid abrasion.
- In upper limb lymphoedema water depth should be at least to the clavicle to optimize lymphatic flow.

Pregnancy

Water based aquatic physiotherapy exercise and treatment offers several advantages for pregnant women including; decreased loading on soft tissue and joints, reduced lower limb oedema and improvement in cardiovascular fitness. Pregnant women may find it more difficult to dissipate heat, though other mechanisms come into play to help regulate temperature in pregnancy, including increased blood volume and increased surface area. As a precaution temperature guidelines are set lower for pregnant women to allow for the possibility of increasing body temperature with activity. The major concern is that of increased core temperature having a possible effect on the developing spinal cord of the

foetus or other developmental abnormalities during the first trimester (based on animal studies). However no adverse effects on the human foetus have ever been reported to occur during land or water exercise in pregnancy. Extra care with temperature control should be taken in the first trimester when the foetus is at risk. Pregnant women are advised not to take spas or saunas and to exercise with care in very hot and humid environments (land or water).

Recommendations

- Liaise if necessary with the patient's obstetrician if there are complications with the pregnancy or co-morbidities including:
 - Hypertension
 - Blood pressure related medications
 - Multiple pregnancies
 - Heart problems or vascular disease
 - Renal Disease
 - Diabetes
- The Royal College of Obstetricians and Gynaecologists UK, have a more extensive list for conditions requiring medical supervision while undertaking exercise in pregnancy and also warning signs for terminating exercise.
- If a patient experiences any bleeding they should not attend for their pool session and immediately be referred to their doctor for review.
- Water temperature for moderate intensity exercise is recommended at no more than 32 degrees Celsius.
- Water temperature for gentle exercises or aquatic physiotherapy treatment is recommended at no more than 35 degrees Celsius.
- Ambient pool environment will affect temperature gain. The use of fans and ventilation (eg, opening doors and windows) may assist temperature control.
- Ensure adequate hydration before during and after an exercise session.
- Women should be encouraged to stop exercising (land or water) if they feel uncomfortably hot, they should hydrate and take appropriate action to allow cooling (eg, move shallower, decrease exercise intensity, remove themselves from the environment).
- Women should be encouraged to self-pace intensity of their own exercise. The Borg scale is commonly used to limit intensity and women should be directed to work somewhere between 12 -14 (somewhat hard) on the 6-20 Borg scale, or use the "talk test" allowing the women to maintain a conversation during exercise.
- Women who are overweight may need to be more aware of temperature and their personal comfort as they may not regulate temperature as well.
- Pregnant staff members need to consider these simple guidelines in determining how long they spend in the pool and what level of activity they perform in the pool. By definition a thermo-neutral pool is unlikely to create a large temperature increase, even in pregnant women, without significant levels of exercise. Unfortunately the biggest risk of temperature related issues to the foetus is in the first trimester when woman may not know if they are pregnant. Any staff / women working in a heated pool should be aware that self-regulation of temperature is a very effective means of controlling any possible rise in core temperature.

- If a woman feels uncomfortably hot she should hydrate, remove herself from the environment or use other appropriate measures to regulate her temperature. More regular breaks and modification of the level of activity may be required. There is no suggestion that foetal problems related to temperature occur outside the first trimester, or as a result of exercise (land or water) though pregnant women are always advised to monitor temperature carefully throughout pregnancy.



Annexure I

Pool Standards

There is a great disparity in design and standards in existing hydrotherapy pools and in many cases, ordinary pools are used for clinical practices. Standardization of facilities must be a goal but it may not always be possible to achieve these standards however it is essential that there is awareness among the practitioners of aquatic therapy so that an attempt can be made to achieve these standards where ever possible.

Design Standards

Pools are complicated structures and make serious demands on design, construction, operation and maintenance. Design and construction are critical to successful operation of a swimming pool facility. Design is the first issue to be considered for new and existing structures and should be addressed in collaboration with all parties responsible for design, construction and operation.

Material: Materials used in the construction of the swimming pool should be non-toxic and provide water tight containment for the pool water. The floor of the pool especially the shallow areas should have a slip-resistant finish.

Proportions: The shape and size of a pool largely depend on the usage. A long and rectangular pool may be ideal for sports and exercise as it gives length and breadth. Safety and circulation of the pool water should also be considered when deciding the shape of the pool.

Floor Slopes: Slope of the floor of the pool should be made downward toward the main drain. All slopes should be uniform. The slope in shallow areas should not exceed 30 cm vertical in 3.6 m horizontal except for a slope directed downward from a transition point, which shall not exceed 30 cm vertical in 1m horizontal. In portions of the pool with a depth greater than 1.5 m, the front slope of the deep area shall not be steeper than 30 cm in 1 m.

Transition Point: Transition points should be marked with a stripe on the pool floor with a color that contrasts with that of the floor or with a buoyed safety rope with colored buoys. In other pools having adjoining shallow and deep areas, a safety rope with colored buoys shall be installed where the water depth reaches 1.5 m.

Pool Walls: Where the pool depth is 1 m or less, pool walls shall be vertical to the floor and the junction of the wall with the floor shall consist of a cove with a radius not exceeding 15 cm. All junctions between pool walls, and between pool walls and the pool floor, shall be coved with a minimum radius of 25 mm.

Water Depth: Water depth at the shallow end of the swimming pool should be around 1 m. The beginner's area of the pool shall be visually set apart from, but may be adjoined to the shallow area and shall not adjoin to the deep area.

Walkways and Deck Areas: Pools shall be completely surrounded by a deck that is at least 1.2 m in width and extends completely around and adjacent to the pool. There shall be no obstructions or interruptions of the pool deck within the 1.2 m adjacent to the pool other than necessary structural supports.

All decks and walkways shall have an unobstructed overhead clearance of at least 2 m.

The decks and walkways shall have a paved surface. The surface of the pool deck, and other surfaces used for foot contact, such as gratings of perimeter overflow systems, shall be slip-resistant. The outer perimeter of the deck for outdoor pools shall be at least 10 cm higher than the surrounding ground surface except where access is provided to adjacent turf areas.

Ladders, Step-Holes, Steps and Ramps: Pool accessed by persons with physical disabilities shall provide safe entry and exit for the individuals from the pool. Access for persons with physical disabilities shall be at the shallow end of the pool. As an alternate, hoists or ramps are acceptable. Where removable ramps or steps are provided, the area beneath the ramp or steps shall be protected to prevent access to swimmers.

Steps and handrails: Stair steps should have risers 5-3/4 inches and a tread 12 to 18 inches wide to allow for sitting. A handrail 32 inches high, extending 18 inches beyond top and bottom steps must be provided. A 22-inch handrail must be provided for children. A six-inch handrail will aid entry for those who cannot stand. Wheelchairs, if immersed in pool, must be safe, waterproof and designed for use in the pool environment.

All surfaces shall be free of sharp edges. Steps shall be of contrasting color or marked to contrast from the pool floor and have uniform size treads of at least 30 cm and a rise of no more than 30 cm. Steps shall be located where the water depth is 1.4 m or less and shall have no pointed or sharp edges. One sturdy handrail or grab rail per 4 m of step width or fraction thereof, extending the length of the steps, shall be provided. Slope of the ramp shall not be more than one in twelve. Ramp shall have a slip-resistant surface; handrails on both sides and its width shall not be more than 1.4 m.

Electrical Installation – Lighting: Artificial lighting shall be provided at all indoor pools and at all outdoor pools that are open for use after sunset in accordance with one of the following:

i) Underwater lighting of at least 8.35 lumens or 5.5 watts per square metre of pool water surface area, located to provide illumination of the entire pool floor; plus area lighting of at least 10 lumens or 6.6 watts per square metre of deck area.

ii) If underwater lights are not provided, at least 33.5 lumens or 2.2 watts per square metre of pool water surface area and deck area.

Where portable electric vacuum cleaning equipment is used, electrical receptacles with ground-fault circuit interrupter protection shall be provided. Separation between receptacles shall be a maximum of 30 m. All receptacles installed in the swimming pool area shall have waterproof covers and ground-fault circuit interrupter protection. Lighting controls should not be accessible to the public. It is also essential to maintain an emergency lighting system in case there is a power failure while therapy is going on for the patients.

Ventilation: Adequate ventilation either by natural or mechanical means shall be provided in facilities to prevent objectionable odour. The humidity has to be maintained at 50%, this can be achieved by a humidifier or exhaust fans as deemed necessary. The total volume of air space in an indoor pool should be three times the surface area of the pool in cubic meters, allowing a good circulation of air in the pool space.

Shower and bathroom: General - Toilet facilities and lavatories shall be provided at a swimming pool, except when such facilities are available within 300 feet of the pool or within one floor level above or below the swimming pool area. Separate shower, dressing booth and sanitary facilities shall be provided for each gender.

The rooms should be well lit, drained, ventilated, and of good construction, using impervious materials. They should be developed and planned to ensure maintenance of good sanitation throughout the building at all times. Walls and floors of the bathhouse shall be kept clean and free from cracks or open joints. The floors shall be well drained. All fixtures within the bathhouse shall be maintained in a clean and sanitary condition at all times. All toilet facilities and dressing rooms shall be ventilated and maintained.

Floors should have a slip-resistant surface and sufficiently smooth to ensure ease in cleaning. All lavatories shall be provided with soap, paper towels or electrical hand-drying units, and covered waste receptacles. Suitable sanitary napkin receptacles shall be provided in toilet facilities used by females. The usage of phones/cameras are to be limited or not allowed in the changing areas owing to protect the privacy of the clients.

Pool and Environment Maintenance

Swimming pool water treatment system: The turnover period shall be less than 6 hours for the recirculation flow rate of the water treatment system provided to filter, chemically balance and disinfect the swimming pool water.

Garbage; refuse disposal: Garbage and refuse shall be collected, handled and disposed of in a sanitary manner. The equipment provided for the storage, collection, and disposal of refuse produced at a swimming pool shall be such that the creation of conditions detrimental to public health, such as rodent harborage, insect breeding areas, odors, air pollution and accidents are prevented. All refuse shall be stored in water-tight, metal or rigid plastic containers having tight-fitting lids. Containers shall be provided as needed throughout food preparation areas and eating areas to provide for enough collection of trash.

Hair and Lint Strainer: A hair and lint strainer shall be installed on the suction side of the pump except on vacuum filter systems. The strainer basket shall be easily removable. Valves shall be installed to allow the flow to be shut off during cleaning, switching baskets, or inspection. Hair and lint strainers shall be cleaned to prevent clogging of the suction line and cavitations. The pump shall be stopped before the strainer is opened to avoid drawing air into the pump and losing the prime.

Inlets: Inlets for filtered water shall be located and directed suitably to produce uniform circulation of water to facilitate the maintenance of a uniform disinfectant residual throughout the entire pool without the existence of dead spots, and to produce surface flow patterns that effectively assist skimming.

Outlets : Pools shall be provided with a main drain at the deepest point. The main drain shall be connected to the recirculation system. Openings must be covered by grating which cannot be removed without the use of tools. Openings of the grating shall be at least four times the area of the main drain pipe or have an open area. The maximum width of grate openings shall be 3.5 cm. Main drains and all other suction outlets installed in the pool shall be designed to prevent bather entrapment.

Make-up Water: Make-up water shall be added through a fixed air gap of at least 15 cm to the pool, surge tank, vacuum filter tank, or other receptacle. When make-up water is added directly to the pool, the fill-spout should be located under a low diving board or immediately adjacent to a ladder rail, grab rail, or fixed lifeguard chair.

Filtration: The design filtration rate in the particular application in which the filter is utilized shall not exceed the maximum design filtration rate for which the filter was installed. Wash or backwash water from diatomaceous earth filters shall be passed through a separation tank designed for removal of suspended diatomaceous earth and solids, prior to disposal.

Disinfection: The pool water shall be continuously disinfected by suitable disinfecting agent that imparts easily measured residual. Gaseous chlorine, chlorine compounds, bromine compounds or other bactericidal agents should be used to maintain the quality parameters of water.

Pool and Pool Area: The swimming pool shall be maintained free from sediment, lint, dirt and hair. The walls, ceilings, floors, equipment and the pool area shall be properly maintained so that they are protected from deterioration. Cracks and other defects appearing in the pool should be repaired in time. All equipment shall be maintained in proper condition, with all required components in place.

Pool decks should be rinsed daily. Indoor pool decks shall be disinfected at least weekly. No furniture, plants or other furnishings shall be placed within 1.2 m of the pool. This area should be kept free of obstructions such as chairs and baby strollers and maintenance equipment.

Floats or tubes not in use should be removed from the pool. Safety ropes shall be kept in place except when the swimming pool is being used exclusively for lap swimming or competition.

Perimeter Overflow and Skimmers: The perimeter overflow systems or automatic surface skimmers should be kept clean and free of leaves or other debris which would restrict flow. The strainer baskets for skimmers should be cleaned daily. The flow through each skimmer shall be adjusted as often as necessary to maintain a vigorous skimming action which will remove all floating matter from the surface of the water. The pool water should be maintained at an elevation such that effective surface skimming is accomplished. For pools with perimeter overflow systems, adequate surge storage capacity should be maintained so that flooding of the perimeter overflow system does not occur during periods of peak usage.

Inlet Fittings: Inlets should be checked frequently so that the rate of flow through each inlet establishes a uniform distribution pattern. Inlets in pools with surface skimmers shall be adjusted as necessary to provide vigorous skimming.

Security: Doors or gates in the swimming pool enclosure shall be kept closed and locked when the swimming pool is closed.

Bather Loads: The number of persons within a swimming pool enclosure should not exceed the permissible bather load as specified in the consent letter. The bather load shall be posted at the pool entrance or at a location where it can be seen by all patrons and shall be enforced by the manager/operator.

Electrical Systems: Electrical system shall be maintained in accordance with the National Electrical Code.

Operation of Mechanical Equipment: Manufacturers' instructions for operation and maintenance of mechanical and electrical equipment, as well as pump performance curves, shall be kept available at the pool. All valves and piping in the equipment room must be permanently identified as to use and direction of flow. A valve operating procedure must be provided in the equipment room for each operation (e.g., recirculation, filtration, backwashing, etc.).

Recirculation pumps shall be kept in good repair and condition. The pump discharge or inlet supply line valve shall be adjusted as necessary to maintain the design flow rate.

Filtration equipment: The filtration flow rate shall not exceed the maximum filtration design flow rate specified by the filter manufacturer for public swimming pool usage. Where this rate is not known or has not been determined, the flow rate shall not exceed 67 litre per minute per square foot of filter area for high-rate sand filters.

Flowmeters: Flowmeters shall be maintained in an accurate operating condition and readable.

Vacuum and Pressure Gauges: The lines leading to the gauges shall be bled occasionally to prevent blockage.

Gas Chlorinators: The manager/operator shall post the telephone numbers of the appropriate emergency personnel to contact in the event of a chlorine gas emergency.

Chlorine cylinders shall be stored indoors in the area designed for that purpose and away from a direct source of heat. They shall be chained or strapped to a rigid support to prevent accidental tipping. Cylinders shall not be moved unless the protection cap is secured over the valve. Gas mask, approved for use in a chlorine atmosphere, shall be kept outside the chlorine room in an unlocked container at all times. The gas mask canister shall be replaced regularly as per the manufacturer's recommendations.

Chlorinators, gas lines, injectors, vent lines and cylinders shall be checked daily for leaks. In case of a chlorine leak, corrective measures shall be undertaken only by trained persons wearing proper safety equipment. All other persons should be asked to leave the dangerous area until conditions are again safe.

Positive Displacement Feeders: Positive displacement feeders should be periodically inspected and serviced. When a chemical feeder is used with calcium hypochlorite solution, to minimize sludge accumulation in the unit, the lowest practicable concentration of solution shall be used, and in no case shall this concentration exceed five percent. If liquid chlorine solution is used, the dilution with water is not critical to the operation of the unit. After first thoroughly rinsing with water, a small amount of mild acid solution may be fed through the unit periodically, to dissolve sludge accumulations.

pH Adjustment : Soda ash or caustic soda may be used to raise the pool water pH. Protective equipment and clothing, including rubber gloves and goggles, must be available for the handling and use of this chemical.

Sodium bisulfate, carbon dioxide gas or muriatic acid should be used to lower pool water pH. Carbon dioxide cylinders shall be securely chained or otherwise restrained in a manner that will prevent tipping. Protective equipment and clothing, including rubber gloves and goggles, must be available for handling this chemical.

Miscellaneous Chemicals: Chemicals shall be kept covered and stored in the original, labeled container, away from flammables and heat and in a clean, dry, well-ventilated place which prevents unauthorized access to the chemicals. If polyphosphates are used for sequestering iron, the concentration of polyphosphates shall not exceed 10 p.p.m. It is important to keep the alkalis and acid based chemicals in the same storage facility. An accidental mixture can give rise to lethal gases.

Acoustics: Suitable arrangement should be made to ensure that safety instructions can be heard, considering the noise level in peak hours.

Monitoring and Reporting:

Operation reports: The pool manager/operator shall keep the daily record of swimming pool or other pool operational data.

Signage

Swimming pool user's responsibility:

- ✓ Should not enter the waters of the swimming pool without taking a bath and a foot bath in bath room on the swimming pool premises.
- ✓ Should not use any oil or any other substances or preparation which may rendered the swimming pool water turbid or otherwise unfit for use of bathers.
- ✓ Should not pollute the waters of the pool by spitting or in any other manner.
- ✓ Not to use the swimming pool when suffering from skin disease or any other contagious diseases

Footwear

Pool hygiene literature and various government codes of practice encourage patrons to wear footwear at pool facilities. This is as an infection control measure to help prevent tinea and plantar warts.

Clients with some specific conditions are at increased risk of infection and complications from these infections. The use of footwear is a common strategy used in aquatic facilities to minimise the risk of falls events. The types of footwear may include plastic shoes or sandals, aqua shoes, grip socks and thongs/flip-flops.

When providing advice on footwear the physiotherapist should consider factors such as:

- Footwear age, cleanliness and fit
- Slips resistance of footwear on the pool concourse and change area floors
- Capability of the client to get their footwear on/off, possibly at the pool edge
- Patient past history eg, bunions, peripheral neuropathy, hemiparesis, etc.
- Subjective comfort and preference

Lifeguard – Will be required if average depth of the pool crosses more than 4 feet.

Annexure II

WATER QUALITY

This requires a thorough evaluation at regular intervals. The quality of water standards are as per the provisions made by local governing authorities. The water quality can vary as per different guidelines. The present water quality standards as per Indian governments are mentioned below.

Disinfectant Residual:

- Where chlorine is used as a disinfectant, the chlorine residual shall be maintained at 1.0 ppm. A free chlorine residual of at least 2.0 ppm shall be maintained when the pool water temperature exceeds 30⁰C in an open pool where there is sufficient ventilation. In Indoor pools the chlorine needs to be at 1.0 ppm.
- Where bromine is used as disinfectant, bromine residual shall be maintained between 2.0 and 8.0 ppm. as total bromine. A bromine residual of at least 4.0 ppm. shall be maintained when the pool water temperature exceeds 30⁰C in an outdoor pool.
- Where chlorinated cyanurates are used, the cyanuric acid concentration shall not exceed 100 ppm.
- Where silver/copper or copper ion generators are used, the concentration of copper shall not exceed 1.3 ppm. and the concentration of silver shall not exceed 0.05 ppm.
- Where ozone is used, the ambient air ozone concentration shall be less than 0.1 ppm. at all times either in the vicinity of the ozonator or at the pool water surface.
- For all other physical, chemical and bacteriological parameters the quality of water used in swimming pools in continuous circulation type shall conform to IS 3328.

Water quality testing: Disinfectant residual and pH tests shall be made on samples collected from the shallow and deep areas of each swimming pool, at least twice daily. Where chlorine is used as a disinfectant, testing for combined chlorine shall be performed at least weekly. In addition, where chlorinated cyanurates are utilized as a chlorine disinfectant, testing for cyanuric acid concentration shall be performed at least weekly. Where ozone is utilized, testing to determine the ozone concentration immediately above the pool water surface shall be performed monthly.

Necessary testing kits should be available for checking the pH & disinfectant residual. The person responsible for testing should be thoroughly familiar with the procedure for checking.

TOLERANCES - Physical

Clearness: The water shall be clear odorless and color- less and shall be sufficiently clear at all times when the pool is in use to pass the following test:

Place a black disc, 150 mm in diameter and fixed to a white background, on the bottom of the pool at the deepest point. The disc shall be clearly visible from the sidewalks of the pool at all distances up to 9 meters in a line drawn across the pool through the said disc.

Chemical : The water shall comply with the chemical tolerances prescribed in Table 1. Tests shall be carried out as prescribed in IS 3025 : 1964 and various parts of IS 3025.

Coliform Organisms: When tested as prescribed in IS 1622 : 1981, not more than 10 percent of 10 ml portions of the sample tested over a period of one month shall show the presence of any coliform organism. If any Most Probable Number (MPN) result is more than 10 per 100 ml, a fresh sample shall be tested within 24 hours. The two consecutive results shall not show MPN index of coliform organism of more than 10 per 100 ml.

Sampling : Representative test samples of water shall be drawn as prescribed in 2 of IS 1622 : 1981, and 2 of IS 3025 : 1964. 5 TEST METHODS 5.1 Test shall be carried out as prescribed in TS 1622 : 1981, IS 3025 : 1964 and in Annex A. Reference to the relevant clauses of IS 1622 : 1981 and Annex A, is given in col 4 of Table 1 and 3.3.1.

IS 3328 : 1993

Table 1 Chemical Tolerances for Water for Swimming Pools
(Clauses 2.2 and 5.1)

Sl No.	Characteristic	Tolerance	Method of Test, Ref to IS
(1)	(2)	(3)	(4)
i)	pH value	7.5 to 8.5 (see Note)	3025 (Part 11) : 1983
ii)	Total alkalinity (as CaCO ₃), mg/l, Max	50 to 500 (see Note)	3025 (Part 23) : 1986
iii)	Aluminium (as Al), mg/l, Max	0.1	31 of IS 3025 : 1964
iv)	Total residual chlorine, mg/l		3025 (Part 26) : 1986
	a) At inlet, Max	0.5	
	b) At outlet, Min	0.2	
v)	Oxygen absorbed in 4 hours at 27°C, mg/l, Max	1.0	51 of IS 3025 : 1964
vi)	Total dissolved solids, mg/l, Max	1 500	3025 (Part 16) : 1984
vii)	Chloride (as Cl), mg/l, Max	500	3025 (Part 32) : 1988
viii)	Iron, mg/l, Max	0.1	32 of IS 3025 : 1964
ix)	Heavy metals (as Pb), mg/l, Max	0.1	IS 7017 : 1973
x)	Colour, Hazen units, Max	10	IS 3025 (Part 4) : 1983
xi)	Turbidity, NTU, Max	10	IS 3025 (Part 10) : 1984
xii)	Odour	Odourless	IS 3025 (Part 5) : 1983
xiii)	Taste	Palatable	IS 3025 (Part 8) : 1984

NOTE — Too low an alkalinity and low pH are the most common causes of complaints of taste, odour and eye irritation. At pH lower than 7.5, there is an increased tendency for formation of dichloramine and nitrogen chlorides or similar compounds which cause eye irritation.

*This is a simple guiding tool, for further in depth guidelines on various tests that needs to be carried out and standards of pool values, the readers are directed to go through various references mentioned after the conclusion of this manual.

Annexure III

Documentation of Therapy

1. Demographic data of the patient
 - a. Name
 - b. Age
 - c. Gender
 - d. Contact details
 - e. Emergency contact number
2. Chief problem for which Aquatic therapy is administered
3. Brief list of problem areas
 - a. Muscle tone & strength
 - b. Sensory awareness
 - c. Bladder & bowel control
 - d. Co-ordination
 - e. Communication abilities
 - f. Cognitive status
 - g. Functional status – ADL & General Mobility
4. Outcome measures used for evaluating therapy plan
 - a. Gait parameters
 - b. Balance parameters
 - c. Functional independence measures
 - d. Any sensitive outcome tool that measures problem of the patient in an objective or subjective method.
5. General Therapy plan
 - a. Patient goal
 - b. Therapist - Short term goals.
 - c. Therapist – Plan of Progression.
 - d. Therapist – Long term goals.
6. Aquatic Therapy
 - a. Length of treatment.
 - b. Temperature of water.
 - c. Depth of water used for therapy.
 - d. Patterns of exercise.
 - e. Progression of exercise.
 - f. Any positive outcomes.
 - g. Any untoward effects/incident.
 - h. Number of sessions given/planned.
7. Discharge summary
 - a. Demographic data
 - b. Problem for which therapy was administered
 - c. Changes in outcome measures after the planned sessions
 - d. Possible home advice
 - e. Precautions advised

This is the minimum documentation required. Details can be added as per each centre's clinical policy or protocol.

Summary

The document provides information on the educational requirement of various professionals to practice aquatic therapy. This is very essential as we interact with individuals having various health issues. A benchmark in Aquatic education will set the concept penetrating the market in a healthy way and will enable growth in the right direction.

Safety is of paramount importance in case of therapy pool. All the people involved in the pool setting should be made aware of this and trained in all the safety measures. A mock drill will keep a check on the competency of the staff. It has to be performed at routine intervals.

Understanding what to do in case of emergency is essential knowledge of the staff associated with therapy pool. A phone at the centre along with contact details should be easily visible and available. Everyone should know their role in case of emergency. Helpers and staff should be trained in basic life saving procedures.

The therapist has multiple roles to play in an aquatic therapeutic setting. He will partly act as a manager of the facility. They should have wide knowledge of all the events happening in the pool setting to handle any changes or eventualities that may arise. Therapist is considered as the In-charge of the facility, who will run the show with help of competent staff. Hence defining their role makes it easy and efficient to run the show at the pool area.

Manager on the other hand is the main person on whom therapist can rest majority of his responsibilities so that focus can be given for therapy. Multitasking is what manager will be doing throughout the day. The smooth running of the pool, coordinating with therapist & patients, working in tandem with janitor/cleaning pool to maintain hygiene and maintaining documents and many other things. They will form a focus point in the entire setup, so having a competent and energetic individual is the need.

Clinical guidelines are merely some basic information on certain, simply put, do's and don'ts. An initial screening to understand the suitability of the client to the therapy, followed by some major clinical conditions wherein recommendations are suggested. The therapist in his ability and clinical experience can decide the therapy plan keeping the information mentioned in this guideline at the background.

Annexure shares information on pool standards and water quality for efficient functioning of the system. This needs to be changed or modified whenever there are some changes as per the local governing authorities. Also as per the centre, certain adaptations are possible to suit the patient population.

Conclusion

The guideline is an initiative to streamline the competency of therapists handling patient population, provide safety guidelines, the importance of emergency protocols and to maintain the industry standard of water quality and therapy pool requirements. This is an attempt to make the people to think that a therapy pool is not essentially a swimming pool and also to enable physiotherapists to use some of the swimming pools which are able to meet the standards as therapy pools.

This guideline is to empower the therapists in India who are venturing to start their Aquatic therapy facility and need to understand some basic elements associated with establishing a pool. We hope this will help them in the best way possible. This is a first edition and depending on the growth and feedback received there is scope for further improvisation.

The references have been taken from many different standards and guidelines set in various countries. The guidelines do not establish itself as rule to adhere to, but definitely a highly recommended point of reference for Aquatic therapists starting their practice in India.



***Note: To be brought to the notice of readers, some states of India have mentioned in their clinical establishment act, Aquatic therapy (hydrotherapy) as part of physiotherapy procedure.**

The Legal Aspect in Indian Scenario:

As per the Clinical Establishment Acts of various States in India, “Physiotherapy establishment means an establishment where electrotherapy, hydrotherapy, remedial gymnastic or similar processes are usually carried on, for the purpose of treatment of diseases or of infirmity or for improvement of health or for the purpose of relaxation or for any other purpose whatsoever”

A centre can be established as “Private Medical Establishment”. This information needs to be verified and to be used appropriately by the practitioners.

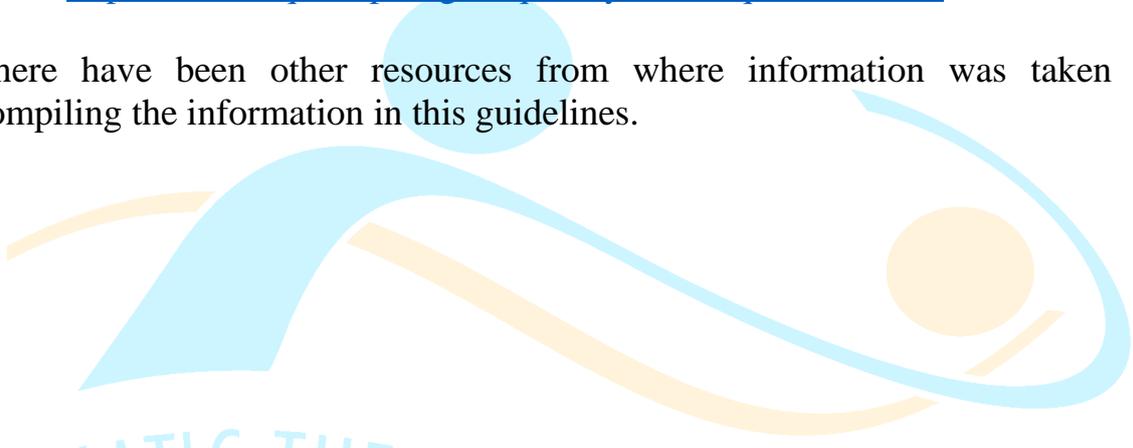
ABBREVIATIONS

ABP – Aquatic Bodywork Professionals
AD – Autonomic dysreflexia
ADH – Anti diuretic hormone
AF – Atrial Fibrillation
AICD – Automated implantable cardioverter defibrillator
AIDS – Acquired Immuno Deficiency Syndrome
ANP – Atrial Natriuretic Peptide
ATP – Aquatic Therapy Professionals
AVP – Arginine vasopressin
BGL – Blood Glucose Level
BP – Blood Pressure
bpm – Beats per minute
BRRM – Bad Ragaz Ring Method
CAN – Cardiovascular autonomic neuropathy
COPD – Chronic obstructive pulmonary disease.
CV – Cardio vascular
DFU – Diabetic Foot Ulcers
DM – Diabetes Mellitus
ECG – Echo Cardio Gram
GFR – Glomerular Filtration rate
GTN spray – Glyceryl Trinitrate
HIV – Human Immuno Virus
HR – Heart Rate
IATF – International Aquatic Therapy Faculty
mmHg – Millimetres of Mercury
ppm – Particle per millilitre
PPM – Permanent Pacemakers
SCI – Spinal cord injury
SOB – Shortness of Breath
SpO₂ – Partial pressure of Oxygen
T2DM – Type 2 Diabetes Mellitus
UTI – Urinary tract infection
WHO – World Health Organization
WST – Water Specific Therapy
CPR – Cardiopulmonary resuscitation

References:

1. http://www.who.int/water_sanitation_health/publications/whoiwa/en/
2. <http://www.physiotherapyindia.org/about/moa/3130-ethical-rules-guidelines.html>
3. http://www.wcpt.org/apti/standards_guidelines
4. <http://atacp.csp.org.uk/guidance-good-practice-aquatic-physiotherapy-2015>
5. https://www.physiotherapy.asn.au/APAWCM/The_APA/National_Groups/APAWCM/The_APA/National_Groups/Aquatic.aspx
6. http://www.karnataka.gov.in/hfw/Documents/National_Health_Policy.pdf
7. www.atri.org/Certification/Standards.pdf
8. <https://www.aquaticpt.org/frequently-asked-questions.cfm>

There have been other resources from where information was taken for compiling the information in this guidelines.



AQUATIC THERAPY NETWORK OF INDIA