Aquatic Therapy for the Polytrauma Population

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Providing treatment for individuals with multiple injuries can pose quite a challenge. Usually a patient with several injuries comes with a variety of precautions and each must be taken into consideration when developing a treatment protocol. Along with the multiple injuries comes a host of co-morbities that will have an effect on patient care. Once the evaluation is complete and a baseline is established, the intervention can begin.

There are a variety of definitions to describe the term "polytrauma," depending on who is providing the definition. The general civilian population often describes polytrauma as " a medical term describing the condition of a person who has been subjected to multiple traumatic injuries, such as a serious head injury AND a serious burn."(1) In civilian medicine, such injuries are most often associated with motor vehicle accidents (MVA's) due to the high velocities at which the trauma occurs, leading to multiple injuries. A retrospective study conducted by the Journal of Orthopaedic Trauma looked at 93 children who suffered from multiple injuries and found that 80% of these incidents occurred due to MVA. (2)

The Veterans Health Administration Handbook defines polytrauma as "two or more injuries to physical regions or organ systems, one of which may be life threatening, resulting in physical, cognitive, psychological, or psychosocial impairments and functional disability. TBI frequently occurs in polytrauma in combination with other disabling conditions such as amputation, auditory and visual impairments, SCI, PTSD, and other mental health conditions."(3) In military medicine, polytrauma is often associated with improvised explosive devices (IED) or Rocket propelled Grenades, which cause blast injuries. Brain injury, loss of limbs, burns, fractures, blindness, and hearing loss are injuries that result from afore mentioned encounters.(4) Care takers must also be aware of the high incidence of post traumatic stress disorder with patients who have suffered polytrauma injuries.

When dealing with those individuals with multiple injuries, the healing process must also be taken into account when deciding on the appropriate treatment plan. When dealing specifically with aquatic therapy, the instructor or therapist

must be sure that all wounds are healed due to the risk of infection with open wounds. It is also important to be aware of those patients with fractures that are not fully healed and know the weight bearing status in order to properly design a treatment protocol. Other factors to consider with this population of patients are proper nutrition, amount of sleep per night, medications, if the patient smokes, stress level, and family/friends support.

All of the above mentioned injuries will pose a unique complication to designing an aquatic therapy program. When working with a patient who has suffered a brain injury, it is important to be aware of the patient's cognitive status. The difficulties that may arise include: decreased ability to understand and comprehend directions, decreased attention span, inappropriate communication, difficulty expressing pain or discomfort, decreased ability to follow weight bearing restrictions, and the need to keep head covered and free from contact. For those individuals with amputations, the biggest challenge for the patient will be establishing a new center of buoyancy and comfort level in the water. Once the patient has accomplished this task, an exercise program can be designed based on personal and therapy goals. The therapist must be aware how specific exercises will have a different effect with this population due to change in center of buoyancy.

When treating clients with fractures, the most important piece of information would be the weight bearing status. An individual with a non-weight bearing status will have a much different treatment protocol than a patient who is partial weight bearing or weight bearing as tolerated. If a patient does have a partial weight bearing status, the therapist should inquire about the specific percentage of weight that can be placed through the limb to allow for an accurate treatment program. This will also decrease the risk for injury, while allowing the bone to heal.

When dealing specifically with vision or hearing loss there are a number of factors to consider. When someone has partial or total vision loss, the water can be a very scary place, especially if they are uncomfortable in the water from the beginning. This particular client will have to almost solely rely on verbal instruction to maneuver around the pool and perform exercises. Therefore, it is pertinent that all instruction is very detailed and given in a step by step process. Since he/she will be relying on sense of hearing the therapist should talk slowly, enunciate, and try to minimize outside distractions. It is particularly important to make the patient aware of possible depth changes so it does not take him/her

by surprise. On the contrary, an individual with hearing loss will rely more on visual instruction with some verbal instruction if the hearing loss is only partial. Most individuals with total hearing loss will also use lip reading as another form of communication. For this client it will be important to provide good non-verbal communication in the form of pictures and demonstration. The instructor should be sure to stand in a good position where the patient can clearly see what is being communicated.

Due to multitude of patients being discussed in this article, it would not be realistic to include a specific exercise protocol for each, especially since each individual client will respond differently to the exercises given to perform. A general exercise/therapy program should include a few basic components. On the first day the instructor should establish and discuss the plan of care, review safety in and around the pool, review rules and regulations for aqua therapy at the specific facility, asses the patient's comfort level in water, be aware of all client's precautions and especially those that may be affected by the properties of the water.

The next step is getting the patient into the water and the safest option should have been decided during the introduction. Once in the water, the program should begin with the warm up most appropriate for the particular client. Following the warm up, basic exercises should be introduced to assess the patient's baseline exercise tolerance and then progressions can be developed for each consecutive session. The best indicator of the patient's tolerance and when it is appropriate to progress would be the level of soreness the evening of and one to two days after the initial session. Although this is a very subjective measure, most patients are less likely to be compliant with the exercise program if they experience a significant amount of soreness or pain after the session. A small amount of soreness after beginning a new exercise program is normal and it is important to educate the client regarding this possibility. The better the patient understands how the body should respond to the treatment the more likely it is that he/she will be compliant and willing to participate.

The program should always end with a cool down and some stretching to decrease the intensity of soreness and prevent injury. Another important component of treatment is to constantly be assessing the patient's response to the exercises and ensure proper technique/form. If the exercises are too difficult, it can lead to improper form and possibly cause further injury. It is also important to assess the client at the end of the session to be sure he/she is well

enough to leave. Some patients may need to rest before leaving the area or may require assistance of a caregiver or the therapist. It is also important to document each treatment session to ensure proper progression and the patient's response to changes.

Although treating the polytrauma population can pose significant challenges, it can also be very rewarding. The therapist allows the patient to experience more freedom of movement and a sense of normalcy, while having to dig deep into his/her knowledge base to design creative exercise programs. This will ultimately lead to improved function and a better quality of life for the patients involved.

References

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