

# Using the aquatic therapy to treat and rehabilitate injuries of disabled weightlifters

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**ABSTRACT**--Aquatic therapy is predominantly used for getting relaxation when the athletes are injured and lost their energy to do the practice in the workout sessions. Aquatic therapy can be provided to the athletes privately or in the rehabilitation centers. The previous research studies have revealed that the power of aquatic therapy is much faster than general physiotherapy treatments. In this article the aquatic therapy is experimented on the injured weightlifters and disabled weightlifters to provide the relief and revival strength. The paper has illustrated the possible aquatic therapy treatments and how they are going to provide the relief and strength to the injured patients to gain muscle strength and pain relief. The paper also suggested the most suitable aquatic therapy methods to the weightlifters to get the relief and revival strength. Aquatic therapy can provide not only physical relief but also neurological relief to he injured and disabled athletes.

**Key words**--Aquatic therapy, disabled weightlifters, Aquatic therapy techniques, Methods

## I. INTRODUCTION

Aquatic therapy is versatile physio therapy treatment to strengthen the muscles and provide the flexibility and ease of movement to the injured body muscles. Aquatic Therapy is predominantly used for the injured muscles while doing the exercises, walking, mobility and imbalance. This gives wonderful relief for the orthopaedic pain instantly while incorporating the aquatic therapy. Aquatic therapy is predominantly used in rehabilitation centers. Most of the aquatic therapies can be extended to the patients with cold waters. Some time this aquatic therapy can be provided with warm water of 35<sup>0</sup> Celsius to the patients. Basically, the warm water can provide speedy relief and recovery to the patients [1].

Aquatic therapy can be extended to musculoskeletal rehabilitation to provide treatment for acute injuries. This can be given to the patients of acute injuries and suffering with the subjective pain. At this condition the aquatic therapy can regulates the reflexively the blood vessel tone. The aquatic therapy can increase the blood flow up to 225 per cent at the time of immersion. This can be distributed to the skin, muscle and heart equally. So that the cardiovascular diseases can be highly curable in the immersion process of aquatic therapy. Aquatic therapy can give relief to the pain and stiffness. Floatation is the process that involved in the aquatic therapy. This floatation process can give counteract the effect of gravitationalforce on joints. This is also creating a low impact environment on the joints of the body parts [2].

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Aquatic therapy can give rise to the quality of functioning of the muscles in the body. Protocols of the aquatic therapy can use the combination of techniques of providing the pressure to the joints and muscles. This process gives rise the strength of the muscles, flexibility and balance to perform the exercise. This has demonstrated the greatest improvements in Childhood Health Assessment Questionnaire scores. Using this score the effect of the therapy treatment can be determined [2].

Aquatic Therapy is predominantly used for cardiopulmonary treatment with land-based effects. Aquatic therapy is enriched with immersion methods. This method can provide the momentum to the blood and pump the blood to the upwards into heart. Even though the pulse pressure is increased the blood will be filled in the heart and increase the functioning. The repeated exercise of immersion can regulate the heart functioning better than the previous conditions. This gives improvement of the cardiac size from 27-30 per cent during the treatment. Hence the oxygen consumption can be increased and heart rate is increased. This aquatic therapy is given at warm water with a temperature of 35<sup>0</sup>Celsius or 95<sup>0</sup>Fahrenheit. This warm water therapy should be implemented with a great care for the patients with severe or uncontrolled heart failure [3].

## II. METHODS

Aquatic therapy can be implemented in different techniques. There are so methods and techniques are in practice. In this paper only six methods and techniques are demonstrated with distinct utilization treatments. [4].

### TECHNIQUE ONE:

In this technique diaphragmatic breathing and active progressive resistance practise in water can be done. This can give increased strength and relaxation to the all muscles based on the elements of body posture [5].



### TECHNIQUE TWO:

Aqua running is a therapy to streamline the cardiovascular functioning. This can be done by running and walking in the water. This can be in a deep water by wearing the floatation device. This floatation device can be

worn as a vest or belt to support the head above the water surface. This treatment therapy is predominantly used for injured athletes. This is also very useful for the injured athletes while aerobic workout [6].



**Figure 1 :** Aquatic therapy running in the water

**TECHNIQUE THREE:**

BRRM is called as Bad Ragaz Ring Method. In this method the patient is kept horizontal in water with the help of rings. This rings or floats can be kept around the neck, arms, knees and pelvis. In this state the therapist makes the patient to do the exercise. BRRM is highly useful for the proprioceptive Neuromuscular Facilitation. This gives extraordinary relief to the neuromuscular function and widely used in the rehabilitation centers [4].



**Figure 2:** Bad Ragaz Ring Method

**TECHNIQUE FOUR:**

Burdenko Methodis integrated with land and water therapy approach. By doing this therapy the patients can develop balance, flexibility endurance, strength and coordination. This is very useful injured athletes to recover their energy and flexibility in doing the practice. This can be used with the help of buoyant equipment. This gives

immediate relief and gives energy to perform the buoyancy in vertical positions, exercising with movement in multiple direction and multiple speeds running from slow to fast [6].



**Figure 3:** Burdenko Method

**TECHNIQUE FIVE:**

Halliwick Concept is developed on the basis of biophysical principles of motor control in water. This technique provides the sense of balance and core stability to the athletes.



**Figure 4:** Halliwick Concept

In this technique ten-point program incorporates the concept in a progressive program of mental adjustment. This ten-point program can cure the mental disengagement. It also helps the development of motor control with an emphasis on rotational control. This is basically used in the rehabilitation centers for athletes to get the balance control, swimming and independence. This aquatic therapy is known as water specific therapy for the distinct patients with distinct pains and injuries [7].

**TECHNIQUE SIX:**

Watsu is a specific aquatic body therapy used for deep relaxation. It can be practiced in the chest-deep warm water in a swimming pool [7].



**Figure 5:** Watsu is a specific aquatic body therapy

In this method the therapist gently cradles the patient with gentle movements and stretches. The massage while cradling can give high level relaxation to the patients of injured muscle. This massage is given to the patients rhythmically while cradled, moved stretched. Watsu can be implemented in different momentum. These are Water breath dance, Free Spine, Slow Offering, One leg offering, two leg offering, Accordion, Rotating Accordion, near leg rotation and far leg rotation. These momentums can provide greatest relaxation in specific part of the body [8].

### **III. MATERIALS**

Aquatic Therapy can be provided to the disabled weightlifters to get aspiring results. The weightlifters can be sent to rehabilitation centers to take the treatment when they get injured and disabled while doing practice [9].

To provide the aquatic therapy a swimming pool is essentially required which can be tuned with temperature control. While extending the aquatic therapy the temperature of the water can be kept at 35°C or 95°Fahrenheit.

While doing the practice of aquatic water therapy the physiotherapist should be present and provide three to six sessions under the guidance. The remaining sessions can be done until the athlete is revived.

Aquatic Therapy is also used for healing the chronic, inflammatory, progressive diseases which are affecting the central nervous system. In this condition the patients who are not able to walk can be cured and make them to walk and keep healthy [12].

### **IV. EXPERIMENTAL**

Physically disabled Weightlifters can under go for the Aquatic therapy. Watsu can be experimented to regulate the respiration rates. Watsu can be used to regulate the muscle tone. Especially Deep relaxation Watsu balances the automatic nervous system. It is predominantly decreasing the sympathetic response and improves the parasympathetic response. The usage of Watsu can be useful to enjoy the far-reaching benefits.



**Figure 6:** Watsu for weightlifter injuries

The clinical experiments of previous researches have revealed that the application of Watsu has bestowed the psychological benefits for stress reduction. It was also used in the treatment of traumas in the past [8].

Halliwick concept can be extended to the disable weightlifting athletes. In this aquatic therapy the physical properties of water can be used to form therapeutic intervention. To extend the treatment for relaxation and muscle strength the specific technique Turbulence, Flow and resistance can be used. This therapy can be used to improve the balance of the athletes while performing the weightlifting practices. The athletes can improve the strength to lift the weights with great deal of balance[13].



**Figure 7:** Halliwick concept can be extended to the disable weightlifting

In this therapy another technique can also provides the body strength to make easy way of movements in doing the weightlifting practices. The technique is Buoyancy. This influences the athletes to improve the vestibular system incensory integration. These bother aquatic therapy treatments can be highly suggested in the water of 35 degrees Cilices to give improved relaxation and immediate relief from the pains [12].

Aquatic therapy is a method employed in educating specific patterns of resistance, endurance of the spine and make them to take to relaxation state.



Figure 8: Aquatic therapy can provide physical and mental health

It is observed in spas and body work and massage centers the treatment of aquatic therapy to extend the treatment for general public who are suffering joint pains and muscle pains [10].

## V. RESULTS

Environment	Case 2 r.		Case 2 c.		Case 3		Case 4		Total mean	
	Min	P	Min	P	Min	P	Min	P	Min	P
Water	1200	-1	0	3	1440	3	960	4	900	2.2
Water + Land	2020	-1	820	3	2640	3	2580	6	2015	2.7
Land	820	0	820	0	1200	0	1620	2	1115	0.5

Note: r: Research; c: Control; Min: Minutes; P: Points

Figure 9: source Shelef, Niv. (2016)

Phase	Water Depth	Lower Limb Exercises	Sets and Repetitions (Each Leg)	Walking
1	Xiphisternum (18%-55% WB) <sup>2</sup>	1. Double-leg squats 2. Double-leg calf raises 3. Dynamic lunge	2x10 2x10 2x10	0 min
2	ASIS (47%-54% WB) <sup>2</sup>	As for phase 1	As for phase 1	0 min
3	ASIS	As for phase 1, plus: 4. Single-leg stance, coronal knee flexion/extension 5. Single-leg stance, coronal hip abduction/adduction 6. Single-leg stance, coronal hip flexion	2x10 2x10 2x10	10 min
4	ASIS	1. Single-leg squats 2. Single-leg calf raises 3. Dynamic lunge Plus exercises 4, 5, and 6 from phase 3	2x10 2x10 2x10	10 min
5	ASIS	As for phase 4, plus: 7. Step-ups	2x10	10 min
6	ASIS	As for phase 5, but modify: 7. Step-downs	2x10	10 min
7	ASIS	As for phase 6, but for exercises 1 and 5, increase speed (resistance) of moving leg as able	2x10 followed by 1:3	10 min
8	ASIS	As for phase 7	5x10	10 min
9	ASIS	As for phase 7	5x10 followed by 1:3	10 min
10	ASIS	As for phase 7	4x10	10 min
11	ASIS	As for phase 7	4x10 followed by 1:3	10 min
12	ASIS	As for phase 7	5x10	10 min

<sup>2</sup>Each session incorporated a warm-up and a cool-down (2 min) of the pool walking forward, backward, and sideways and high stepping (conducted at the depths indicated). Walking immediately followed the completion of lower limb exercises. All single-leg exercises were performed with both the left and the right legs. The step height was 14.5 cm. ASIS=anterior superior iliac spine; WB=weight bearing.

Figure 105 : source from Kristin Mortenson (2015)

## VI. DISCUSSIONS

Aquatic therapy can be implemented and practised by different kind of professionals. The basic certification course can be learned by any graduate with normal biology science background and basics of anatomy. The basic course certification can make the professional to engage the therapeutic treatment for muscle pain relief and to provide strength to the injured muscles and joints. Aquatic therapy specialization should be given to the professionals who have completed their physiotherapy certification with bachelor degree [12].

Suitable activities	Aquatic Temperatures				
	Cold (10°-15° C)	Cool (20°-29.5° C)	Neutral (33.5°-35.5° C)	Warm (36°-38.5° C)	Hot (37.5°-41°)
Post-exertional recovery	✓				
Contrast baths	✓			✓	✓
Vigorous exercise		✓			
Arthritis exercise			✓		
Typical Aquatic Therapy			✓		
Cardiac Rehab			✓		
Multiple Sclerosis exercise		✓			
SCI programs			✓		
Parkinson's programming			✓		
Relaxation				✓	✓

Figure 11: Source from American Medical Association

American Medical Association has suggested and recommended the aquatic therapy for the general patients suffering from body pains and chronic joint pains. It also recommended to the athletes' rehabilitation centers to treat the acute pain patients and injured disabled athletes. AMA has allocated the Current procedural terminology codes to this aquatic therapy treatment with different techniques and methods [14].

## VII. CONCLUSION

Aquatic therapy is meant for providing the physical medicine and rehabilitation. It is different from aquatic exercises and aquatic fitness to perform swimming. It has various kinds of techniques and methods to treat distinct patients of muscle injury and disabled athletes. It is highly preferable to under go the treatment under a qualified professional. The paper has successfully illustrated the method and treatment techniques to the disabled athletes of weightlifting with distinct methods of Aquatic therapy. It improve the physical fitness as well as it provides the mental stamina and relaxation. American Medical Association has recommended this therapy to the disabled weightlifting professionals and other athletes who were injured with muscle and joints and suffering with pains.

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