



## AQUA YOGA ASANAS – AN INNOVATIVE EXERCISING IN DEEP WATERS

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**ABSTRACT**

Yoga is ascetic, traditional Indian discipline that includes adoption of specific bodily postures with breath control and simple meditation techniques. It is widely practised for health and relaxation. Asana is a posture adopted in performing hatha yoga. Performing various yoga asanas helps to maintain mental, physical and spiritual health. For a swimmer the divergence between the locations of the centers of gravity and flotation is the problem to balance and perform asanas. In most cases, rather than floating level, the body rotates until the centers of gravity and buoyancy are aligned vertically. The body then displays a motionless float and the water supports the weight of the swimmer at that angle. When the body commences in a horizontal/streamlined position the relationship between the center of buoyancy to the center of gravity will produce a rotational torque and subsequent movement, person can remain balanced until the angle of flotation is attained. Aqua yoga asanas in deep water is a unique trail where in the benefits of yoga asanas and that of exercising in water can be integrated to achieve more flexibility and maintain physical fitness along with stress relief. Water aerobics differ from Aqua yoga asanas, where in water aerobics can be quite strenuous. The buoyancy of water and center of gravity are balanced to perform various asanas with breath control. In this paper, techniques beneath innovative yoga asanas practiced in deep water of 10 feet depth are discussed. Over a couple of practise sessions, water balance at the final position of the yoga asana is obtained and body is suspended in deep water like in case of Nataraja asana. 30 different asanas are practised that improves joint mobility and muscle flexibility, general fitness, stress relief and also decreases fatigue and lethargy. Hence swimmers of any age group, height, body dimensions and flexibility can start with aqua yoga asanas and continue with regular practise to achieve perfection in holding final posture of asanas.

**KEYWORDS :** Aquatic exercise therapy, aqua/water yoga asanas, water/aqua aerobics, buoyancy, center of gravity.

**INTRODUCTION:**

Yoga is universally accepted ancient system of philosophical thought and perpetual source of intuitive knowledge culminating in the direct experience of self amidst seeming plurality. Yoga essentially works at three aspects that include mental, physical and spiritual health. It is safe and simple practicing method. Regular practice of Yoga recharges rejuvenates and rediscovers ones' true self. As per the present day scenario physical exercise is given priority to maintain fitness; mental health is given second priority and least priority to spiritual health. Maintaining harmony of physical, mental and spiritual health's are to be considered.<sup>(1)</sup> Practicing yoga asanas help in physical fitness by increasing basic metabolic rate and attains purification of body and mind. With this process body and mind are energized with spiritual absorption. Modified asanas makes practicing them simple and suitable to all. Practicing asanas helps in mobility of joints and maintain the suppleness of muscles to promote physical mobility. Buoyancy and viscosity of water help perform the asanas with ease as the weight of the body is no hindrance, yet the muscles and joints work with synchronization. practice of regular aqua yoga improve flexibility, benefits of performing asana, improves the technique of balancing oneself in water and performing asanas with ease than done on floor. Thus practicing aqua yoga asanas, a unique exercising technique, can be adopted by all swimmers for improved lung capacity, balance, flexibility and stamina.

**DYNAMICS OF FLOTATION:**

Before describing the various asanas that can be worked with in deep water, understanding the dynamics of flotation is essential. To conceptualize as to how one can float and stay floating while performing asanas, Archimedes' principle helps us to understand the dynamics and the body movements to be performed accordingly. It states for any object, wholly or partially immersed in a fluid, is buoyed up by a force equal to the weight of the fluid displaced by the object. Buoyancy is the upward force that acts on the swimmer while they are in the water. The pressure from beneath the swimmer is much greater than the pressure above them, which would allow the swimmer to float. At the surface of the pool, there is less

resistance as the fluid is more resistant than air. It is of a greater advantage to be more buoyant and stay closer to the surface. In order for a person to float, buoyant force needs to be greater or equal to the weight of the person. To become more buoyant, swimmer's upper body is to be used, so that the body's centre of buoyancy is adjusted due to the greater surface area. The upper body needs to be used effectively and efficiently as the lower body would sink and not be streamlined i.e. eddy's resistance. Hence the swimmer needs to be parallel to the surface; in order to do this; the chest is pressed down and causes the hips to rise. Water is substantially denser than air and this causes the swimmers to float.<sup>(2)</sup>

When an object floats in fluid/water, it is acted upon by two forces. One is the ever-present force due to gravity and the other is the buoyant force. When the object is symmetrical, such as a rectangular, the two forces coincide. When the object floats, the buoyant force equals the gravitational force. Since the floating object displaces its weight in fluid (Archimedes' Principle) equilibrium is reached and the object rests at the surface in the fluid. The water supports the weight of the object. The center of buoyant force from water and center of gravity determines how an individual floats. It varies considerably between swimmers. It requires technique adjustments because it interacts with any movement principle. The characteristics of a swimmer's flotation should always be considered when a new technique element or new asana is learnt by a swimmer.

In humans, the predominant constituent matters are bone, muscle, fat, air in the lungs, other structures and fluids. The proportion of these substances in an individual's physical make-up determines the specific gravity, the ability to float, and the characteristics of floating. There is considerable variation in these factors among humans. Fat has a specific gravity of less than 1.0 and floats in water, while both bone and muscle have a specific gravity of slightly more than 1.0.<sup>(4)</sup> Thus, persons with a high proportion of fat will float while some individuals with very low fat levels, heavy bones, and high muscle mass will sink. Normal persons usually float to varying

degrees and in varying ways. Men have higher specific gravity because of greater muscle mass and different limb to trunk ratios compared to women. Women are usually broader at the hips and increase or maintain body fat changing their center of gravity and shape for moving through the water. Inter- and intra-individual variations in physical structure and its consequential effects on flotation are to be considered to understand the difference between the techniques developed between swimmers. Any alterations in physic of swimmer will demand technique change. There is no ideal weight or percent body fat for swimmers of both genders. The flotation characteristics of every swimmer are particularly individual. Flotation characteristics and lung capacity are needed to be considered to incorporate considerable adjustments to maintain a swimmer in a fluid-supported streamlined posture. The human body is articulated complexly, its progress through water can be understood by comparing its non-force producing segments to that of boat hulls. At most stages of techniques, the head and trunk are the non-propulsive segments of the swimmer and constitute the primary load that is being propelled. When the body commences in a horizontal/streamlined position the relationship of the center of buoyancy to the center of gravity will produce a rotational force and subsequent movement until the angle of flotation is attained. Occasionally, there are individuals who can float horizontally with a considerable volume of the body above the surface. Such persons predominantly are females and their centers of gravity and buoyancy almost coincide. An example of the floating position of a floater; such individuals swim with ease. A floater is a person with a lower than normal specific gravity and the centers of gravity and buoyancy are very close together. The density of water also determines how a person floats. A swimmer would float slightly higher in salt water than fresh water.<sup>[2,3,4]</sup>

#### TECHNIQUE OF AQUA YOGA ASANA PRACTISE:

Aqua yoga asana practise should be started by swimmers who are familiar with swimming strokes and could do back stroke with considerable water balance. This primary requisite makes swimmer to develop technique to balance or place the center of buoyancy and center of gravity closer as explained above. A swimming pool of depth variation from 4-10 feet was selected as the place for yoga asanas practise, at Saptarshi Sarovara, Sri Ganapathy Sachchidananda Ashram, Mysore. The yoga asana is worked by splitting the asana and practised in shallow waters before moving to the deeper waters. Aqua yoga asana practise makes it unique as it is easy to perform the asana in water since body weight is no more a hindrance in water and an additional benefit of practising asana can be obtained. Few asanas like Supta padmasan, supta gomukhasan, markatasan, supta matsyendriyasan, supta baddha konasan, pavan muktasan, supta vajrasan, shavasana, matsyasan etc are asanas done lying on the back or floating on water. In the final position the person has to balance the limbs without any rotation, lying on back and repeating the same on the other side to complete one cycle of asana. The same steps are followed to reach the final position of the asana as done on floor, while doing in pool person should consider balancing while doing asanas and hold for a while in final positions. Above mentioned asanas can be done breathing normally through nose and without any holding of breath.

Other asanas like the Tadasan, anjaneyasan, veerabhadrasan, pranamasanas are done while exhaling with mouth and dipping in water to take final position of respective asanas as mentioned above. A push is taken to come above water to inhale with mouth and same is continued to repeat the asanas. Gradual increase in repetitions would increase the stamina and lung capacity to hold the breath and hold the asana in final position. Few other asanas like Natarajasana can be done by holding breath and suspending in water during final position and release of final position

would let person float for breathing time. In such asanas antar kumbhaka (holding breath between inhalation and before exhalation) is to be synchronised to complete these asanas. Asanas like shashankasan, kapotasan and dhanurasan are done floating on water lying on stomach/prone position. These asanas demand slow exhalation and breathe control to execute during the final position of asana and release from final posture is time for breathing. Asanas like adhomukha padmasan, adhomukha vrikshasan is to be performed after complete exhalation. In above mentioned asanas head, neck and thorax are to be taken below water and lower limbs are positioned to the surface of water. In performing such asanas bahya kumbhaka (holding breath after exhalation and before next inhalation) is to be synchronised to complete the asanas. Thus various asanas are to be performed by balancing body with forces (buoyancy and gravitational) along with breathing pattern according to the asana.<sup>[1,5]</sup>

#### DISCUSSION:

Around 30 different asanas are practised over/immersed in water where in some body parts are more buoyant than others, and so the center of buoyancy usually does not coincide with the center of gravity. The center of buoyancy relates to the body's volume while the center of gravity relates to the body's mass. Since these two factors normally are different, they are usually sited in different areas of the body. The distance between the centers of gravity and buoyancy usually is greater for males than females. The divergence between the locations of the centers of gravity and flotation presents a problem for swimmers. Human body is articulated complexly, to perform aqua yoga asanas, at most stages of techniques its progress through water, for every effort to rise up, a counter-reactive action on the other side of the center of buoyancy will occur making another part of the body sink.

To perform asanas floating on water [Fig-1 and Fig-2] either in supine and prone position can be attained by holding air in lungs that helps body float. Hence during final positions held over water can be completed with good water balance along with antar kumbhaka. While doing antar kumbhaka, lungs hold air and upper part/thorax is more buoyant. When asanas where head, neck and thorax are placed upside down, like adhomukha vrikshasan, after complete exhalation is done to make thorax area less buoyant by exhaling air out and keeping lungs with minimum air. Thereby thorax part moves with easy to reach deep inside water; unlike when lungs are filled with air. Thus depending on the final positions of yoga asanas, breath is held after inspiration, during or after exhalation to maintain balance during the final position of respective asanas. Thus after practising asanas for a period of 3 consecutive months, yoga asanas are performed with ease in water with improved flexibility and lung capacity. Practise of aqua yoga asanas especially for age group above 35-40 years would avoid stretching discomfort while doing asana and inconvenience due to changes in joints and muscle flexibility.

#### CONCLUSION:

Aqua yoga asanas practise is an innovative exercising technique that can be adopted by swimmers of any age group, body symmetry, to improve flexibility of muscles and joint mobility, lung capacity, water balance and a unique way of exercising. Aqua yoga asanas were practised in a swimming pool of depth variation from 4-10 feet for 3 consecutive months without any prior practise of yoga asanas. Thus yoga asanas that are performed regularly on floor can be attempted horizontally and in deep water which complement benefits of Yoga and hydrotherapy/aquatic exercise therapy.

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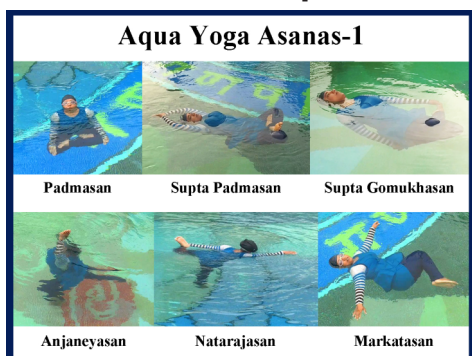


Fig-1 Aqua Yoga Asanas

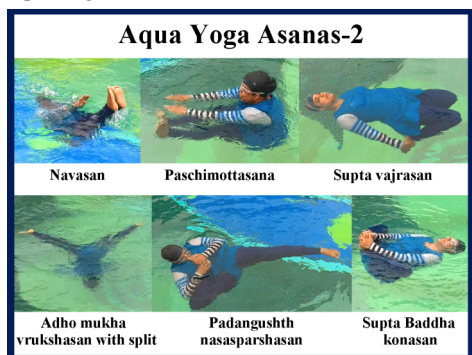


Fig-2 Aqua Yoga Asanas

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