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Diving into the Depths of Consciousness and the Ocean

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Diving into the Depths of Consciousness and the Ocean

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Abstract

Freediving at its core is holding your breath underwater. But beneath the surface, the body, mind, and spirit undergo a transformation. The mammalian dive response drives the physiological changes that humans undergo while diving to conserve enough oxygen in the body for basic functions to continue to function. The autonomic nervous system synergistically influences the cardiac, pulmonary, and vascular systems and causes apnea, bradycardia, vasoconstriction and splenic emptying to sustain aerobic ATP production in the heart and brain. Additionally, the act of breath holding has many beneficial effects on the mind. Much research has been done on the positive effects of meditation and conscious breath control such as reduction in stress and help with mental health and cognition. Coordination between the breath and body can have positive effects on people's emotional states and sense of self. Finally, many freedivers have reported having transcendent moments while freediving. Many traditions centered around the breath such as Buddhism, yoga, and Qi Gong also have religious ties. Conscious breathwork can deeply connect the individual simultaneously to the self and something beyond the self, facilitating transcendent experiences. Being immersed in nature is also conducive to experiencing moments of spirituality by connecting to the self and the universe. Freediving activates the mind, body and spirit; a freediver is not simply diving into the depth of the ocean but into themselves too.

Introduction

I was in Dahab, a small coastal town on the Sinai Peninsula in Egypt. To my right stood the red, craggy desert mountains that spread across most of the peninsula. To my left, the red sea sparkled in all its glory, an oasis from the harsh and unyielding desert. The clear water lapped the pink shores in a lazy cadence as if the sun had put a lethargic spell on the sea. The serene breeze moved the glassy water in gleaming ripples like a clear, flowing Persian rug. A few feet from the shore, the depth transformed the water to a light turquoise, still clear enough to see the smooth rocks at the bottom. Even further, the sea became a rich blue, hiding the sea's secrets—the imagination the only remaining answer to the mysterious depths. Or so I thought.

Locals had redirected us from Sharm El-Shaik, a resort city on the Sinai Peninsula, to Dahab, a backpacker town with hostels speckling its streets. As two college students travelling while studying abroad, we were grateful for this recommendation. I would prefer to stay in a hostel than a hotel any day. Colorful patterned elephant pants that seemed to be a staple at any tourist destination hung from shop doorways. Bars and restaurants with two walls, a roof and steps leading right into the red sea lined the main street of the town. Every ten feet there was a different dive shop. As I would soon learn, Dahab is a mecca for diving and freediving and many conversations would soon wind back to diving.

At our hostel, I was chatting with a fellow resident. Like many times before, when my friend and I mentioned that we were getting scuba certified, he immediately asked if we had gone freediving. Like always, my friend's immediate response was "no, pushing myself to hold my breath sounds like torture." I was a bit less extreme in my aversion to freediving. I was not

opposed to freediving but at the moment, I simply wanted to cruise along the sea's depths enjoying the wonderous world of vibrant coral reefs, giant and synchronous schools of fish, and ethereal sea turtles. Pushing my breath-holding limits in the ocean sounded intriguing for a future endeavor but Scuba diving was already an ambitious skill I was in the process of learning. Like many others, he continued to convince us to try freediving. He also told us about his painful experience being left at the altar on his wedding day. He had so much anger inside him that he was holding onto that was bleeding into his everyday life in negative ways. Then, when he tried freediving, everything changed. It gave him an internal calmness that was addicting. With consistent freediving, he became a different person, finally able to let go of the toxic anger that had been ruling his life.

Months after I left Dahab, I could not stop thinking about his story, especially since I had gotten a taste of what he had described on my final day of my Scuba certification. That morning, I lay in my bed reflecting on the past few days of scuba diving. Half dreaming, I recalled with a soft smile how it felt to move with zero gravity in the water like an astronaut. The miniscule beings that I saw carrying single grains of sand to the pale octopus hiding in an intricate knot were glimpses into a new world that I had limited time exploring. Navigating through this new cold, viscous fluid while being awestruck by the magical beings who lived there was such an extreme sensory experience that all I could do was be in the moment and let it wash over me. Scuba diving introduced me to my breath. Diving twenty meters below the surface of the water with an oxygen tank attached to my back as the only means to get oxygen made me hyper aware of each inhalation. The more relaxed my breath was, the longer I could conserve my oxygen and stay in this underwater world that I wished to become more acquainted with.

Since scuba diving is challenging and expensive to access, once I left Dahab, I began practicing yoga and diaphragmatic breathing to keep myself connected to the ocean and my body. In the back of my mind, I knew I wanted to try freediving, so this was preparation for that too. The more I practiced pranayama and breath control, the more I wanted to experience this meditative state and dive into the ocean and my consciousness.

The Mammalian Dive Response

The mammalian dive response is a physiological response seen in all mammals (Panneton, 2013). The dive response seen in land and aquatic species varies in intensity; for example, the Weddel seal can dive for up to an hour (Schagatay et al., 2001) while the human breath hold record is twenty-four minutes and thirty-seven seconds (Suggitt, 2021). The mammalian dive response is a combination of physiological processes that occur simultaneously in the human vascular, cardiovascular and pulmonary systems of the body under conditions of apnea, or oxygen deprivation, to conserve the remaining oxygen in the body (Schagatay & Holm, 1996).

The autonomic nervous system controls and coordinates the various unconscious responses that the human body undergoes during a breath hold (Gooden, 1994). While the sympathetic nervous system is commonly considered the fight or flight center and the parasympathetic nervous system is commonly considered the rest and digest center, they both simultaneously receive stimuli from the environment to direct a specific response from the organ systems (Gibbons, 2019). The sympathetic nervous system is stimulated to respond to physiological stress such as increased heart rate and widespread vasoconstriction (McCorry, 2007). The parasympathetic nervous system conserves energy during periods of rest by slowing and overseeing bodily functions such as digestion (McCorry, 2007). The sympathetic and parasympathetic systems are constantly stimulating and repressing bodily functions in tandem in order to achieve a specific response to best fit the stimulus. As we walk through life, they are in constant conversation with our body, attempting to balance the states of stress and relaxation we are in and to keep us in homeostasis. During a breath hold, both parts of the autonomic nervous

system coordinate co-activation to slow heart rate and increase peripheral arterial pressure (Buchholz, 2017).

There are two distinct kinds of people: people who run splashing into the water and dive into the oncoming crashing waves and people who wade slowly into the ocean, methodically acclimating their body to the colder ocean temperatures before they dunk their face in the water. Regardless of what method you use to enter the ocean, the final plunge, headfirst into the cold waves, always seems to be the hardest part. When you finally submerge your face into the icy water, it especially stimulates the nerves around your nose, eyes and forehead or the ophthalmic division of the trigeminal nerve (Gooden, 1994). The trigeminal nerve is responsible for sending pain, touch, and temperature sensations from the face to the brain (Cleveland Clinic, 2021). The thermoreceptors on the face detect a change in temperature on the skin and send this information via the trigeminal nerve to the central nervous system (Schagatay, 2014). Evolutionarily, it was beneficial for people who were submerged in water, whether it be voluntary or involuntary, to stop breathing. The vagus nerve, responsible for regulating organ functions such as heart rate, digestion and breath rate, receives the information from the trigeminal nerve that the body is in water and increases parasympathetic activity to stop breathing and conserve oxygen levels (Gooden, 1994). When being trained to be a safety diver for your diving buddy, people are taught to blow water away from the cheek and forehead area during a blackout to stimulate and regain breath. Apnea is both a stimulus and a response. When apnea is involuntary, lack of oxygen entering the body triggers the mammalian dive response. Cessation of movement in the lung tissue decreases the stretch receptor activity and triggers the heart rate to slow (Foster &

Sheel, 2014). Additionally, chemoreceptors detect a change in arterial oxygen pressure under conditions of apnea and slows the heartrate (Gooden, 1994).

Just like there is a variability of intensity of the mammalian dive response within mammals, there is also variability of intensity if the response between dives. During the early research of the diving response in Weddel seals, researchers trained seals in captivity and studied forced dives and noticed significant drop in heart rate (Hill et al., 2018). In more recent research in which technology was used to measure dives of Weddel seals in the ocean, they noticed that the dive response was not used when the seals made short dives and did not need to use oxygen conserving mechanisms (Hill et al., 2018). Similarly, there is a gradient in strength of the mammalian dive response in humans. Water temperature affects the strength of the human dive response. Colder water temperature triggers a greater diving response, measured by heartrate (Schagatay & Holm, 1996). This could be attributed to the fact that colder water poses a greater danger than warm water and requires a strong dive response for survival. Additionally, emotional factors have been shown to affect the intensity of the diving response. People in deep relaxation can undergo apnea for longer than their distracted or harassed counterparts (Gooden, 1994). Interestingly, fear has also been posited to increase the diving response but has not been tested on human subjects for ethical reasons (Gooden, 1994). However, this would explain why the Weddel seals that underwent forced dives in the early experiments had extreme diving responses compared to dives in the wild. Fear of drowning stimulates the mammalian dive response to its greatest potential to ensure survival.

The direct contact of water on the face and breath hold triggers the human dive response in order to slow the consumption of oxygen and send the oxygen to the brain and heart, the organs most severely affected by oxygen deprivation, or hypoxia. The heart and brain require a constant supply of ATP to conduct life sustaining processes and thus need a constant supply of oxygenated blood. The parasympathetic nervous system primarily does this by slowing the heart rate via the vagus nerve to slow the uptake of the remaining oxygen and metabolism (Schagatay, 2014). Arterial baroreceptors and peripheral chemoreceptors work together to identify and change in arterial blood oxygen and attempt to keep the body at homeostasis by regulating sympathetic nerve activity and blood pressure (Foster & Sheel, 2005). The heart rate slows; trained divers on average have a heartrate reduction of 45%-50% (Schagatay, 2014). A slower heart rate requires less energy and slows oxygen consumption, slowing metabolism.

The sympathetic nervous system is also stimulated when the human dive response is activated by cessation of respiration and face immersion. The sympathetic nervous system constricts peripheral blood vessels, to funnel the oxygen away from tissue that can withstand hypoxia (Schagatay, 2014) such as the skin, muscles and internal organs (Panneton, 2013). Vasoconstriction increases resistance of blood flow, increasing blood pressure (Hill et al., 2018). Oxygenated blood can then flow towards the heart, brain and tissue that needs a constant supply of oxygen to function (Foster & Sheel, 2005). Additionally, the spleen contracts and releases red blood providing an extra oxygen source into the bloodstream (Schagatay et al., 2001). Sympathetic nerves and a-adrenoceptors signal the spleen to contract and empty red blood cells rich with oxygen into the bloodstream to prolong apnea (Schagatay et al., 2001).

All these mechanisms triggered by the human dive response are ways that the body has evolved to conserve oxygen and prolong apnea if the body is submerged and can't immediately access oxygen. Once the oxygen in the body has run out and cannot supply the brain with oxygen, the brain completely shuts the body down in what is known as a blackout or loss of consciousness. All the remaining oxygen in the body is used for the brain rather than other functions in the body's last attempt to prolong life.

Breath

The breath is our companion who moves steadily with us throughout life, never abandoning us. The lungs are constantly working, inhaling and exhaling. Inhaling and exhaling. Air from the environment enters our body through our nose or mouth, travels down the pharynx, larynx, trachea, and find their way to the alveoli, small air sacs which "are the primary sites of gas exchange" (Haddad & Sharma, 2021). Some oxygen diffuses across the alveoli and gets diffused directly into the bloodstream, but most oxygen molecules are transported to tissues via hemoglobin, an oxygen carrier protein in the red blood cells (Betts et al., 2013). Hemoglobin transports oxygen from the lungs to the bodies' tissues where it passes the oxygen off to myoglobin molecules. Oxygen is then stored in myoglobin until the oxygen partial pressure of the tissue falls and is released into the mitochondria so that aerobic ATP production can continue (Hill et al., 2018). Oxygen is used by every cell in the body to produce ATP and drive cellular processes after which carbon dioxide is produced as a byproduct (Haddad & Sharma, 2021). Red blood cells transport carbon dioxide back to the lungs where it is exhaled through the mouth and nose (Cleveland Clinic, 2018).

During a breath hold dive, the last deep breath of air inhaled before submerging goes to the lungs, but oxygen is also stored in the bloodstream, attached to the transport protein hemoglobin, and in muscle tissues, attached to myoglobin (King et al., 2014). Compared to diving mammals like the Weddel seal, humans have rigid lungs (Hill et al., 2018). The deeper the dive, the greater effect pressure has on the air in the lungs: the lungs and the air inside compress. The alveoli are the first part of the lungs to compress making the oxygen inside them inaccessible at certain depths (Hill et al., 2018). At this point, the oxygen stores in the blood and

tissues become primary sources of oxygen. Diving mammals like Weddel seals lungs compress so much that they store most of their oxygen in their tissues rather than their lungs. Humans also store oxygen in their tissues via myoglobin but to a lesser extent (Hill et al., 2018). When the oxygen in the blood is used, skeletal tissues release the oxygen stored in the myoglobin molecules. The oxygen in the blood is rerouted to the heart and brain and muscle tissue uses anaerobic ATP production.

Breathing is a process that sustains life, but we rarely think about our breath. For the most part, it is a subconscious action controlled by the autonomic nervous system. It is like driving with your eyes closed. If you press the gas pedal of a car, it might go forward, but with your eyes closed, you will not go the most effective route and you might hit objects and cause damage along the way. Most people don't fully use their lung capacity and only inhale superficially into their chest (Nestor, 2021). The more effective our lungs are at obtaining air from the environment, the better supplied our bodies are with oxygen. Since oxygen drives every single process in our body, breathing and the way we breathe has a significant impact on our body, mind and spirit.

Diaphragmatic breathing, or an inhale that uses the diaphragm and abdominal muscles to fill the lungs more efficiently with oxygen, has been shown to increase parasympathetic activity (Gerritsen & Band, 2018) and increase feelings of relaxation. The autonomic nervous system and respiratory activity affect emotional states (Jerath et al., 2015).

The breath is a physiological process that when used consciously, can control cognitive and emotional states. Activities that foster a deep sense of mind body awareness like yoga,

meditation, and qi gong have been reported to have positive impacts on health, mental health and cognition (Gerritsen & Band, 2018). For thousands of years people have been practicing these contemplative acts with the goal of developing harmony between the mind, body, spirit and environment. A review of contemplative acts revealed that they reduce stress, negative affect, and increase well-being and self-efficacy (Gerritsen & Band, 2018). Meditation has been shown to reduce physiological stress markers such as heart rate, blood pressure, cortisol levels, and inflammatory bodies (Gerritsen & Band, 2018). Meditation is a commonly used intervention for treating stress, anxiety, depression, and some emotional disorders (Jerath et al., 2015). Body awareness is important in developing affective processing and a sense of self. Thus, activities that coordinate the body with the breath and foster body awareness can have positive effects on metacognition, cognitive enhancement, and emotional states (Gerritsen & Band, 2018).

The breath affects emotional states by triggering the autonomic nervous system. Slow, deep breaths trigger the parasympathetic nervous system and quick hyperventilations trigger the sympathetic nervous system (Jerath et al., 2015). When the breath is not being manipulated consciously, it can mirror our emotional states. A yawn of boredom, a sigh of exasperation, panting from excitement are ways our breath informs us of our emotional state (Boiten et al., 1994). The breath is a physiological function that affects every single other cellular process in the body and thus has significant effects on mental and emotional states.

Breath hold is also an ancient breathing technique used in pranayama, one of the limbs of yoga that focuses on breath control (Rana & Gopinath, 2021). Prana means ‘life energy’, or the breath, and yama means control (Rana & Gopinath, 2021). Prana is said to connect matter and energy to consciousness and the mind (Edwards, 2006). Conscious practice of the breath began

with spiritual associations (Edwards, 2006) because it connected our consciousness to our bodies and the earth.

Freediving has many similarities to mind-body exercises such as yoga and meditation in terms of conscious control of breathing and an intense mindfulness of body movements. The positive health, mental, and emotional effects coming from conscious movement of the body and lungs as seen in yoga and meditation can also be experienced from freediving.

On land, your breath unlocks your consciousness but, in the ocean, your breath unlocks flight. Our lungs' capacity to stretch and hold air allows us to change our buoyancy in the water. With scuba diving, a deep breath in floats you up while an exhale plummets you towards the ocean floor. It feels divine to be able to control your movements with your breath, without using arms and legs. Since the breath is so tied to the autonomic nervous system, it almost feels like controlling your body with your mind.

With freediving, your breath is your lifeline, your last tie to the terrestrial world. A reminder that you are a visitor in this aquatic realm. The intense focus on your breath and movement of your body forces one to be mindful. Knowing that you are playing a delicate game with death makes it an even more exhilarating experience and makes that one breath of air even more special.

However, freediving triggers the mammalian dive response which activates both the parasympathetic and sympathetic nervous system to conserve the last breath of oxygen from the surface. The parasympathetic nervous system slows down the heartbeat, but the sympathetic nervous system dilates blood vessels. This combined activation of the autonomic nervous system

contributes to the feeling of simultaneous heightened relaxation and alertness. This feeling is common in Nadi Shodhana pranayama, or a yogic alternate nostril breathing technique. In a study analyzing breathing techniques, researchers found that there was sympathetic activation in people who practiced right nostril breathing and parasympathetic activation in people who practiced left nostril breathing (Pal et al., 2014). When this pranayama is practiced, both the sympathetic and parasympathetic nervous system is activated in a manner that leaves the body and mind buzzing with calm energy.

Breath hold is also an ancient breathing technique called kumbhaka pranayama. A study measuring the effect of kumbhaka pranayama on heart rate variability showed that there was a decrease in RMSSD meaning participants had less heart rate variability after practicing kumbhaka (Riley et al., 2019). Studies on low usage of intermittent hypoxia, or when the body has lower than normal levels of oxygen, from a breath hold have reported to "reduce arterial hypertension, strengthen innate immune responses, reduce inflammation, reduce body weight, increase aerobic capacity, improve glucose tolerance, increase bone mineral density, enhance spatial learning and memory, rescue ischemia-induced memory impairment, reduce symptoms of depression, improve postischemic recovery of myocardial contractile function, increase respiratory capacity in chronic obstructive pulmonary disease" (Navarrete-Opazo & Mitchell, 2014). However, high use of hypoxia and severe hypoxic episodes are more likely to cause pathogenesis although positive effects have also been observed (Navarrete-Opazo & Mitchell, 2014).

Breath holding is one of the more extreme methods of breath control. It takes significant mental willpower to overcome the body's strongest response: to breathe. The carbon dioxide

buildup in the body begins as an uncomfortable urge to breathe but soon becomes an intense craving for air. The carbon dioxide buildup manifests itself as an existential fear: if this feeling persists, I will die. A single inhalation of carbon dioxide has been shown to elicit immediate panic symptoms (Griez et al., 1986).

When a breath hold is done consciously, and one overcomes the body's pressure to breathe for a brief period of time, the subsequent inhalation feels sublime. The simple act of suspending the breath becomes a mind-body exercise saturated in mindfulness. During a breath hold, the lack of oxygen entering the lungs is the only thing that one can focus on. The initial stillness of the lungs is like an all-consuming void of calm. The intense need to breathe seeps into any thought one might have during a breath hold. Then, the feeling of carbon dioxide buildup that triggers the throat and diaphragmatic convulsions dominate any sensory experience. Every single contraction feels like a wave. The only conscious thought that enters the mind is 'I need to take a breath' and 'no, I don't need to breathe at this moment, I can continue on for longer.' The mind is hyper focused on the simultaneous stillness and movement of the body during a breath hold. It has been thought that mindfulness increases willingness to tolerate uncomfortable emotions and sensations (Arch & Craske, 2006). When a breath hold is done consciously and mindfully, overcoming the anxiety-producing effects of carbon dioxide makes that next breath so rewarding.

The breath's intimate connection with the cycle of life and death has made it a central element in many religions and spiritual practices. Both the Ave Maria prayer common in Christianity and yoga mantras have been showed to slow the respiration rate to six breaths per minute. Studies have shown that this is the ideal respiration rate and has many positive effects on

cardiovascular and respiratory function (Bernardi et al., 2001). Perhaps the blissful feeling that comes with efficient usage of the heart and lungs through these religious rituals is what helps people experience spirituality.

Spirituality commonly involves a search for meaning in life, connection with others and the environment, and transcendence of the self that results in inner peace (Delgado, 2005). The word spirit is derived from the latin word spiritus, or breath (Edwards, 2006). The mind body disciplines centered around the breath such as yoga, meditation, and qi gong all have spiritual roots in which the breath links matter, life, mind, energy and consciousness (Edwards, 2006). Mindful focus on the breath sheds light on the most basic meaning to life: to live is to breathe.

The steady, cyclical nature of the breath also reflects the cyclical nature of life and death, of the seasons, of the ocean waves. We inhale what plants exhale. A breath of air is like a gift from the world that becomes a part of us. Every oxygen molecule in the wind is gifted by a fellow plant's hard photosynthetic work. That oxygen molecule gives us life, becomes part of our body. With every breath, we interact with our environment but when we become conscious of our breath, we feel a deep sense of connection with our environment, with the rest of life on our planet. The breath is the primary way that we interact with the world (Edwards, 2006), inviting the world into our bodies. This connection with the universe allows for transcendent experiences. My body is made up of the same matter that makes up the universe. I am the universe, and the universe is me.

Water

Beginnings

The first life on earth began in the depths of the ocean. The Archean Ocean had more active tectonic plates and hydrothermal vents (Baross & Hoffman, 1985). The heat, elements, gases, and inorganic compounds from the flowing magma in the hydrothermal vents interacted with ocean water to convert inorganic precursors into organic compounds that are the source of life (Baross & Hoffman, 1985). Today, the deep pelagic zone from 13,000 feet to 35,000 feet deep boasts the largest animal communities, the greatest number of individuals, and the most immense animal biodiversity on the planet (Nestor, 2015). Biodiversity in the depths of the ocean where light does not penetrate points to the origins of life in the deep ocean. Life evolved in the dark ocean and humans have had to adapt to living on land. Our genetic code was edited to best transition from life in the water to life on land. The rough draft of DNA was written in the ocean and then human DNA was tweaked slightly so that we could survive on land. All life on earth shares a collective history through water (France et al., 2003).

Although humans evolved on land, the evolution of our species was intertwined with water. Hominins, including *Homo sapiens,* left East Africa during the Upper Paleolithic age and followed coasts and major rivers in North Africa, Europe and South Asia (Oppenheimer, 2013). Ten thousand years ago, the continental melting of the ice caps caused a swell in the Bosphorous straight, Black Sea, Nile, Tigris, Euphrates, Indus, and Yellow rivers that spurred farming and human civilizations (France et al., 2003). The Aztecs built their capital city, Tenochtitlan, on Lake Texcoco with an immense and sophisticated canal system (France et al., 2003). Today,

human civilizations are still disproportionately more concentrated around bodies of water (Oppenheimer, 2013).

Every human life begins their journey in water. We spend nine months growing and floating freely in our mother's womb. Water gives us an embrace when our mothers can't. Many people describe free diving as a return to the womb. The planet is our mother, and the ocean is her womb. As one becomes fully immersed in water, it surrounds the whole body, a constantly shifting embrace (France et al., 2003). The deeper you swim, the more compressed you feel, like a cozy blanket wrapped snugly around you. Freediving as a return to the womb is not only metaphorical but also has physiological standing. Immersion of the head in water in utero inhibits respiration as seen in diving. Additionally, when prenatal hypoxic events occur due to drastic environmental change and uterine contractions limit oxygen supply, the fetus's heart rate slows, and there is a redistribution of blood flow as seen when diving. Perhaps freediving feels freeing, like a rebirth (France et al., 2003), because it transports us to a time in the past in which our breathing was suppressed: in the womb.

Feelings

Water has a powerful effect on people's emotions. I did not realize how living inland would influence my mood. On the sprawling Southern California freeways during the drive to San Diego for my freediving class, the unpredictable traffic forced me to notice the flashy billboards speckling every other building, the expansive concrete malls and dealerships that even cheerful, swaying palm trees could not masquerade. I was very aware that I was living in a concrete covered desert and as much fun as I had had in Claremont, it had never felt like home. An hour into the drive where the freeway veers west, I caught my first glimpse of the ocean. I

couldn't help but cry out in awe, excitement, love and longing. I tried to keep my eyes on the road, but the ocean's sparkling beauty drew my attention as if it had a gravitational pull. Now I felt like I was home.

Water evokes deep emotional responses because it brings many of us back to the pure childhood joy of splashing in puddles, jumping like a cannon ball into a pool, boogie boarding in the ocean waves, dancing in the rain (France et al., 2003). When I think of the ocean, I can hear the euphoric whooping as people run into the waves so clearly in my head because I have heard it so many times. Water makes people feel so alive that the mere sight of water makes people "find voice in exuberance" (France et al., 2003). The fluid nature of water makes it exciting. It can take the shape of one form one moment and then transform into something else the next moment. Waves are so hypnotic because they rise, curl, and then explode in blue and white foam and the next second, the wave is gone. All the molecules of water that were bound together in a moment of collective force by the wind are reabsorbed into the ocean, never to be together in the same arrangement again. Water is ungraspable, uncontainable and yet incredibly tangible. Water is not one thing and does not take a single form. Touching or being submerged in water is an intense sensory experience. The feeling of water on the skin feels new every single time. It is the adventure of the promise of a new experience that gives water the emotional power over us.

Water feels like a whole new experience, but it is also familiar to move around in a fluid. We move around most of our lives in a less dense fluid: air. Water and air are both fluid substances that make up our body and exist in our surroundings. Oxygen is needed to make energy that drives essential life processes and water makes up most of our body mass. Since we live on land, we are constantly surrounded by air. Goosebumps form on our arms when we feel

the cold breeze on our skin. The hot, humid air on summer days feels like a blanket weighing us down. Each breath brings the fluid we inhabit into our body. The oxygen from the air is used to build and repair our body. Water is a different fluid with higher density and pressure. It is harder to move through it, so all our movements are slow and fluid. It is the change and excitement of a new environment and a whole new set of sensory experiences that makes being submerged in water so exciting. But movement within a fluid also feels familiar because we exist in a fluid world. The ocean follows familiar patterns. Waves on the shore ebb and flow constantly. The ocean is like the breath. It moves in a consistent rhythm: in, out, in out with occasional interruptions. Waves, just like our breath, reflect the state the ocean is in. Larger waves that roar as they crash, an explosion of white foam can indicate volatile weather patterns. When waves lap slowly onto the shore, taking their time to cover the shore, the breeze is calm. Like the ocean, we let out a forceful sigh, or slow and deep breaths, or fast and shallow breaths when we are anxious. The fluidity and ever-changing nature of water is comforting because it reflects our transient emotional state.

Spirituality

For many, the feeling of being in nature whether it be on a mountain, a lake, by the ocean, or even being next to a big tree, is an overpowering sensation of awe and contentment. Nature's power and beauty evokes a spiritual or self-transcendent moment that can be fleeting or can lead to major life transformations (Naor & Mayseless, 2020). Like emotions, spirituality can be hard to define due to its intimate relationship to the individual experiencing it. However, spirituality commonly involves the individual's potential for a relationship with themselves, others, the transcendent, and nature (Naor & Mayseless, 2020).

Spirituality in relation to nature can best be understood by looking at indigenous perspectives. In indigenous Pacific Island worldviews, relationships are central and "at the core of what it means to be human is a shared life philosophy of balance, harmony and deep connectedness" (Hessler et al., 2018). A deep connection with oneself facilitates having and feeling deep connections with other beings on this planet.

Freediving is conducive to spiritual experiences because it provides a space for one to deeply examine themselves. To free dive, people must be aware of how they are feeling physically, emotionally, and cognitively. Pushing your body to the brink of death requires an intimate knowledge of your own capabilities at any given moment. Swimming in the deep ocean, away from safety, away from oxygen forces free divers to explore their limits which in turn fosters human fulfillment (France et al., 2003). Experiencing the duality of being on the edge of life and death, consciousness and unconsciousness elicits a heightened sense of self and mental control (Stranvad, 2018). Free divers practice visualizations and are mindfully aware of their body and environment on a dive. This mind-body focus and relaxation puts free divers into a meditative state where self-reflection is facilitated. Being in harmony with the self is conducive to being in harmony with other living beings and nature.

Being in harmony with nature begins with perceiving oneself as part of nature rather than opposing it and viewing nature and life within it as sentient and interrelated (Naor & Mayseless, 2020). When we can think of ourselves as just another being on this planet among others for which we have a deep empathy and respect for, we can view ourselves with the same empathy and respect. When one sees the world as deeply interconnected, we can appreciate our place in the universe and feel a deep sense of belonging (Naor & Mayseless, 2020).

Beyond seeing oneself as a part of nature, being in harmony with nature can provide a spiritual experience when one finds synchrony with nature: “In synchronicity there is something very spiritual, as in anything that lets you feel that your story is in sync with all the other stories in the world” (Naor& Mayseless, 2020). The ocean is a dynamic force, constantly changing and moving. It has many moods: one day it can be as still as glass and other days the same ocean rages wildly against the shore. Its fluidity makes it easy for humans to relate and see themselves as the ocean. Living life as a human comes with constant changes and shifts to fit a new environment. Seeing nature reflect the fluidity of life can be cathartic because it universalizes our experiences. This is a perspective taken on by indigenous people in the Pacific islands: “the ocean is a fact of life. One could say it is in our blood. Teresia Teaiwa is famously quoted for the line; ‘We sweat and cry salt water, so we know that the Ocean is really in our blood’...Our epistemologies and lived cultural praxis reinforces a simple fact; we are the people of the sea, and the ocean is in us (Hessler et al., 2018). When people free dive, they simultaneously lose themselves and become the ocean, or a sea creature making their home in the ocean. From this transcendence, they find themselves.

Freediving into the endless depths of the ocean and experiencing the ocean’s immensity can enable people to feel like their problems or identity are small and lead to realizations of a greater meaning or purpose to life. This allows for a perception of life where the collective consciousness supersedes the individual consciousness of the world (Naor & Mayseless, 2020). Feeling a deep sense of connection to all the fellow life and nature on this planet is a state of consciousness that allows for self-transcendence. Thinking, feeling, and acting beyond the

individual can be a powerful spiritual experience because it elicits a deep appreciation for the planet.

What it feels like to Freedive

On a crisp January morning, outfitted head to toe with a thick wetsuit, I step into the frigid waters of La Jolla Shores in San Diego. I am finishing the last part of my freediving training. The five millimeters of neoprene insulates me how I imagine a seal feels insulated with its fat. Soon after getting in the water, I clumsily begin finning, still getting used to the long freediving fins. My freediving buddy points to something behind me and I quickly look. A harbor seal sleekly swims towards us with its head above water looking at us and then quickly dives down and swims away. I promptly reevaluate feeling like a seal; I come nowhere near their gracefulness in the water but I my anticipation to practice diving into the blue San Diego water is still there. As I swim out to the buoy where we have set up the lines to dive along, I visualize what happens to my breath on a freedive.

Freediving straddles a razor thin line between feeling more alive than ever, and death. Pushing myself to get closer to a state that approaches death makes me feel more alive than ever. On a freedive, I am hyperaware of the limited oxygen from my last breath at the surface, that last inhale my only connection to the surface, to the sky, to land. The oxygen from the surface of the ocean, is like a familiar friend accompanying me on a new journey to a foreign place. The deeper I swim, the smaller my breath becomes, compressed by the pressure of the ocean. The further I become immersed in this new underwater world, I have less of the terrestrial world within me. The pressure forces me to surrender to the depths, compressing my last breath at the surface to the bottom of my lungs as if asking me to leave my worries from the surface at the surface. Where I am the visitor, receding into the depths of the ocean, so familiar, like coming back to a

place where I belong. Yet I am constantly reminded that I am a visitor by the CO2 buildup in my bloodstream.

Freediving is so simple, yet complex. Fundamentally, what free divers do is hold their breath and swim down to the depths of the ocean whether it be for food, sport, or recreation and then return to the surface. Let's say that for a one-minute dive, it takes thirty seconds to get down and thirty seconds to get back to the surface, but there is a lot to think about.

I am now at the dive site and as I float with my left hand on the orange buoy in my predive visualization, I take deep breaths that reach my belly and lower back. I think of every action I will take on my dive. Take deep breaths, relax every muscle in my body before I take my last, deepest breath. Take the snorkel out of my mouth, pinch my nose and equalize at the surface. Push the buoy behind me with my other hand. Duck dive by kicking my right leg straight to the sky as I use both my arms for an initial, strong, pull. Now I am facing the rope with my head pointed towards the bottom of the ocean. Equalize: keep my epiglottis closed, lower my soft palate. Push the air in my mouth with my tongue into my ears. Start with strong kicks at the surface to fight the greater positive buoyancy. Bent knees but kick from the hips. Equalize with every kick, every second. Keep my left arm that is not equalizing on my side. Equalize. Keep my neck straight, don't look at the bottom, just keep on looking at the rope ahead of me and the luminescent water behind it. Equalize. My kicks are less forceful, I have reached neural buoyancy at ten meters. Equalize. I see the end of the rope, time to turn around.

I reach towards the surface, yank the rope and summersault forward. Now the crown of my head is pointing towards the surface. A few strong kicks propel me up. No need to equalize

anymore. I start to feel the carbon dioxide in my body, begging me to breathe, but I am only focused on my kicks, my straight neck. My body tells me I need oxygen but in reality, I need to release the carbon dioxide coursing through my body. At first, I feel contractions at the back of my throat as if the muscles that are so accustomed to the steady inhale and exhale are asking me to resume the steady rhythm of breath. Then I feel the steady beat in my chest like warning drums, my body telling me I have held my breath for half the time I am capable of before blacking out. The faint contractions in my throat and chest slowly grow until they are unavoidable and all consuming. Now, I can't differentiate between my throat, chest, and diaphragm contracting. I just feel my body moving in a wave as if to recreate the comforting and ever-present movement of breath even if I can't inhale oxygen at the moment. The contractions remind me that I am a visitor in this aquatic world, my explorations limited by my breath.

As I kick, I tell myself I am okay. My body does not need oxygen at this moment. I am okay. I am okay. Don't look up, stay in the moment and look ahead, the surface is close. I am okay. I feel myself being propelled to the surface as the pressure decreases. The ocean is returning me to the surface. I am almost there. My visit has almost come to an end. The water transforms from a deep blue to a translucent blue, clear rays of light piercing the surface like lightning bolts. I raise my left arm above me, and I can suddenly feel the bright orange buoy with my fingertips. I can finally release the breath I have held for the past minute taking my recovery breaths. I inhale deeply and exhale quickly so that I can inhale more oxygen as soon as possible. I smile, say 'I'm okay' and flash the 'I'm okay' diving signal: my thumb and pointer finger together. With my hands on the orange buoy and my smile frozen in place, I bask in the fuzzy

yet clear feeling that envelops me like the radiating heat surrounding a fire that warms the space around it. It has only been a minute.

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