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What Can SCUBA Do For You?

A phenomenological exploration of the haptic sense in SCUBA diving for people with a disability.

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Abstract

Water provides a zero gravity environment, allowing people with limited motion to be granted freedom, to gain a sense of equality with other people in the water. Self-contained underwater breathing apparatus (SCUBA) diving has been used to help individuals after they have acquired a disability.

Background: The study tries to understand the participant's perception of their lived experience, which can provide an understanding to why SCUBA diving has become a popular activity and in some cases, a method of rehabilitation for people with a disability. With this question, the study aims to find the internal phenomena, and interpret it according to the data material provided by the participants. **Purpose:** The thesis aims to fill a lacuna in research surrounding SCUBA diving from the lived experiences or hermeneutic phenomenological perspective of the participants, using the haptic experience as its theoretical framework. The thesis will investigate how a person with a disability experience SCUBA diving, and what do these experiences mean in social participation? **Method:** Using semi-structured interviews and field observations, the study examines how four divers with disabilities from a disability SCUBA club, feel that participating in SCUBA diving has impacted their lives on an emotional and social level. The transcripts from the interviews will be analysed using thematic data analysis, along with the observations, providing support for the interviews, thus triangulating the intersections between each to analyse the data material gathered. **Implications:** The impact of the study will be understanding how SCUBA diving is experienced, thus providing a deeper understanding of the lifeworld of SCUBA divers with a disability.

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Introduction

Water provides a zero gravity environment, which according to Elliot and Kaufman (2014) has allowed people with limited motion to experience personal freedom, and to gain a sense of equality with other people in the water. Self-contained underwater breathing apparatus (SCUBA) diving has become a popular activity for people with disabilities.

Seventy percent of the world is under water, allowing endless amounts of underwater discoveries and experiences to be made (Graver, 2010). This is why SCUBA diving is one of the fastest growing adventure sports for the last thirty years. One of the world's leading educational companies of scuba diving, Professional Association of Diving Instructors (PADI) (2014), reports that in 2013 there were over 900,000 courses conducted worldwide. Of those courses, sixty-five percent of participants were male, with a combined average age of 29 years (which hasn't changed since 2008). Within the UK, Sports England conducts an annual survey called the Active People Survey (APS). APS7 (2013) shows similarities between PADI's report and the number of participants in SCUBA diving within the UK. The APS7 (2013) showed that over 37,000 people take part in SCUBA diving at least once a month.

In this chapter the researcher will introduce a background into disability and how disability has been viewed in society throughout history. This is because there is a social element to this thesis, and society's understanding and acceptance of disability plays a role in how SCUBA diving is seen by people with and without a disability. The chapter will first look into disability, then SCUBA diving, and conclude with SCUBA diving for people with a disability.

Disability;

When speaking about disabilities this study will use the definition used by the United Kingdom (UK) to describe disability in the Equality Act (2010) (HM Gov., 2010). The Equality Act (2010) (HM Gov., 2010) acknowledges that you have a disability if “*you have a physical or mental impairment that has a ‘substantial’ and ‘long-term’ negative effect on your ability to do normal daily activities*” (p.4). According to the Oxford

dictionary (Stevenson, 2010), disability is defined as “*a person having a physical or mental condition that limits their movements, senses, or activities*” (p.497).

There have been records of people with disabilities dating back centuries (Albrecht, 2005), but what were the origins of disabilities? Crosetto, Garcha, and Horan (2009) indicates that a person could have a disability through three means; acquired, congenital, or genetic. Congenital disabilities usually become present at birth or shortly after, it is also the preferred term for ‘birth defect’ (Smart, 2011). In many situations, the causes of congenital disabilities are unknown (Albrecht, 2005). Genetic, or inherited disabilities appear over time (Goldstein and Reynolds, 2011), an example of a genetic disability would be cystic fibrosis (Kerem, et al. 1989.) Lastly is acquired. A person could acquire a disability through injury or illness (Gillberg, and O'Brien, 2000). Examples of acquired disabilities would be spinal cord injuries (SCI), cerebral palsy (CP), and amputation. There has been documented proof of SCI, CP, and amputations existing for centuries (Albrecht, 2005).

Physical activity for people with disabilities was brought to the foreground by Doctor Ludwig Guttmann, who in 1944 started work at Stoke Mandeville hospital (Goodman, 1986). Guttmann had the idea to include physical activity as part of physical therapy and rehabilitation for injured war veterans at the end of World War 2 (Goodman, 1986). Guttmann developed the idea of including physical activity, after an experience he had, where he witnessed an individual who had acquired a SCI, a full body cast was applied to the individual, who was then placed in isolation, away from other patients. The individual died within five weeks of acquiring the impairment (Goodman, 1986). Guttmann’s main goal was to retrain the individuals, so they could once again be useful within society (Steadward, Watkinson, and Wheeler, 2003). Thanks to the positive work of Guttmann, the use of rehabilitation through sport, the promotion of competitive sport for people with disabilities was noticed, and in turn, the Paralympic movement (Gold and Gold, 2007; McCann, 1996).

Rehabilitation has not always been viewed by the medical community as positive form of treatment. The notion of re-training according to Stiker (1999) implies returning to a point or situation that existed for the able bodied. Stiker (1999) continues that re-training is a reference to the “norm”. It is the idea of the norm, and ableism which Wickman (2007)

feels slowed the developed of sports and activities for people with disabilities. To explain further Wickman's (2007) idea, ableism can be described in two ways; intentional or unintentional (Albrecht, 2005). In sport, an intentional form of ableism would be the assumption that people with a physical disability (such as Oscar Pistorius) should not compete against "normal" athletes. However, an unintentional form of ableism would be to assume that able bodied athletes such as the Olympics are superior to athletes in the Paralympics. Ableism is defined by Campbell (2009) as "*a network of beliefs, processes and practices that produces a particular kind of self and body (the corporeal standard) that is projected as the perfect species, typical and therefore essential and fully human*" (p.5.). Ableism (intentional) is a factor to why the first physical activity for people with disabilities were aimed at wheelchair users; because from a distance, the individual in a wheelchair would appear "normal" (Campbell, 2009).

Although this thesis is not investigating the experiences of individuals as they participate in rehabilitation, the thesis does support the idea of rehabilitation from Guttmann's perspective, seeing rehabilitation as a positive method to assist people with a disability in sport and physical activity. With support from Guttmann, sport for people with disabilities, or adapted physical activity (APA), grew in popularity. In 1990 the first definition describing APA was produced by Doll-Tepper, Dahms, Doll, Von Selzam, (1990), stating that APA "*refers to movement, physical activity, and sport in which special emphasis is placed on the interests and capabilities of individuals with limiting conditions*" (preface).

SCUBA Diving;

SCUBA diving, or the concept of diving, has been around for centuries. Even Alexander the Great was believed to be a combat diver in his day (Kelly, 2014). Diving and its technology continued to grow and develop up to the early 1820's. It is at this point when we first see an appearance of the divers helmet (still an image associated with diving today). Yet the most significant development to happen to recreation diving came from Jacques Cousteau. In 1943 Jacques Cousteau and French engineer Emili Gagnan successfully built and tested a valve that would revolutionise the world of SCUBA diving, and opening up the underwater world to people of all abilities (Bryon, 2014). This valve is still used today in every SCUBA diving regulator.

Through the development of the Cousteau-Gagnan valve diving became increasingly popular, as shown in the above statistics. A reason for its popularity could be one of many, but PADI (PADI, 2010) have tried to sum it up using the following reasons. Diving is one of few sports which not only allows you to explore and have new adventures daily, but also enables the diver to experience new cultures, and exciting social events, and lifestyle (Carin-Levy and Jones, 2006). For many, the social aspect of a sport is the key feature, it's what draws the participants to the sport in the first place (Wu and Williams, 2001). As the popularity of diving grew, many SCUBA educational organisations began to surface. In 1966 PADI (Dowding, 2003) was founded, and quickly became one of the leading organisations internationally for teaching individuals (who were the appropriate age and had adequate finances) to SCUBA dive. Although PADI does not have a specific disability course, it does endorse training through disability specific SCUBA organisations.

There are two disability specific SCUBA organisations; Handicapped SCUBA Association (HSA) and the International Association of Handicapped Divers (IAHD). The HSA was founded in 1981 (HSA, 2012) by Jim Gatacre who he himself has a disability, and because of his disability, he has dedicated his career to assisting others to enjoy the underwater world. Through the founders (Jim Gatacre) own experience, he and the HSA developed three levels of certification which allows all individuals to succeed within their own ability. The IAHD was the latest of the three organisations founded. It was founded by a small group of individuals in 1993 with the aim of promoting, developing, and conducting training for people with disabilities (IAHD, 2005).

SCUBA Diving for People with Disabilities;

People with all disabilities mentioned have learnt how to SCUBA dive, and according to Chamalian (2001), his opinion is that SCUBA diving can be just as practical for people with disabilities as any other sport. SCUBA diving provides the people mentioned above with a way for them to leave their chair, at least momentarily, and participate in an activity that enables them to appear equal underwater (Human Kinetics, 2010).

SCUBA diving was traditionally seen as an exclusive sport, not open to people with disabilities, yet, like most situations, the opinion changed. In Winnick's (2010) opinion,

SCUBA diving has become a popular activity for people with disabilities, which, according to Chamalian (2001) could be as a result of enhanced mobility, and reduced gravity. SCUBA diving for people with disabilities has received media attention over the last decade, where people have tried to understand the reason for people's participation in SCUBA for several years. In 1997, Bradbeer, a journalist for a newspaper in Canada, interviewed people who were trying diving for the first time, and identified that couples (one person with, one without a disability) enjoy SCUBA diving as it allows them to engage in an activity equally.

In recent years, SCUBA diving has started to be explored as a therapeutic option for both injured war veterans returning with post-traumatic stress disorder (PTSD), spinal cord injury (SCI), and amputations (Elliot and Kaufman, 2014), as well as non-military personnel who have acquired the same disabilities. Nevertheless, people with disabilities, not just war veterans, have been SCUBA diving at least since the 1980's when the HSA was founded.

Prescribe SCUBA Diving?

There have been many papers surrounding the negative medical aspect of diving. Studies on decompression illness (Ljubkovic et al., 2011; Madden et al., 2014; Mollenlokken et al., 2011), barotrauma (Jeong, Kim, Cho, and Kim, 2012; Pennell, 2014), and general medical problems (Barbosa et al., 2010; Cordes et al., 2000; Lemaitre, Tourny-Chollet, and Lemouton, 2006; Slosman et al., 2004) associated with diving. However, according to Cheng and Diamond (2005), background literature on divers with disabilities is very scarce, as well as the benefits of diving for people with disabilities (Carin-Levy and Jones, 2006). There is even less information surrounding SCUBA diving from the experience of the diver with a disability themselves, who are going through the process of learning a new skill or activity after acquiring an injury.

People who acquired a SCI are introduced to correct methods on how to use a wheelchair, enabling them to maintain their independence and mobility (Field-Fote, 2009). A negative result of using a wheelchair can be the pain generated in and around the shoulder joint caused by overuse. Kemp et al., (2011) reports that forty percent of individuals with a SCI report pain within the first twenty years of acquiring their injury. Shoulder pain is

common with people who use wheelchairs (Frontera, 2007), and effects both athletes and non-athletes evenly (Finley et al., 2004). In athletes, Bernardi et al., (2003) reported that fifty-six percent of all bodily pain originated from the shoulder, which is not surprising, as the shoulder joint was never meant as a means of propulsion (Foglia and Musarra, 2007).

There are many different activities offered to people who have acquired a disability during their stay in rehabilitation, and people who have acquired an amputation/s are no different. People with an amputation can choose to take part in activities with or without their prosthesis. A study by Dijkstra, Geertzen, Stewart, and Van der Schans (2002) found the sixty-five percent of people with an amputation felt stump pain, and claimed it could be a result of an incorrectly fitted prosthesis.

Swimming is a physical activity which can be conducted by people with and without a disability, and is a vital skill to have when SCUBA diving. Sport England in 2001, conducted a survey only with adults with disabilities. The results showed that, excluded walking, swimming was the most popular activity. This data is supported by the APS7 (2013) which showed swimming as the popular activity. Cole and Becker (2004) believe that the popularity of swimming for people with disabilities is due to the therapeutic benefits of the water.

In 2010 Winnick wrote that SCUBA diving has become a popular activity for people with disabilities, yet in Winnick's previous edition in 2005, there was no mention of SCUBA diving. This provides the study with a window of time to when SCUBA diving's popularity for people with disabilities increased. There have been reports of individuals with a wide variety of disabilities who have been taught how to SCUBA dive (more on this later), yet this study will focus on individuals with a SCI or an amputation because they are the second highest disability group in the UK (HM Gov., 2012).

The thesis target population of people with SCI and amputees have the possibility of experience pain as the result of participating in physical activity. SCUBA diving is offered as a weightless, zero gravity alternative to other sports (Kaplin and Becker, 2011), and as a result, has become a popular activity among people with disabilities (Elliot and Kaufman, 2014).

The main source of propulsion in SCUBA diving are the legs (PADI, 2010). If you have a diver with a SCI or lower limb amputation, the ability for them to propel themselves underwater in the traditional manner becomes limited. Studies show that in a situation where the traditional method of underwater propulsion is unavailable, individuals have evolved and developed their own swimming style (Daly and Vanlandewijck, 1999). In SCUBA diving, the preferred stroke for people who no longer have use of their lower limbs is breaststroke (Elliott and Kaufman, 2014), and overtime, many adaptations of breaststroke has been adapted to fulfil individual needs (Prins, 1988). A reason for the use of breaststroke is, that unlike the other three strokes, the divers arms are low, and would (if swimming in a pool) remain underwater, providing less force on the divers' rotator cuff (Tovin, 2006). A study by Silva, Bilzon, Duarte, Gorla, and Vital (2013) suggested that breaststroke could have a negative physiological effect on the lumbar region, caused by overuse. However, this is currently unproven.

If a diver has limited use of their arms (as a result of CP), another alternative is available with the use of a diver propelled vehicle (DPV) (Cheng and Diamond, 2005). DPVs come in all shapes and sizes, from handheld ones, to ones which can be attached to the tank. DPVs allow the diver to participate in the underwater world, without the pressure of having to swim (Elliott and Kaufman, 2014, PADI, 2010).

There is numerous water based sports which an individual with an amputation (similar to that of a person with a SCI) can participate in, one is SCUBA diving. Lusardi, Jorge, and Nielsen (2012) state that diving is an excellent recreational activity, and can include individuals with both upper and lower extremity amputation. Individuals can choose to SCUBA dive with or without their prosthesis, and according to Brody and Geigle (2009) most amputees with either upper or lower amputations swim without their prosthesis. The lack of a prosthesis could be of great benefit for the individuals who feel pain through the use of their prosthetic (Carroll and Edelstein, 2006).

Literature Review

A search was conducted in March 2015 using the platforms of Medline, Embase, Cinahl, and SPORTDiscuss. The keywords included for the search were “SCUBA”, “Disabled”, and “Rehabilitation”. A follow up search was conducted in January 2016 including the search parameter of haptic (more on haptic later). One additional article was found, providing the study with five articles which were considered applicable. Previous studies consisted of two quantitative studies which looked in depth at the medical issues and considerations needed for people with disabilities in regards to participation in SCUBA diving (Cheng and Diamond, 2005; Kaplin and Becker, 2011). Three articles used a qualitative design using questionnaires and semi structured interviews to understand reasons for participation in SCUBA (Yarwasky and Furst, 1996; Carin-Levy and Jones, 2006), and to research in depth regarding the somatic senses of an experience (Allen-Collinson and Hockey, 2010). All studies included both male and female participants, ranging in age from fourteen years upward.

Cheng and Diamond (2005) details how precautions can be made for individuals with certain medical issues. Its purpose was to look into medical issues relevant to people with disabilities. It includes two case studies involving females in their teens. Although the study does not look into detail with physical disabilities, the authors do show that it is possible for anyone to dive, as long as they have been medically cleared, and the appropriate adaptations have been made. This study investigated aspects of SCUBA diving which could result in an injury for the participant, for example an inner ear barotrauma, and decompression sickness. The study then continued to analyse these medical issues. However, Cheng and Diamond (2005) support people to SCUBA diving, and state it is a “*great source of self-discovery*” (p.374). The final conclusion of the report is that more research is needed.

Yarwasky and Furst (1996) is a significant piece of research, because it shows that people with and without a disability can enjoy the sport of SCUBA diving for the same reasons. The purpose of Yarwasky and Furst’s (1996) study was to investigate what motivates athletes to participate in sport, they used questionnaires and distributed them to sixteen individuals, eight with and eight without a disability. This study highlights an equality between the two groups of participants, despite their physical differences. Although this

study looked at the motivation to why people with and without disabilities choose to participate in SCUBA diving, none of the questions investigated why they chose diving in first place. Yarwasky and Furst's (1996) study provides this thesis with background knowledge into the motivation of participation, which provides an element of the lived experiences of those who dive and have a disability. The key results were that people participate in SCUBA diving for how it made them feel, and there were further similarities between the two groups behind their reasons for participation.

The study by Carin-Levy and Jones (2006) pertains the closest to the proposed research. Carin-Levy and Jones (2006) used a phenomenological approach to investigate the psychosocial benefits of SCUBA diving for people who have acquired a physical disability. This study was only a pilot study using in depth semi structured interviews. It included three participants (two with SCI and one with an amputation), yet it shows that although the literature in this field is scarce, there is a need for it, which is supported by Carin-Levy and Jones (2006) who state that future studies are needed into the physical, social, and psychological aspects of SCUBA diving for people with a disability. By this study being a pilot study, it shows that there is a need for more studies on this topic.

In 2011, the doctors at John Hopkins University conducted a pilot study into the effects of diving, and found some interesting results. Participants were ten war veterans with SCI and amputations. In a four-day period participants showed a reduction in muscle spasticity, an increase in sensory sensation through the use of the light touch test, and pinprick test (Kaplin and Becker, 2011). The study had many variables which could affect the validity of the results, and as such, future studies need to focus on eliminating independent variables, to see if there is a SCUBA related pathway, which could restore neurological and psychological functions (Kaplin and Becker, 2011). Elliott and Kaufman (2014), states there is a need for researchers to explore scuba as a therapeutic method to manage pain. Several divers with disabilities reported significant reductions in their pain levels after multiple days of diving, however no data has yet been recorded, and no one knows how long the sensations last (Elliot and Kaufman, 2014). The study from John Hopkins (Kaplin and Becker, 2011) demonstrates that SCUBA diving is a positive method of rehabilitation. But are the results reliable? Can SCUBA diving really assist in rehabilitating people with a disability?

Allen-Collinson and Hockey (2010) is currently the only (as of March 2016) article which looks into the haptic (the sense of touch, for example when your hand touches the sand, how does the sand feel to you) and somatic sense of touch whilst SCUBA diving. The study included only one SCUBA diver and two distance runners. Unfortunately for the current study, the SCUBA diver was without a disability decreasing its relevance to this study. Allen-Collinson and Hockey's (2010) study provides only the second paper to look at SCUBA diving from a phenomenological framework, and the first to look at haptic. The study provided previously unseen insight surrounding the experiences of touch, temperature, clothing, and the general underwater world of SCUBA diving, as well as the idea of pressure on the body. The final conclusion from the article is how Allen-Collinson and Hockey (2010) advocates for more phenomenologically inspired research which can generate fresh research insights into the lived experiences of the sporting body.

From three of the five studies, a theme of participation was highlighted. Yarwasky and Furst (1996) discovered that people with disabilities participate in SCUBA diving for the same reason as able bodied people; fun, how it makes the participants feel, and the general excitement. Carin-Levy and Jones (2006) continues on from Yarwasky and Furst's (1996) research and showed that psychologically, people participate in SCUBA diving for the freedom from their impairment, social and optimal experiences, and because of the enhanced self-concept. Kaplin and Becker (2011) showed that participating in SCUBA diving had a positive effect on each individual in the study.

The literature review highlighted that all studies focused mainly on people with spinal cord injuries and amputations, with only one article including people with cerebral palsy. The lack of research in alternative disabilities is a clear lacuna in current literature. It is known that other disabilities participate in SCUBA diving, the HSA (2012) indicate numerous disabilities which has been overlooked in previous studies. However, for this study, the same population will be targeted, as SCI and amputation is a common acquired injury in war veterans (Cozza, Goldenberg, and Ursano, 2014), and is the second highest disability group in the UK (HM Gov., 2012), yet if other disability populations volunteer, their participation will be encouraged.

There is also a lack of current research looking into the way people with disabilities participate in SCUBA, and how it is experienced, and what were their motivations for choosing SCUBA diving from all the possible activities.

After careful scrutiny of the literature, it became clear that there is a lacuna in the research regarding a phenomenological approach to understanding SCUBA diving through the experiences of the divers, and how this relates to different senses. At least four documents wrote that future research is needed surrounding SCUBA diving, both with pain management (Elliot and Kaufman, 2014), and the benefits SCUBA diving have on a person with a disability (Carin-Levy and Jones, 2006), using phenomenological perspectives to gain understanding of the matter (Allen-Collinson and Hockey, 2010), and that background literature on divers with disabilities is very uncommon (Cheng and Diamond, 2005). This study aims to try and fill this hole, and attempt to bridge the gap between rehabilitation and possible benefits.

Purpose of Study;

The purpose of the study is to investigate what it is like for people with a SCI or amputation to learn SCUBA diving, and if the information from their lived experience can illustrate possible social benefits to diving. However, this study should not be seen as a method to get people with disabilities involved in SCUBA diving. Even if there are benefits, individuals with disabilities may still not join in, because of the participants' preconceptions.

Research Questions

After exploring and reviewing the current literature surrounding the area of study, the study has been able to identify two main focal points, which are:

1. How does a person with a disability experience SCUBA diving?
2. What do these experiences mean in social participation?

The first question looks into the experiences of people with disabilities whilst SCUBA diving. The question also tries to understand the participant's perception of their own lived experience which can provide an understanding to if SCUBA diving was an appropriate activity for the individuals. With this question, the study means to find the internal phenomena, and interpret it according to the data material provided by the participants. The second question is a follow on from the first, and looks into different reasons for participation, and see how their experiences have been influenced.

Conceptual Framework

This chapter describes a topic which underpins this thesis. According to Anfara and Mertz (2014), a framework affects all areas and aspects of qualitative research. The framework provides a lens for seeing and understanding what has to be in the design and conduct of the study. Nevertheless, there is no clear guideline or role surrounding the inclusion of a conceptual framework. This lack of clarity is noted in Ravitch and Riggan (2016) who state that a conceptual framework has often been referred to in at least three different ways; 1) Visual representation of the study, usually displayed in a figure, 2) Treating conceptual and theoretical framework as one of the same, and 3) linking all the different elements of research. This study will follow and expand on the third view highlighted in Ravitch and Riggan (2016). This study aims to use the conceptual framework to help make sense of and discuss the results from the analysis of the data material in regards to the experiences of SCUBA divers with disabilities. The framework will also show why the methods proposed are both appropriate and rigorous.

This chapter will bring different arguments to the front, and will demonstrate why these ideas and theories are relevant to the thesis and the studying of SCUBA diving.

Philosophy vs Methodology;

Phenomenology as a Philosophy; Van Manen (1990) describes phenomenology in a broad sense of being a philosophy, a “*theory of the unique*” (p.7). Phenomenology and hermeneutics according to Van Manen (1990) are human science approaches rooted in philosophy. Reinach (1951) claimed that the concept of phenomenology does not define a philosophical system, instead, Reinach (1951) wrote that it better describes a method of philosophy. A reason for this argument is because unlike other approaches, phenomenology aims to uncover the essence of things (Müller, 2011). Yet when you look for a method of phenomenology, you discover that the method behind phenomenology research is that there simply is no clear method (Gadamer, 1975; Rorty, 1979; Van Manen, 1990).

Phenomenology enables a person to look into the experiences of others by utilising the first-person perspective. The first-person perspective according to Standal (2014) is a feature which distinguishes phenomenology from third-person sciences, which eliminate

the influence of human subjectivity. The first-person perspective is crucial when trying to understand a phenomenon, because according to Zahavi (2003) it is “*the appearance of something for someone*” (p.17), thereby providing an alternative to the objective accounts of third-person sciences. Husserl and Merleau-Ponty became associated with the phenomenology of perception (Moran and Embree, 2004), an idea which has had a positive impact on people with disability, as it allows people to hear the person with a disabilities own perception of their life, and their experiences. Carel (2012) states that phenomenology is ideal for describing the experience of illness, or rehabilitation, through the use of analysing the experience of people actually living with the ailment. Smith and Hutchinson (2004) adds to the previous point by noting, that by understanding illness and disability, it can reshape our views on embodiment. Phenomenology allows researchers and doctors to learn that everyone is an individual, so even if two people have the same classification of illness or disability, they will each experience this situation differently.

Above mentioned how phenomenology as a philosophical movement can help to look in to the experiences of people with disabilities, next we will look at phenomenology has a method, which can be used to research these experiences.

Phenomenology as a Methodology; Phenomenology (as previously mentioned) allows the researcher to describe lived experience, it is with the use of the hermeneutic method which enables the researcher to interpret the “*texts of life*” (Van Manen, 1990, p.4). By including the hermeneutical aspect, it edifies the participant’s personal insight (Rorty, 1979), because hermeneutic phenomenology refers to the philosophy of the personal and the individual.

As already mentioned, procedurally, there is no clear method for phenomenology (Gadamer, 1975; Rorty, 1979; Van Manen, 1990), which can then create problems, and researchers could be conducting phenomenological research without fully understanding what that means (Kerry and Armour, 2000; Standal and Engelsrud, 2013). Müller (2011) proposes a reason for problems with phenomenology as a method, is that it is not just one clear method, but can be found in various forms. But one thing that researchers seem to agree upon, is it that for phenomenological research to be considered phenomenological, there needs to some level of philosophy found within the theoretical framework of the study (Kerry and Armour, 2000; Müller (2011). When it comes to phenomenology as a

method, it is good to look at what it can do, but also what it cannot. This way, you as a researcher know if you are using the right method. Van Manen (1990) identifies that phenomenological research is not designed to solve problems, it is there to understand them. It is also important to note that you cannot generalise with phenomenology, as the experience is the participants own, and as previously mentioned, their life world is different and unique to them.

Phenomenology consists of different elements (embodiment, lifeworld, and the four existential themes) which were developed by philosophers. Over time these concepts have been brought into phenomenology and incorporated into the empirical research practice. Phenomenology as a philosophy has the ability to provide insight into the foundational aspects of SCUBA diving for people with disabilities.

When trying to identify a difference between phenomenology as a philosophy and a methodology, you begin to see similarities between the two. So to summarise these differences; phenomenology as a philosophy aims to uncover a hidden essence, whereas as a methodology, phenomenology aims to interpret the text of life. As a philosophy you are looking at the first person perspective in order to understand the phenomena. You ask people to explain their perception of their own life, understanding and accepting that everyone is an individual. But as a methodology, you focus on what phenomenology can do, you look at *how* is this experienced, instead of *why* is this experienced. By using the three concepts of phenomenological philosophies of first-person perspective, embodiment and lifeworld (more on the last two later) identified in Standal (2014) creates the starting point from when phenomenology is a philosophy to phenomenology as a methodology, because the experience of the first-person highlights how different the experience is from the perspective of the researcher who has not shared these experiences.

Lifeworld;

Over time, modern philosophy became concerned with accommodating natural science. It was not until Husserl began his own account of experiences, and the consciousness, where it started to transform into the human science (Moran and Embree, 2004). Husserl's main philosophical concept for phenomenology derived in his works written in the 1930's; *Lebenswelt* or lifeworld. The lifeworld is a concept that captures the world in

which mankind live (Luft, 2011). The lifeworld then looks in depth into the lived experience of a person, through the process of exploration into the structure of the human lifeworld. Husserl (1970) describes the lifeworld as the world of immediate experience, a world which is already there that is experienced in a natural (natural in Husserl's mind is original, and before critical and theoretical reflection) primitive approach. Husserl continues to make a critical distinction between the historical theoretical attitude of life (derived from the Greeks) and our natural pre-theoretical attitude where ultimately all theorising is derived (Van Manan, 1990). Historically, mankind like to discover and wonder why things are the way they are, gaining new experiences, and constantly expanding our lifeworld, and our sense of wonder. Wonder, according to Merleau-Ponty (1962) is a demand for awareness or attentiveness which helps us to seize the meaning of life and the world.

Investigation of the human experience is part of what makes phenomenology a human science. For example, the experiences of a child will have fashioned a different lifeworld than that of the experiences of an adult (Schutz and Luckmann, 1973). An adult with a disability will have different experiences producing a different lifeworld than that of an adult without disabilities. The whole idea of lifeworld is a key factor to why phenomenology is an efficient method when studying the experiences of people with disabilities (Diedrich, 2002), because as described by Murphy (1987) "*disability is not simply a physical affair for us; it is our ontology, a condition of our being in the world*" (p.90).

Phenomenological studies often aim to discover the essence of the lived human experience surrounding a specific phenomenon. Phenomenological research is a systematic strategy which is designed to uncover, identify, and try to gain an understanding of the 'essence' of human experiences (Creswell, 2009), but what is essence? Essence is a Greek word meaning "*the inner essential nature of a thing, the true being of a thing*" (Van Manen, 1990, p.177). Husserl's works of 1913/82 describes essence as a "whatness" of something, instead of a "thatness". Over time, phenomenologists have developed Husserl's concept of essence further, claiming that there is a fundamental essence, and an empirical essence (Creswell, 2009). An example of these types of essences are; there is an empirical essence of actual SCUBA divers, however there is a basic essence of a SCUBA diver, an essence which every SCUBA

diver is drawn towards. An essence is what makes us, us, and without it, we would not be who we are, for example, a Smurf is not a Smurf because it is blue, it would still be a Smurf if it was yellow. So what makes a Smurf a Smurf? Essence is a structural meaning that highlights characteristics, which in turn without the phenomena would not exist (Dahlberg, 2006). Husserl describes how we as researchers must lay out the essences and see how we can gain an empirical understanding from the essence.

According to Van Manen (1990), to conduct hermeneutic phenomenology is to “*attempt to accomplish the impossible*” (p18) by constructing an interpretation of a person’s lifeworld, whilst accepting that a full understanding is unattainable, encouraging researchers to pursue studies with increased vigour. It is through the collection of the lived experience which enables phenomenology and this study to describe the experience of loss of mobility (Toombs, 1995) or SCUBA diving for people with an impairment, and identify the relationship between a person’s body and world through the phenomenological notion of the lived body.

Four Existentials;

In accordance with Van Manen (1990), there are four fundamental existential themes which infiltrates the lifeworld’s of all human beings. These existential themes are; *lived space* (spatiality), *lived human relation* (communality), *lived body* (corporeality), and *lived time* (temporality), and can be used as a supportive guide during the reflection process of research. The four existentials are dimensions of the lifeworld, and as so, belong to the lifeworld. The use of the four themes or existentials (as Van Manen describes them) provide support to the researcher, enabling them to describe and interpret the mass complexity of the lifeworld. These existentials are grounded within every human beings’ lifeworld regardless of their history, social situation, or cultural background (Van Manen, 1990).

Lived space; the idea of lived space is pre verbal, and something which in our everyday lives, we generally do not reflect upon. It is, for instance the feeling of being free whilst outside, or feeling small when in a big building, and the sense of feeling safe when in our own home (Jacobson, 2009). Like all things, our sense of space or home changes, but even more so for an individual living with a degenerate illness. Toombs (1995) describes

how her office decorated with an aesthetically pleasing table and book shelves was once a space where she could sit and study. The same location later became a place of difficulty and stress, as Toombs (1995) had to manoeuvre her wheelchair around the obstacles. Merleau-Ponty identified an idea previously mentioned by Husserl, which is that the lived space rooted in the lived body, and cannot be understood independently (Carr and Cheung, 2012).

Lived human relation; or the lived other refers to our experiences and intersubjective relations with people preceding forming opinions of people and the forming a relationship to others who we let into our interpersonal space (Van Manen, 1990). Interpersonal space could refer to people who are physically present within our space, or in today's world, indirectly present via the internet on social media. An individual will learn about themselves through the relations formed with others. These relations can result in a deeper understanding, and purpose in their own life (Adamshick, 2010). The lived human relation as mentioned earlier relates to a philosophical concept called intersubjectivity, and from a human science stand point, the interest is in intersubjectivity as an embodied relation between humans (Overgaard, 2006), which is why the lived human relations and intersubjectivity intertwine. Standal and Rugseth (2016) claim that "...intersubjectivity is not derived in the sense that we first exist as individual subjects who subsequently form relations with other subjects through reflection. Rather, we pre-reflectively exist as subjects in relation to other subjectivities" (p.36), meaning the person who is the experiencing subject (participants in SCUBA diving) cannot be detached from the field of SCUBA diving (because that is the common field) (Zahavi, 2001).

Returning the phenomenology as a methodology instead of a philosophy, the formation of the lived human relations could have an impact in regards to phenomenological research into people with disabilities. The researcher could have formed assumptions about the participants, and not treat the participants with the respect they deserve, because some people see people with disabilities as the 'others', and forget their manners (Svendby, 2013). Nonetheless, it could have a reverse affect. The participants with the disability could have had an unpleasant experience of the 'upright' people (Toombs, 1995), which could affect their openness in a study (Bridges, 2001), highlighting how insider/outsider research could play a role within the lived human relation. Previous lived human relation experiences are important for the researcher to understand, and should

encourage the researcher to enter the study with an open mind, and a sensitivity to the participants.

Lived body; refers to the body as it exists in the lifeworld, where bodies co-exist through feelings (Murray, 2012). The situation being experienced by the body, will determine how the lived body will react; if a person gazes upon our body, if it is someone whom we know or trust, our body will show signs of relaxation. Yet if the body is of someone we do not know, our body could move in an awkward manner, losing its naturalness (Sartre, 1956). According to Toombs (2013), two philosophers provide a phenomenological analysis of the body; Sartre and Merleau-Ponty. Both reveal that there is a fundamental distinction between the lived body, and the objective body.

I am not in relation to my hand in the same utilizing attitude as I am in relation to the pen; I am my hand...I can apprehend it – at least in so far as it is acting – only as the perpetual, evanescent reference of the whole series...my hand has vanished; it is lost in the complex system of instrumentality in order that the system may exist. It is simply the meaning and orientation of the system (Sartre, 1956, p.426).

The quote from Sartre (1956) highlights that as an embodied subject, you will find yourself within the world, amongst the environment. You are embodied, not in the sense that you possess a body, Toombs (2013) explains that it is in the sense that you are a body. You are not an object of the world, rather your body is a point of view on the world. Additionally, the lived body displays certain signs which intertwine with embodiment, one main sign is the being-in-the-world (Toombs, 2013). When looking at the lived body in a sporting context Hockey and Allen-Collinson (2007) explore the sensory and haptic dimensions of the sporting body, expanding on both Sartre's work and Merleau-Ponty's (2001) work referring to the body as a subject of perception.

Lived time; refers not to time from a clock, but the experience of time. How an hour class can drag on for one student, yet fly by for another (Van Manen, 1990), and can connect to our past and present experiences, and thereby influence our future. Lived time can play a crucial role in phenomenological research into the lives of people with disabilities, because time can be experienced in different ways. This is noticed when you are participating in an activity you enjoy; versus an activity you dislike. An example of ways

in which people experience lived time differently can be found in an article by Zhou (2010) who shows in her article relating to the lived time of people infected with HIV/Aids, in that the participant's experience of time alters depending on the illness, and their desire to regain control of their life.

For the purpose of the present study, the researcher judged that the existential themes of lived space and body were the most relevant. This is supported by Carr and Cheung (2012) who has highlighted that these two existentials are rooted in each other, and must be studied together. Another reason why these two existentials are most relevant to the thesis is because under water, the body will experience different sensations, whether it be pressure, current, or sound, these experiences will differ from land. Also navigating a body in a zero gravity environment will provide new challenges, as well as navigating the space of the underwater world, around the coral, fishes, and reefs.

Embodiment;

Through the notion of embodiment, researchers and philosophers can ask questions like; how is having and being a body experienced? What is it like? Longo et al., (2008) uses these types of questions to describe embodiment. Embodiment refers to the sense of your own body, relating directly to sense of self, and is often associated with individual identity (Cassam, 1997; Edelman, 2004). This individuality can be displayed in many ways by the individual, through clothing, hair style, and even the physical activities they participant in. If you ventured to a dive show, most people will have a similar appearance, the stereotypical look of a diver, however, everyone is still an individual, and will display their individuality in their own way (Liimakka, 2013). Embodiment has become a popular concept for human movement research, especially in phenomenology, because researchers have been concerned with the embodied experience and meaning through sport and movement (Arnold, 1979). This concept of embodiment through sport is important. It can examine how a SCUBA diver with a disability learns new skills and how they to manoeuvre themselves around underwater.

The concept of embodiment is intertwined with the lifeworld, and the lifeworld's existential theme of the lived body. When learning to SCUBA dive there are a number of different skills a person needs to master in order to qualify, and dive in open water. The

persons understanding and experience of their body plays a vital role in being successful in these skills. For an individual who is experiencing a new body (newly acquired impairment) under water, their previous bodily experience, and the experiences they have since acquired could have an impact on their skill acquisition.

Haptic;

Embodiment and the lived body become entangled again through the conceptual framework of *haptic*. Haptic refers to the sense of touch (Ross, 2008). When under water our bodies experience an increase of atmospheric pressure, and experiences are sensed and felt differently under water to what they are on land (Allen-Collinson and Hockey, 2010). Grunwald (2008) suggests there is a reduction in haptic experience under water as a result of buoyancy, because according to Ross (2008) buoyancy reduces tactile pressure. Haptic is the combination of touch and movement that, according to Rodaway (1994) creates the haptic experience, because touch is about the awareness of presence, as well as of locomotion. Ingold (2004) argues that with haptic resources, it allows the participants to tune into the constantly changing sporting environment, providing a direct embodied way of feeling and experiencing the world around you (Hetherington, 2003).

There is a clear relationship between sports and haptic, nevertheless research on the inclusion of haptic in sport is limited and a relatively unexplored area (Hockey and Allen-Collinson, 2006), as well as limited research on haptic as a whole. Focusing on the haptic concept could also be overlooked, because the lived experience and the sensory perception are often entangled with other elements (Allen-Collinson, 2011). These others elements could be a reason for the limited research along with the confusion behind the meaning of haptic. Haptic can range from the direct contact to the internally felt sense of the body or even the somatic sense (Allen-Collinson and Owton, 2015). Haptic can also include the sense of movement (kinaesthetic), felt muscle position (proprioception) and the sense of balance (vestibular system) (Paterson, 2009).

Through the haptic framework, research can develop an embodied analysis of the body during sport and physical activity, in this case, SCUBA diving. There is a close relationship between the haptic and the sporting environment, because of the physical interaction between the sporting bodies and the objects in the form of terrain (fish, coral,

reef, sand, ship wreck) and various equipment (SCUBA tank, buoyancy control device (BCD), various hoses) (Hockey and Allen-Collinson, 2006). This idea is critical when it comes to researching SCUBA diving, because the environment is ever changing, whether it be the current, or the topographical features of the ocean floor, a diver being able to sense and interact with their surroundings is key, and will provide the study with an in depth understanding of divers' lived experience, as well exhibiting a kinaesthetic awareness of their own body.

In relation to this thesis, the haptic is part of phenomenology, which will be used to help explain the haptic experience of the lived body. Through the haptic framework, the thesis will explore the different types of bodily experiences the participants have whilst SCUBA diving. The thesis will then investigate how it feels to be a body as it is lived and experienced through SCUBA diving. The haptic concept also coincides with the later works of Merleau-Ponty. In the later years of Merleau-Ponty's teaching, he started teaching from the concept of process philosophy which derives from the ideas of philosopher Alfred North Whitehead (Manning, 2014). Process philosophy developed Merleau-Ponty's idea of the movement controlling the body. How does the sense of touch impact the movement? Does this then have an impact on how the movement moves and influences the bodily experience of the movement? It was through Merleau-Ponty's later work where he admits that sensation (or in the case of this thesis, just the haptic sense) is equal to that of the experience (Manning, 2014). What Merleau-Ponty meant, was that the sensation and senses experienced in the world can influence peoples experience. Through the human, who remains central to the world's appearance allowing this thesis to gain an understanding not just through the lived experiences, but through the haptic sensation as well.

The research questions for this thesis was to understand how does a person with a disability experience SCUBA diving? And what do these experiences mean in social participation? The haptic framework and phenomenological perspective will support the interpretations of the thesis results as it sought to understand SCUBA diving from a disability perspective.

Methodology

Epistemology;

The study adopted a qualitative hermeneutic phenomenological approach, because it looked at how people with an acquired impairment experiences SCUBA diving after the injury. The qualitative paradigm suits the idea of an exploration of the participants lived experience, because qualitative research is interpretive which allows the study to look into the world of the participants (more on Interpretivism later). Qualitative research includes a number of different theories (Brantlinger et al., 2005), but the theory relevant to this study is phenomenology. This concept of lived experience comes from the phenomenological theory, which according to Finlay (2000), strives to describe any experience of a phenomena along with how the participants perceive their experience.

Denzin and Lincoln (2011) define qualitative research as an interpretive, naturalistic approach to the subject matter of participants. Interpretivism, according to Schutt (2006) enables the researcher to gain an insight into the world of the participant by discovering meanings, for instance, by improving our comprehension of how a person experiences learning a new skill. This study tries to comprehend how these experiences are understood through the interviews and comments of the participants from the SCUBA organisation (Willis, Jost and Nilakanta, 2007). It is a method of research that gains personalised insights into the thoughts, feelings and perceptions of individuals (Silverman, 2006).

Phenomenology;

In order to understand phenomenology, it is always best to define it. Mortari and Torazzi (2010) defines phenomenology as a way to expand our understanding of the world. The Oxford dictionary (Stevenson, 2010) defines phenomenology as “*the science of phenomena as distinct from that of the nature of being*”, and “*an approach that concentrates on the study of consciousness and the objects of direct experience*” (p.1334). There are several key words in the definition, *objects of direct experience*, and *phenomena*. They both link together in the definition of phenomena, which is “*a fact or situation that is observed to exist or happen*” (Stevenson, 2010, p.1334). An example of phenomena that relates to disability would be help, pain, and experience (Watson, Roulstone, and Thomas, 2013).

Phenomenology became of interest to researchers in the 1970's, as it allowed the researcher to pay attention to the people themselves (Carel, 2012). Through the use of phenomenology, it is possible to discover the meaning and interpretation behind the experiences of the studies participants by taking into account both body and mind (Standal and Engelsrud, 2013). Carel (2012) states that phenomenology is ideal for describing the experience of illness, or rehabilitation, through the use of analysing the experience of people actually living with the ailment. Toombs (1995) argues that for people who have not experienced a disability first hand, it becomes difficult to interpret the experience accurately. We see a sandy beach, a person using a wheelchair sees an obstacle. It is through this insight that the study will gain knowledge and understanding, and be able to answer the research question. The purpose of phenomenology as a self-critical methodology for reflective research is to find an account of the subjective experience, not a subjective account of the experience like in natural science (Van Manen, 1990).

Phenomenology (as previously mentioned) allows the researcher to describe lived experience, it is with the use of the hermeneutic method which enables the researcher to interpret the "*texts of life*" (Van Manen, 1990, p.4). By including the hermeneutical aspect, it edifies the participant's personal insight (Rorty, 1979), because hermeneutic phenomenology refers to the philosophy the personal and the individual.

Participants;

Participants were recruited from a non-profit charity SCUBA organisation in the UK, aimed at providing learning opportunities for people with disabilities to SCUBA dive. An email was sent to all members, as well as a post on their social media page, providing everyone with the opportunity to participate if they wish. All those who wished to be selected sign consent forms. Four forms are selected purposefully of those who meet the studies inclusion criteria, and can provide different perspectives to the study. This provides everyone who wishes to participate an equal chance to be selected. This method is known as purpose sampling (Van Manen, 1990).

Table 1.1 shows a brief background of the participants whose signed consent forms were selected.

Table 1.1: Participants Characteristics

<i>Participant</i>	Impairment	Time as Diver	Time since injury	Wheelchair user?
1	Spinal Cord Injury T5	16yrs	20yrs	Yes
2	Below Knee Amputee (right)	3yrs	1yr	No
3	Hereditary Spastic Paraplegia	15yrs	15yrs	Yes
4	Cerebral Palsy	18months	Since Birth	Yes

The outcome of conducting the pilot interview highlighted the importance of body language (were they relaxed or tensed for certain questions? Did this appearance change over time?) And how the observations can support the data material gathered from the researcher’s interview. As a result of the pilot interview, the interview guide was changed slightly to include possible following up questions which would help to gain a greater understanding on a statement made by the participant, to ensure that the study receives the maximum possible data material, and the interviewers’ interpretation is correct (Denzin and Lincoln, 2011).

Interview Design;

Interview questions were designed based on the research questions. Themes were then identified which were relevant to the research question, and the interview questions were designed around those themes. Each question had a follow up question in order to gain the most data material with the aim of answering the research question (Kvale, 1996). After the interview guide (see appendix 1.1) was generated, a copy was sent to the chairman of the SCUBA diving organisation who consulted on its relevance and appropriateness for their patrons.

The interview questions were carefully developed, some questions aimed at general information to allow the study to gain an understanding of the participant, other questions aimed at providing an insight to the how they experienced SCUBA diving, and answering the research question. The interviewer used a semi-structured approach, along with open questions, enabling the interviewer to expand on responses given by the participants (Schensul, Schensul, and LeCompte, 1999).

Each interview was conducted in a safe and open environment which was decided upon by both the researcher and interviewees. The locations were private enough so not to be overheard, but open enough to ensure the safety of both parties (Gratton and Jones, 2004).

Data Generation;

The study made contact with two non-profit charity SCUBA organisation in the UK aimed towards SCUBA divers with disabilities to locate willing participants. By using two different organisations, it provided the study with an increase in variation, not just when it comes to participants, but to their experiences as well (Giorgi, 2006). If the participants matched the criteria, consent and procedure forms were sent out to each participant. The documents informed each participant about the interview and observation process and their ethical rights.

Once the study received the consent forms, an appropriate time and date was arranged with the participant allowing the study to conduct the interview and observation. On the day of the meeting, a review of consent was conducted. This allowed the interviewer to reiterate the participants' rights, and ensured each participant was fully informed about the interview and observation procedure.

Observations: The close observations were conducted first; this way the experience is fresh within the mind of the participants. All observations were collected from a single pool session. The pool was used due to the temperature of open water in the UK in January. Each participant was observed, and the duration of the observations were approximately 30mins. The data material gathered from the observations were used to support the results from the interviews. When collecting the observations, the researcher looked for patterns in how the participants interacted with others, on land, and in the water (Rothe, 2000). The aim of the observation was to observe the participants in a swimming pool environment to see first-hand their experience of SCUBA diving. The dive organisations have their own pool, so it was on familiar ground for the participants. As the dive happened in a pool, the researcher was able to observe and make notes from outside the water, as not to impact any learning, but with the option to join in the water for a closer look, or more detailed observation. This method of observation involves two methods on Gold's (1958) continuum (see figure 1.1); observer as participant (in water)

and complete observer (on land). Cohen, Kahn, and Steeves (2000) indicate that it is difficult to predict what should be included in an observation, as every study is different. With this in mind, when conducting the observations, the researcher was looking at the participant's social interactions, and their environment to provide a multilayer of text which is symbolic of their experiences.

Semi Structured Interviews: Before the interviews were carried out with the participants a pilot interview was conducted. This ensured that the questions, although semi structured, were designed and structured correctly, allowing the interviewer to acquire the appropriate data material (Weed, 2007) in order to answer the research question. Conducting a pilot interview does not just ensure the questions are worded correctly, Oppenheim (2001) argues that piloting the interview guide allows the interviewer to practice how to conduct the interview and themselves. The answers are not the only data material acquired in interviews; observations of the participant's body language and initial reaction could provide a more complete response to a question. Conducting pilot interviews allows the interviewer to practice observation techniques, providing in depth answers for the main investigation (Maxwell, 2005).

The interview approach was applied to allow the author to gain specific data material from a specific experience of their lives. By using an interview with semi structured questions, if the participants mentioned information of interest, the author could ask the participant to follow on with that comment, thus providing the study with the most applicable data material (Flick, 2009). Interviews were conducted face – to – face. The interviewer turned on the Dictaphone then proceeded to conduct the interview. Once finished, the interviews were transcribed on Microsoft Word, and analysed using MAXQDA.



Figure 1.1: Observation Continuum

Gold (1958)

Data Analysis;

Giorgi (1975) developed *meaning condensation* into a phenomenological process which can be applied to both the interviews and how to analyse them. Kvale (1996) describes meaning condensation as condensing experiences from participants into smaller statements. It is the smaller statements which can be sorted with the use of MAXQDA. Condensing the data material into smaller statements also allows for the central theme to be located (Kvale, 1996), allowing expressed meanings to develop into more essential meanings relating to the lifeworld and experiences of the participants. The method of meaning condensation links to Van Manens (1990) idea of the selective or highlighting approach, which also tried to find key statements from a text, and highlight the smaller, condensed version which indicates a thematic notion of the investigated experience. The interview questions were designed to focus on the main topic area of the study (the haptic experience) highlighted in the conceptual framework section.

This study used both interviews and field observations, which allowed the data to be triangulated. This method of triangulation allows the intersections between each to be analysed (Denzin and Lincoln, 2011).

Interview Themes; Step two in the analysis of the data material, and the next process of meaning condensation, and is known as content thematic analysis (Kvale, 1996). Content thematic analysis, according to Kvale (1996) focuses on categorising the data material into dominant themes found within the text. When looking at literature, a theme relates to a subject which appears frequently within the text. Van Manan (1990) describes thematic analysis from a phenomenological stand point as a way to understand the structures of experiences being studied, in this case, the experience of SCUBA diving. The themes were acknowledged after reading through the data material, and the author was able to identify a number of reoccurring themes with the aim of answering the research question.

Ethical Considerations;

Each participant was kept anonymous, all the data collected was protected under the Data Protection Act (1998). At no point were the participants' rights violated, as the method of data collection was not invasive (Tomlinson and Fleming, 1997). Contact was made through the SCUBA diving programme, and participants were invited to join the study.

A consent form was then sent out informing the participants of the procedures, and their rights (Denzin and Lincoln, 2005). Each participant was reminded of their rights at the beginning of the interview, and reminded that the participants had the right not to answer a question if they wish and were able to pull out from the study at any given time. To ensure that all data collected remained confidential, it was stored in a box file where only the author had access (Mitchell and Jolley, 2009). Ethical approval was obtained through the Norwegian Social Science Data Services (NSD).

Trustworthiness;

Brantlinger et al., (2005) developed criteria for qualitative studies which provides phenomenological studies with credibility and trustworthiness. The researcher will discuss the trustworthiness related to the study, and then discuss the limitations to studies trustworthiness.

The study obtained trustworthiness through the use of data triangulation, as interviews and field observations were completed. The researcher has a personal background in SCUBA diving, so a journal was kept to facilitate reflexivity. Reflection through a diary enables the researcher to be aware of their bias and assumptions (Krefting, 1991). A journal was used as a prompt during the analysis of the transcripts, allowing the data material in both journal and transcripts to be cross referenced (Denzin and Lincoln, 2011). In regards to the member check, the researcher has positioned herself as a 'partner' (see Stone and Priestley, 1996), because the researcher is working with the demographic. With this in mind, the researcher incorporates the second level of member checks, ensuring that the data material provided has been interpreted in a manner which identifies the truth, and that the participant who provided the data material feels it depicts their experiences accurately. The study also included peer debriefing, as the research is part of a Master's programme, the researcher received debriefs from her supervisor. Trustworthiness was also obtained through the use of an audit trail, which provided information surrounding when, where, and the duration of the interviews and field notes collected, which then assisted the researcher to gather thick, detailed, description helping to form an inform conclusion.

Limitations; there are some limitations to what could be included in the study in regards to trustworthiness, most was as a result of time, and the type of research. The duration of the study was nine months. This time restriction impacted how many methods were incorporated. Also, as a Master thesis, it was completed solely by the researcher, limiting extra investigators, or external auditors to none.

A delimitation placed on this study is the amount of participants being used. Due to the scope of this thesis, if more than four participants were utilised there would not be enough time to transcribe and analyse all the interviews (Harris. Cronin, and Keogh, 2007).

Results

Thematic analysis is a process of recovery, recovering the embodied and evolving meaning of the text (Van Manen, 1990). After reading through the information gathered, many elements kept occurring within the text. Subsequently by interpreting the meaning of the lived experiences, the researcher was able to formulate two themes and subthemes to empower the study and to help realise the meaning of the experiences, through the exploration of the participant's underwater lifeworld, and their experiences of embodiment. These themes are;

1) Life Underwater

2) Our Experiences

The participant numbers correlate to the number provided in table 1.1 (which can be originally located in the methodology section). For the readers' consideration, here is a copy of the table.

Table 1.1: Participants Characteristics

¹ Name	Gender	Impairment	Time as Diver	Time since injury	Wheelchair user?
Annie	Female	Spinal Cord Injury T5	16yrs	20yrs	Yes
Bob	Male	Below Knee Amputee (right)	3yrs	1yr	No
Chuck	Male	Hereditary Spastic Paraplegia	15yrs	15yrs	Yes
Dave	Male	Cerebral Palsy	18months	Since Birth	Yes

Life Underwater;

Moving around underwater is experienced differently to moving around on land. The once simple task of taking a breath is now faced with the notion that one needs to monitor the air they are breathing. These are just some of the experiences of SCUBA divers when they live life under the water.

Feeling Good;

Each participant spoke of how SCUBA diving has provided them with a sense of positive feeling. The experienced varied from enjoying the social side of SCUBA diving, which

¹ These are not the actual names of the participants.

includes the exploration of new locations and new discoveries, and even the anticipation of a going on a dive holiday.

Chuck describes his experience of diving as “...it’s magic, it is complete poetry. I feel very much at peace. I’m just swallowed up by under the water...it does feel free, and yes, I’m more buoyant. It is just another world.” Chuck’s comment highlights what previous research (Carin-Levy and Jones, 2007) have shown, in that SCUBA diving opens up a new world, an underwater world. It does not matter on depth for this sense of freedom mentioned by Chuck to occur, because Chuck is limited to a depth of 10m/33ft and can share in the same experience as Bob who is able to dive to depths of 30m/100ft “...shallow dives are cool, depends on where you are. In Egypt you’ve got amazing coral, but at depth (²below 18m/60ft) you’ve got to be think oh how much air do I have left...”

Physiological Changes;

When asked if there was anything else the participants felt the researcher should know, Annie commented on how SCUBA diving can also provide a perceived sense of pain relief and muscle relaxation, not normally achieved, unless through the use of medication;

...one thing I did find with the diving, and it might be because of the pressure is that, at home I’m in a lot of pain with spasms, having to take medication and that at night to get to sleep. Whereas in Egypt, all of that pain is gone, my legs are floppy, I could bend my feet and all sorts, like I said in England, I would have to take a lot of medication to manage that. I come back feeling a lot healthier than I went. I know MS (muscular sclerosis) patients use hyperbaric chambers to help with pain relief and spasm, and I think the diving for me has the same effect, my legs are just lovely for two weeks, and it’s great. That’s the other benefit I can think of.

Annie’s experience of pain relief links to a pilot study (Kaplin and Becker, 2011) which discovered physiological improvements. Dave commented that he too had some physiological improvements after a SCUBA holiday, yet he put the improvements down to the warm weather instead of SCUBA diving, which illustrates that the comment made

² In PADI, the standards states that any dive below 18m/60ft is considered a deep dive.

by Annie indicates a need for further research into SCUBA diving, because she is not the only person to have experienced physiological changes.

Feeling Relaxed;

Water for the participants in this thesis is considered and experienced as a very calming environment, but for some, the thought of going in and under water for long periods of time could be experienced as daunting and scary, Chuck states that he wishes to help people to overcome these fears and experience the underwater world;

It's (SCUBA diving) something that not a lot of people do, and I try to help the general public get over their horror, they think they'll be closed in. I'm like look, you can see 20m of water, and you see all fishes, big fishes. It is magic.

Chuck's involvement in SCUBA diving has been a positive and enjoyable experience for him, which he feels others could benefit from, and he loves to spread the word of SCUBA diving whilst at work and when communicating with friends. Chuck tries to change people's misconceptions of SCUBA diving, and encourages others to have a go, and to share in his experiences.

SCUBA diving is also an activity which you might not even consider participating in, like Bob. Bob takes part in many sports filled with adrenaline such as motocross, and sky diving, but once he tried SCUBA diving, Bob discovered it was a very calming, relaxing experience which has become an emotional release;

SCUBA diving is like the only non-adrenaline sport I have an interest in doing now...with diving I'm in my own head, I enjoy being in my own head, because it is peaceful down there. Also being able to go under water in the open water by myself it was like, well it was like a release, and I found myself being able to do everything. There was like a release valve in the back of my mind, and everything turned off in my head.

After spending time in the military, Bob found it difficult readjusting to civilian life and kept participating in physical activities which would provide him with the rush of adrenaline he was used to in everyday life. When he discovered SCUBA diving, a physical activity which was different to those he was used to, he discovered a different sense of self which he had not experienced before. Bob claimed that SCUBA diving provided him with a new outlet, one which facilitated relaxation, and aided his escape from his mind and thoughts. Although Bob did not get into SCUBA diving as part of a rehabilitation programme, he admitted that through his experiences of SCUBA diving, the calming environment aided in the reduction of his PTSD.

A good indication that the participants were relaxed and enjoying their dive is shown through their comments regarding experiencing (lived) time underwater. Both Annie and Chuck commented on how quickly time goes by during a 40-50-minute dive. Chuck recalls “*My time when diving passes slowly but is always over too quickly. Dive time is around 55 – 60 mins.*” Yet, for Dave who is very conscious of his air consumption, felt that time went by regularly, as he was continuously checking his air. Dave stated;

Because I’m such an air hog, I’m checking my air every 90sec, so time goes pretty precisely for me...I think once I get more relaxed, and I don’t have to worry that I’m running out of air, I think time would still pass quickly, but I wouldn’t be so conscious of it.

This is a common occurrence in new divers, and like Dave says, once he becomes more fluid with his diving, then his thought regarding his quantity of air will cease being his main priority, and his experience of (lived) time underwater may alter in a similar way to that of the other participants.

Marine Life;

The underwater life and fishes has been mentioned previously by Chuck, but Annie also comments on the marine life. She feels one with nature, and finds the experience of intermingling with the fishes calming and relaxing;

...diving for me, is being more innate with nature. For me it's all about the fish in the water, I love the relationships between all the different types of fish. It's more about being able to go off and look at nature, rather than it being a sport.

Dave continues on from Annie's comments, and shares more information regarding how he feels underwater, with his experience of the marine life;

...when you go into open water, you can see fish and things, and you can see why you would want to do it...anyone can go to the bottom of a pool, but it's when you're in the sea and you can see sharks and other fishes.

Experiencing the marine life according to the participants is both relaxing and rewarding. It is one of the reasons for SCUBA diving. Annie describes in more detail how she enjoys observing the life cycle of the marine life, and that SCUBA diving provides her the opportunity to witness up close the creatures of the sea. Whereas Dave sees the marine life as the purpose for diving in first place. Both Annie and Dave's experiences of the marine life provide a relaxing experience through SCUBA diving.

Under Pressure;

A fundamental experience of life underwater is the pressure it applies to divers' bodies. When a diver descends 10m/33ft, the atmospheric pressure applied to the diver is doubled. Each diver experiences the pressure differently; this is Dave's account;

Your ears just get used to the fact that you're going up and down a lot, and I can properly go 4m down before I have to equalise, whereas before it was every 1m. Your body reacts differently to open water; the equalisation is different.

The idea of felt pressure being applied on the body, is a key structure of the experience and links to the research from Allen-Collinson and Hockey (2010). The deeper the diver goes; the more pressure is applied. At the surface people have one ³atmosphere (ATM)

³ For more information regarding atmospheric pressure in SCUBA diving, please see appendix 1.2

of pressure pressing down upon them. At 10m/33ft, this pressure is now two ATM, 20m/60ft the pressure is three ATM. As Dave mentioned, through his experience, his body became used to the change of pressure.

When breathing underwater, sometimes the task of breathing air could become difficult because of the ATM pressure on the divers lung (Graver, 2010), for this reason, divers can use a gas mix called enriched air nitrox (EANx). A standard tank of air will hold twenty-one percent oxygen, but on a tank of EANx, the tank can hold an increased percentage of oxygen, commonly thirty-two percent (PADI, 2010). Chuck felt a difference when breathing EANx, he said “...(they) put me on nitrox, and yes, it felt easier, my mouth felt fresher, it just felt easier.” Research by Kaplin and Becker (2011) tries to explain why this occurs, one explanation is pressure at depth, whilst the other is the divers body position.

Our Experiences;

SCUBA diving has a lot to offer, it is not just the experience of being underwater, but the experience of being with marine life, meeting new people, and exploring different dive sites.

Peer Learning;

SCUBA diving has offered numerous experiences to the participants in this study by providing equality between divers and a sense of freedom not generally experienced in other activities. Annie participates in many wheelchair sports including tennis and cycling, nevertheless she feels a greater sense of equality in SCUBA diving. Annie speaks about how she learnt from an instructor who was also a paraplegic, and how she feels when diving with divers without a disability;

...she (the instructor) had become one of the first scuba diving instructors back in the 90's. She was a paraplegic herself. She was just looking to give people with SCI the opportunity to do what she had done, and to have a go at scuba diving. I'm just a bit crazy and do these things out of the blue. I then had two weeks in Egypt where she taught me how to dive. And it was great to learn from another woman who was a paraplegic. It was in a really nice

atmosphere, nice warm pool, nice warm sea. I absolutely loved it. I was a keen swimmer, enjoyed the water and I was hooked. So three months later I was back. So now, I'm absolutely addicted after the first week of learning.

Through learning from a peer who shared a similar impairment, it provided Annie with a “can do” attitude, because her instructor demonstrated that all the skills were possible for an individual with a spinal cord injury (SCI), and that Annie can become a successful diver. Annie continues to share a sentiment which has been identified in previous research (Elliot and Kaufman, 2014), which is that when underwater.

I just feel like everyone else, I feel like there's not a lot of difference at that point between me and the able-bodied divers. And I just love it, because I'm out of my wheelchair, and moving my body around with my arms.

Annie experiences becoming just like everyone else, and that her impairment is no longer visible to other divers around her, allowing her to experience the sense of freedom mentioned by Chuck.

Feeling good underwater is just one of many experiences, never the less, the realisation that you as a person can achieve more, is a far greater experience for Dave. Dave comments how he never thought he would be able to SCUBA dive as it required the use of his legs, he goes on to say “*In my mind it was something that I couldn't do... it was only when I found someone who did SCUBA diving, that I looked into it.*” Three of the four participants had never considered diving until someone they knew recommended it to them, or they saw a SCUBA diving experience which someone else was having. SCUBA diving is a sport which the participants felt was not a viable option for them until someone told them differently.

Social Experiences;

When Dave was first introduced to SCUBA diving, he was not too sure if it was something he would be able to achieve because of his limited mobility with his legs. A key selling point for his introduction to SCUBA according to Dave, was the BBQ being offered after the try dive. Dave describes his experience when being introduced to SCUBA diving;

...he (the man from the dive organisation) said give it a go, and if you hate it there is always the BBQ after it, for me that was a win win, I thought even if I don't like the diving, I get a feed.

For Dave, it showed there was more to the club than just diving, and was able to socialise with other members after the pool session. The element of socialising is a factor discovered in the literature included in this thesis, relating directly to research conducted by Yarwasky and Furst (1996).

The experiences gathered from the participants highlight a common area of interest. The SCUBA diving holidays. Holidays appear from the experiences to be a key social interaction point. Whether the holidays were booked through a dive club, or on their own, the holiday plays a critical role for the participants. For Annie, she said;

I have deliberately chosen all of my holidays to be based around diving...Before I had my accident, I planned to travel all around the world, and now because of the diving, I can turn up anywhere in the world, on my own, and I instantly have something in common with people, so it is very sociable.

Although she planned to travel prior to her accident, through her experience of diving, it has enabled her to continue travelling, and provided her with a very social activity. When asked if SCUBA had made a difference in his life, Chuck responded with;

Well I go on holiday; I do look forward to my diving. I do the dive holiday...it was the whole point of the holiday, we had been building it up a lot...Still got places to go, and things to achieve.

Chucks point follows on from Annie. They both use the experience of diving to travel, and it is an event in which they both feel excited about, and have purposefully chosen to attend a SCUBA diving specific holiday.

Another approach that promotes socialising outside of SCUBA diving according to the experiences of the participants are charity dives. Charity dives can provide the same

atmosphere as a holiday or BBQ according to Bob. Bob describes how his experience of a charity dive provided social interaction. *“I did the charity dive in a big tank pool...I got to see friends I hadn’t seen for a while. Had a chat, had a dive, but there was nothing to see, as it was just a pool.”* Although the dive was not the best, the experience did provide the opportunity for Bob to interact with peers.

Changing of Environment;

There are many different environments for SCUBA diving which can change for many reasons. When a diver first learns how to dive, their experience will begin in a pool, this experience can differ depend on your location to whether the pool is an indoor or outdoor, warm or cold. These changes can have an impact on a diver’s experience. Annie mentioned during her interview how a pool environment can provide a different experience depending on your location;

...when I did my skills session in Egypt it was in a warm pool. I’ve only done one pool session in the UK, because I was helping a student who needed to film a disabled diver. The red sea is really salty, so naturally you’re a lot more buoyant. I jumped in a pool, which is properly six maybe 10m long, and just sank like a stone to the bottom. I wasn’t particularly comfortable, the tank felt heavy on my back. I really didn’t enjoy the experience of being in the pool.

Bob expands on Annie’s comment regarding the location of the pool that you are training in. Bob described a dive he completed in a giant pool for charity;

...I did the charity dive in a big tank pool. It was like a big hot bath. I got to see friends I hadn’t seen for a while. Had a chat, had a dive, but there was nothing to see, as it was just a pool.

Chuck states why he enjoys a sea dive instead of a pool session *“...I’m more relaxed in the sea than in the pool. The pool is a struggle, because of getting changed, getting ready, and getting me in.”* Pool or sea is not the only environment change to contend with. All participants are based within the UK, nevertheless none of them have completed an open

water dive in the UK, and the reason is temperature. Annie shares her experience with temperature;

...but trying to get into a Drysuit without being able to stand up would be really tricky. Also, it's cold, and as a paraplegic, I do feel the cold a lot more than I used to. So you know, when I'm diving I have to wear a full-length suit, and I'm still very cold when I get out of the water.

Thermal regulation is different for a person with a SCI compared to a person without. When submerged in water a SCUBA diver will lose body heat twenty-five times faster than on land (PADI, 2010). Loss of body heat this fast can create a problem for an individual who already has a reduction in their thermal regulation due to a SCI, and it is because of these issues that Annie and Chuck do not dive in cold water, and need a thick neoprene suit to assist in maintaining the body temperature.

There are still different conditions and environments to consider, and for a SCUBA diver, the most important condition, is the water itself. Is there a current and what is the topography of the dive site? Two participants commented that when it comes to diving in a current, they struggle, because of the lack of mobility in their lower legs. Swimming into the current is fine, as like the participants' comments, it moves them along through the water, and as long as your buoyancy is right, the dive will be fine. However, if the participants wish to stop or slow themselves down, they cannot, because of the lack of mobility in their lower legs.

Buoyancy;

When it comes to environment changes, the topography of the site is more important. If there are lots of ups and downs, the site will require the diver to be confident with their buoyancy. In an ideal situation, by breathing in a diver should be able to rise above an obstacle, and by breathing out, a diver should be able to sink back down. Annie comments on her buoyancy “...once I'm in the water, and I've got my buoyancy right, and you breathe in and you go up and down, and it's that simple to move around in the water.” Participants mentioned a method in regards to assisting with their buoyancy, they wear 6mm semi dry wetsuits and boots. The increase in neoprene will help with buoyancy, and could assist in lifting body parts. Chuck comments “...my legs still sink, whether I'm in

a pool or not. I use a 6.5mm semi dry suit, which does give out a little bit of buoyancy, but not enough.”

Body awareness connects slightly with the previous theme of buoyancy. Although Chuck has little feeling in his lower body, he experiences a sense of body awareness in the water. As Chuck said previously “...*my legs still sink, whether I’m in a pool or not. I use a 6.5mm semi dry suit, which does give out a little bit of buoyancy, but not enough.*” He is aware that his legs are sinking in the water, he is aware that they are not floating horizontally, even though Chuck has limited sensation in his legs, he is aware of their position in the water, which could be related to Allen-Collinson and Owton’s (2015) idea of the internal felt sense of the body or even the somatic sense.

From the comments mentioned above, it is clear that divers with different disabilities experience SCUBA diving both differently, and the same. SCUBA diving can be experienced in many different ways, and there are different theories which can help us to understand what is happening. These theories will be discussed in the next section.

Discussion

Using understandings derived from hermeneutic phenomenology, this thesis has investigated the haptic aspect in relation to the lived sporting world of SCUBA diving. Different sporting activities will produce haptic experiences specific to the sport, for this thesis, the haptic structures experienced were temperature and pressure. According to Hockey and Allen-Collinson (2007), it is through the use of embodied sporting activity (SCUBA diving) which can produce and create the lived space. When it comes to sport specific, the lived space involves certain forms of haptic knowing which are essential for the skilful practice of SCUBA diving. Ingold (2004) describes that the practise required to become skilful is not solely the responsibility of the individual body, but rather a system of relations interconnected and embodied with the environment. It has been illustrated through the analysis of the data material from the SCUBA divers that they develop specific senses touch, requiring the divers to be responsive to any differential in pressure and even temperature. The divers' haptic awareness is accomplished through the embodied sporting practice which has allowed divers to become attuned to their sporting environment.

The research questions for this thesis was to understand how does a person with a disability experience SCUBA diving? And what do these experiences mean in social participation? This chapter will discuss the results and relate them back to current theory and literature pertaining to SCUBA diving, haptic, and phenomenology, answering the research questions stated above.

Phenomenology; the discussion turns to how the information and experiences of the participants relates to the underpinning theory of phenomenology, looking closely at the four existentials, embodiment, and lifeworld. The participants claim that through their experiences of SCUBA diving, it has opened up an increased number of social interactions. Chuck said, he tells everyone he can about diving, and tries to convince many people to share in his experiences. Annie knows when she goes on a diving holiday, she will be in the company of people she shares a common interest in and start a conversation. These social interactions according to Adamshick, (2010) and Van Manen (1990) whether in person or via social media can be connected to the lived human relations. Annie and Chuck have no pre-formed opinions of the people they are interacting with, but through

an attachment of the common field of SCUBA diving, they can begin forming a relation. The strongest result in data material in regards to the lived human relations is that because of SCUBA diving, it has facilitated mutual relationships between divers. Divers who on land would have different abilities because of their disabilities.

The ever changing topography of a dive site compels the thesis to examine the lived space. When training to dive in a swimming pool, it is easy to understand how divers can experience feeling big in such a small and enclosed space, yet in agreement with Jacobson (2009), when in open water, divers can experience feeling like a small in a big open space. The feeling of openness is even greater when in warm tropical water where all the participants dive, due to the clear visibility reaching distances of twenty meters plus (which could be length of the pool they completed their confined pool sessions). The lived space changes again when going between the pool and sea because of the salinity of the ocean, creating a more buoyant space than that of the pool. The participants had to navigate themselves around different spaces which had the capability to alter the way one feels about oneself in that space, this navigation could increase with difficulty if you have limited feeling in your lower limbs, like Annie says, she is not aware of where her feet are, yet she knows they are “drooping”. The topography of the dive site links to Toombs (1995) when describing her office, how a table first looks pretty, then becomes an obstacle to avoid, this is true too for coral reef when diving, especially in a current. Annie shared her comment about how she dislikes currents, a reason for her dislike was through experience she could not manoeuvre as easily between coral. Annie felt that the time from one object to another was shorter due to the increased speed of the current. This links to Toombs (1995), because as first the coral looks pleasing, but with a current, becomes an obstacle to quickly be avoided.

Lived time is a key feature when underwater. As stated in Van Manen (1990), two people in the same situation can experience time differently, if it is enjoyed, then time will pass quickly, if the activity is an undesirable one, then time will pass slowly. The participants of this thesis felt that their time underwater went quickly, except for one person. When the participants felt relaxed and were enjoying the dive, they experienced the dive to be over very quickly. The exception was Dave, who constantly had to monitor the clock to make sure he did not use up his air too quickly. Allen-Collinson and Hockey (2010) suggest that as a diver becomes more skilled at knowing when to make those adjustments

to compensate for the change in pressure, they are becoming attuned. This sense of being attuned to the environment as your skills develop is a concept supported by Ingold (2004), and this sense of being attuned to why these participants experience time quicker underwater, as they no longer have to think about compensating for pressure change they just react. For the person who felt time go by at a standard rate was a newer diver, who still had to think through their actions, and who is not quite as attuned their environment as the other participants. Dave was very conscious of his air consumption, and so was checking his gauge regularly, along with the clock to monitor the duration of dive, and thereby how much time he had left of his dive in relation to his tank. Dave was thinking about what he was doing, unlike the other three who were simply diving, he experienced time underwater differently, as he was very focused and thinking about his air consumption. Although Annie felt that her time usually went quickly underwater, she did mention how when there is nothing to see her time goes slowly. Zhou (2010) explains that people could experience a changed sense of time as a result of a negative experience, one cause could be frustration, which Annie goes through when diving at a site with nothing to see. Annie is very open in her like for the marine life, and when there is nothing to see her time will pass slowly.

Living with different impairments, the participants get to know and understand their body, they know what they can and cannot do, they also know how their body feels on a daily basis. Examining the lived body opens the thesis up to investigating embodiment. The concept of embodiment through sport enables the researcher to investigate how a SCUBA diver with a disability learns new skills and how the divers manoeuvre themselves around underwater, for example body awareness whilst diving. Each participant was asked how they experienced learning a new skill underwater, and none could really describe their experiences, except for one person, which is the cause behind the lack of data material within the results chapter. Dave was the only participant to describe his experience of learning a new skill, and stated that learning how to complete the basic skills in the pool was skill dependant. Dave's experience demonstrates that he was able to complete the mask skills, and neutral buoyancy skills with ease, but he mentioned how his hardest skill was the controlled emergency ascent (CESA), as it required him to use his arms to propel himself whilst still releasing air with one arm. With limited use of his legs, this proved a difficult skill to master. Although Annie did not describe how she learnt the skills in depth, she did express how they were easy for her to learn, because she watched her

instructor (also a paraplegic) perform the skill, and she copied. In the situation of Dave and Annie, Annie was able to watch and observe a person in the same situation as her (Standal and Engelsrud, 2013), whereas Dave was not. Dave watched the skill being performed by an abled bodied instructor who had not felt the skill in the same body as Dave (Standal and Engelsrud, 2013). The analysis of the data material indicated that it was not always easy for the participants to get from place to place underwater, and it was even harder if a current was present. Manoeuvring around underwater can be difficult compared to land, because three of the four participants live their lives using a wheelchair navigating their way around the world. Never the less, when underwater they live their lives moving around outside of the wheelchair, in an ever changing, zero gravity, environment, thus creating a challenge. All participants dive through a club specifically for divers with disabilities where there are examples of how others have learnt to swim around. Through observation and imitation, the participants experienced an embodied social process of being with others in a joint effort of learning how best to SCUBA dive for their individual needs (Standal and Engelsrud, 2013). Only one participant expressed a challenge in his ability to manoeuvre underwater, and stated that he hires a professional diver to be his buddy instead.

Van Manen (1990) mentioned that we as human beings like to discover, gaining new experiences, and consisting expanding our lifeworld, and our sense of wonder. The data material shows that the participants enjoy to travel and so discover new places, all of which has an impact on the lifeworld of each participant. The experiences identified in the data material shows that the participants indicate that the greatest sense of wonder is “living” amongst the fishes, experiencing life underwater first hand. Merleau-Ponty (1962) emphasised, wonder is a demand for awareness, helping us to seize the meaning of life and the world. Chuck mentioned in the results, his experience of the SCUBA diving and underwater world is that “...it’s magic, it is complete poetry. I feel very much at peace. I’m just swallowed up by under the water...it does feel free, and yes, I’m more buoyant. It is just another world.” What could be more natural then under the sea, similar to Annie and Dave’s comment regarding observing and becoming one with the fish and other marine life, it is a fantastic experience and one of the reasons they dive. It was through the experiences of the participants which developed and created their lifeworld that justified the use of phenomenology as an efficient method when studying the experiences of people with disabilities (Diedrich, 2002), stressing Murphy’s (1987)

comment about how “*disability is not simply a physical affair for us; it is our ontology, a condition of our being in the world*” (p.90).

Haptic; When looking at the lived body in a SCUBA diving context, Hockey and Allen-Collinson (2007) explore the sensory and haptic dimensions of the sporting body. The idea of a sporting body expands on work regarding a body as a subject of perception by both Sartre and Merleau-Ponty (2001). Beyond the immediate contact of skin, haptic can be applied to include internally felt bodily sensations (Paterson, 2009) and link directly back to phenomenology. It is through the different somatic sense which enables the thesis to help understand what Paterson (2009) feels is the underexplored background feelings of embodiment. Understanding the internal felt bodily sense requires the examination of the proprioception and vestibular system which make up the haptic system. Balance is key in SCUBA diving, but underwater, balance is seen as buoyancy, and all four participants mentioned how important good buoyancy was for their dive. Some participants mentioned how being in the pool can produce poor buoyancy, as it is difficult to balance well in shallow water. When trying to become buoyant underwater, the aim is to achieve a perfectly horizontal line with your body, or flat body, and legs bent up for kicking. For two of the participants, buoyancy was not easy to master because of limited control of their lower limbs. Chuck is aware of his body position underwater, and is aware that even with a thick neoprene wetsuit and booties on, his legs will still sink. This experience is similar for Annie who only over the last two years has started to feel her legs droop. Low legs can result in a diver being unable to become neutrally buoyant, and thereby being off balance whilst diving. Annie’s feeling of her legs dropping leads onto the second point of proprioception; although Annie is unable to feel her legs, she has an embodied sense of her legs location. Paterson (2009) describes proprioception as the sensory return from the nerve endings in the muscles. Sensory levels decrease in people with SCI’s (Frontera, 2007), never the less, some sensory function could remain (lesion level dependant), thus enabling Annie to have an embodied sense of where her legs are in the water.

Information in Paterson (2009) identify how the haptic sense can play a role in SCUBA diving, because it shows how pressure on the skin receptors can react influencing pressure, temperature, and pain. The sense of temperature was important for the participants’ experience of diving. Although all participants were from and currently live

in the UK, not one had SCUBA dived in open water in the UK, the reason, temperature. When underwater a person will lose body heat twenty-five times faster than on land (PADI), this creates a problem for people with a SCI because of their decrease in ability to regulate their body temperature⁴. A person with a SCI will have a reduction in their ability to regulate their temperature from the level of impairment down (Frontera, 2007). Diving in cold water where you lose heat quickly, as well as being unable to affectively conduct thermoregulation, makes it is easy to understand why the participants choose not to dive in UK water. This fact was overlooked when recruiting participants for the thesis. Many people agreed to participate in the study until they were informed they would need to conduct a dive for observation and quickly dropped out of the study. It was not until the interview with Annie who mentioned the difficulty with cold water that the dropout rate made sense.

Continuation of Research; The experiences of the participants are similar with existing research (Allen-Collinson and Hockey, 2010; Carin-Levy and Jones, 2006; Kaplin and Becker, 2011; and Yarwasky and Furst, 1996) in regards to SCUBA diving for people with disabilities. The information gathered expands of previous experiences, in addition to identifying new experiences not previously explored in research.

The study surrounding haptic and diving conducted by Allen-Collinson and Hockey (2010) discovered that for divers, the temperature of the water is the most important factor in the sense of touch, as it influences what the diver will wear for that dive. Allen-Collinson and Hockey (2010) also found that pressure was a felt sense most prominate in the dives in either the divers suit or sinuses. Allen-Collinson and Hockey (2010) spoke of choosing the right ⁵exposure suit for the dive, but the experiences of the participants showed that they only dive in warm water. Some of the participants have a reduction in their ability for thermoregulation, and mentioned that they use 7mm semi-dry wetsuit. This choice in suit also removes the possibility to feel pressure in the suit. Felt pressure in a suit only comes from wearing a Drysuit where the diver has to manually add air to the suit in order to prevent a ⁶squeeze, as other suits are open to the air and pressure

⁴ The reduction in thermal regulation is relevant to those individuals who have a lesion level of thoracic 6 and above (Frontera, 2007).

⁵ Refers to what the diver is wearing, swim suit, wetsuit, semi-dry wetsuit, or Drysuit.

⁶ If a diver fails to add air into the Drysuit, they will feel a squeeze as a result of the lack of air circulating in their suit.

around them in the water. However, the analysis of the data material also showed that over time, the felt pressure within the sinuses eases. Although it is still felt during the dive, like Dave said, the ears get accustomed to going up and down in varying pressure.

Yarwasky and Furst (1996) identified that the notion rated as most important for divers with a disability was the fun and emotional response from simply participating in SCUBA diving. Research by Yarwasky and Furst (1996), also acknowledged that the third most important element of SCUBA diving for people with disabilities was challenge it provided. The first connection between previous research by Yarwasky and Furst (1996) and this thesis comes from the analysis of the data material from Chuck. Chucks comment in relation to his experience of SCUBA diving being magical relates back to element highlighted as most important for divers. Chuck was not the only participant to experience and express the fun and enjoyment of SCUBA diving. A common experience among the participants was fun and enjoyment whilst being in open water. Annie and Chuck had both encountered an undesirable experience, yet their previous involvements of fun and emotional response encouraged them to continue diving. Bob is usually very quick when acquiring skill, yet with SCUBA diving, he is still developing his skill nearly two years on. Dave thought he would never be able to SCUBA dive due to his impairment, yet by under taking this challenge they both have succeeded in learning new skills. The experiences by these two participants (Bob and Dave) connects to pervious research, as they expressed their enjoyment in relation to SCUBA diving as a challenge.

The last connection between Yarwasky and Furst's (1996) paper and this thesis is the importance of the excitement of the activity. Several of the participants commented on how they purposefully book SCUBA diving specific holidays for the love and excitement of the holiday, and that the primary focus of the holiday is to dive. Never the less, physically diving is not the only way the participants mentioned that they get excited. Through the interaction of SCUBA diving specific holidays, club BBQs after a pool session, and other social opportunities, the results of this thesis demonstrate that social issues were of great importance to the participants. These experiences of the participants are shared with the results of the paper by Carin-Levy and Jones (2006) who also discovered that the social interaction held a high level of importance for the divers, and the social interaction was not just the physical act of diving, but the numerous opportunities to socialise outside of the water. It seems that by participating in SCUBA

diving as a leisure activity, there was a personal and social transformation which enabled the participants of this thesis to feel empowered and equal to that of any other diver. The experience of equality provided the participants with a great sense of achievement, through taking part in an activity once thought impossible to them, because like Dave said, he thought SCUBA diving was an activity he would not be able to complete. The sense of equality was mentioned by all, but one with power is from Annie, who was taught by a fellow female with a SCI, creating a great sense of empowerment and equality. All the participants commented on how, when underwater they were like any other diver, and there was not a lot of difference between themselves and able-bodied divers. This statement about being “free” from their impairment is shared with the results from Carin-Levy and Jones (2006), where there were many references made to the weightlessness of the underwater world, and the importance of the ability to participate in an activity without their wheelchair. These sentiments about diving without a wheelchair were shared by the three participants who use a wheelchair on a daily basis.

Kaplin and Becker (2011) found that after a duration of SCUBA diving, there were physiological changes for the participants. Some changes were in relation to sensation, whilst others were in regards pain felt by the participants. Some variables during the pilot test such as warm weather made the researchers question if these physiological changes were due to SCUBA diving, or the tropical setting in which the pilot test was conducted. Kaplin and Becker (2011) discovered a decrease in mental problems, and a decrease of around eighty percent in symptoms relating to post-traumatic stress disorder (PTSD). Annie expressed how she had experienced physiological changes during SCUBA diving holidays, changes which would not generally occur without the help of medication. Annie describes how during a diving holiday, the pain in her legs is gone, and that her legs feel relaxed. It was because of these physiological changes and experiences that Kaplin and Becker (2001) investigated SCUBA diving in the first place, and they too discovered that during SCUBA diving, the water appears to restore neurological and psychological function for people with SCI. However, when asked the same question to another participant, although they agreed that they felt some physiological changes, they put these changes down to the warm weather instead of SCUBA diving. Bob identified how SCUBA enables him to relax, and with his military background and PTSD, SCUBA diving has according to Bobs interview, enabled him to find peace underwater. Chuck mentioned how he dives EANx, and when he does, it feels easier. Kaplin and Becker

(2011) tries to explain the easier breath as a result of one or two possibilities; the increased oxygenation of the tissue as a result of the pressurized air, or in Chucks case, EANx, or, divers who regularly use a wheelchair, might be able to inhale greater in the water, because their breathing is no longer hindered by sitting in a wheelchair.

In this chapter the thesis has related the results to that of existing theories and research, filling the gap in relation to experiences of divers with disabilities, and how these experiences relate to the haptic framework. The following chapter will explore further into the evidence provided, answering the research questions.

Conclusion

After looking at all the information gathered, and how it pertains to previous research and current theories, the thesis will now aim to answer the research questions. As mentioned above, the research questions of the thesis were;

1. How does a person with a disability experience SCUBA diving?
2. What do these experiences mean in social participation?

The first question looks into the experiences of people with disabilities whilst SCUBA diving, trying to find the internal phenomena, and interpret it according to the information provided by the participants. It was not until after the participants had physically observed diving (Chuck), or became convinced by friends (Bob and Dave), or read a random advertisement in a magazine (Annie) that they showed an interest in SCUBA diving. This interest very quickly turned in an obsession (Annie was back within months of her first SCUBA diving course to have the opportunity to dive again), after becoming engulfed by the underwater world, from that moment on, the marine life became a common reason for them to continue diving. As mentioned in the previous chapter, the participants experienced a number of different phenomenon whilst diving. All the participants claimed that as a result of SCUBA diving they were able to achieve a level of equality with able bodied divers, and where able to participate in an activity outside of their wheelchair, and some were even able to find a release from daily pain after prolonged diving. For one participant, whilst diving, they experience an ease in their breathing. Kaplin and Becker (2011) feel this could be because he is outside of his wheelchair where his body and diaphragm are no longer restricted by him sitting down. In the discussion, the thesis highlights how some experiences expressed by the participants connect with previous research (Allen-Collinson and Hockey, 2010; Carin-Levy and Jones, 2006; Kaplin and Becker, 2011; and Yarwasky and Furst, 1996), and some experiences which have yet and need to be explored further (being incorporated into the marine life, cold water diving for divers with a SCI). All these experiences provide the answer to research question one regarding how SCUBA diving is felt and experienced by people with a disability.

The second question is a follow on from the first, and looks into different reasons for participation, and see how their experiences have been influenced on a social level.

SCUBA diving was experienced by all participants as a fun and social activity which they can do almost anywhere and have something in common with in a stranger, enhancing their social participation of the activity. Dave was reluctant at first regarding his ability to be able to successfully SCUBA dive, it was not until the mention of a social BBQ afterward his try dive which convinced him to give SCUBA diving an initial go. SCUBA diving has opened the world up for the divers, all participants mentioned how when they book a holiday, it is booked with diving in mind. One participant acquired her injury whilst traveling (see transcripts in appendix 1.4), and it took time for her to travel again. SCUBA diving has created the means for her to travel again, and expand on her experiences socially with other divers and intensifying her lifeworld. The experiences of diving holidays, BBQ, and charity events provide the answer to research question two regarding what these experiences mean in relation to social participation.

Future Recommendations;

The results of this thesis has identified an outcome found in a pilot study (Kaplin and Becker, 2011), and concludes that further investigation into the experiences of physiological changes of Dave and Annie should be explored deeper. Deeper investigation into these phenomenon has the potential to expand and provide additional information and research in regards to the haptic experience of SCUBA diving through pressure. The research could be conducted on a diver with or without a disability; never the less, current research would indicate a greater need for additional information relating to divers with a disability. This thesis also advocates for research to explore the experiences of divers who might have a reduction in one sense (visual or hearing impairment), and how their experiences might relate back to the framework of haptic.

This thesis advocates phenomenology as one means to explore and conduct qualitative research, investigation sensory dimensions (haptic) of sporting embodiment. Phenomenology allows researchers to delve deeper into the structures of (in this case) SCUBA diving experiences for people with a disability. Phenomenology can provide new information and insight surrounding the sporting body of a person with a disability; a person and body who holds meaning and purpose to their lived experiences. This thesis aimed to fill a lacuna in current research, and feels that it has provided a new insight into

the experiences of divers with disabilities and how these experiences relate back to the haptic framework and social participation.

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Appendix

Appendix 1.1;

Interview Guide

-Guide Lines-

Topic: How is SCUBA diving experienced for people with disabilities?

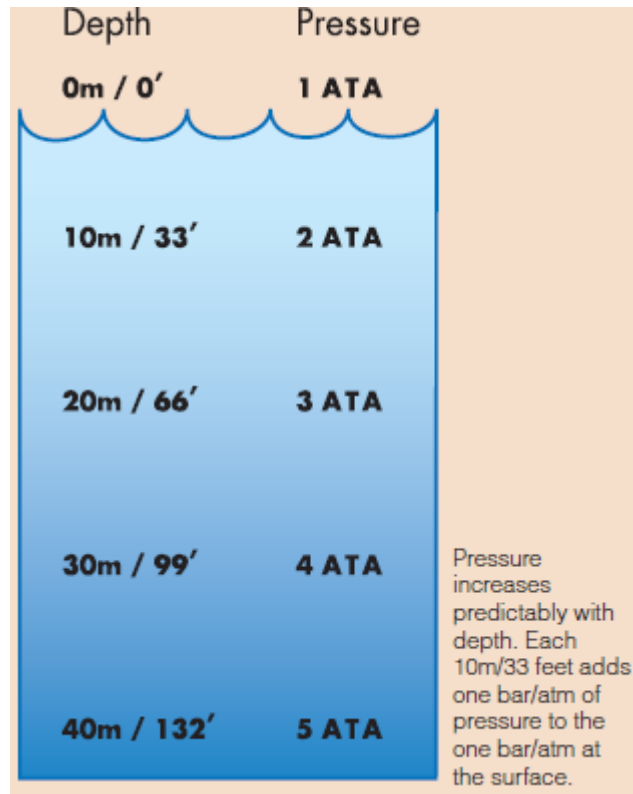
Research Question: How does a person with a disability experience SCUBA diving?

Possible Questions:

1. How long have you been involved in SCUBA diving?
 - a. What was the reason behind choosing diving?
 - b. Did you have an interest in diving prior to injury/illness?
2. Does anything feel different when diving compared to other activities?
 - a. Describe how it felt when learning the underwater skills
3. Describe what it is like when you are in the water
 - a. Does this experience differ between pool and open water?
4. Has diving made a difference in your life?
 - a. If so, how?
5. How do you experience time underwater?
6. Describe your last dive
 - a. How did it feel?
7. Anything else you would like to add?

Appendix 1.2;

Atmospheric pressure diagram



Appendix 1.5; Atmosphere diagram

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