**SSN: 2515-6780**
**JOURNAL ON TOURISM & SUSTAINABILITY**
Volume 8 Issue 1 July 2025

# IMMERSION OR OVERWHELM? VR-ENHANCED SCUBA DIVING FOR NEURODIVERGENT TOURISTS

**Caglar Bideci*, Mujde Bideci****
*Lecturer in Marketing, University of the West of Scotland, London Campus
**Senior Lecturer in Marketing, Canterbury Christ Church University

**Abstract**
Tourism research and practice continue to prioritise neurotypical experiences, often excluding the needs of neurodivergent individuals despite growing awareness of neurodiversity. This study explores how virtual reality-enhanced (VR-enhanced) scuba diving can serve as a restorative and inclusive tourism approach that supports cognitive restoration and emotional well-being for neurodivergent users, drawing on Attention Restoration Theory and the constructs of presence and embodiment. While traditional scuba diving tourism research has emphasised risk, motivation, and skill, this study reframes scuba diving through the lens of sensory inclusivity and neurodiverse user experience. Our research demonstrates how customisable sensory features in VR support restorative engagement for neurodivergent users and contribute to inclusive tourism by positioning VR-enhanced scuba diving as a transformative and accessible alternative to conventional nature-based experiences.

**Key words:** Attention Restoration, Embodiment, Neurodiversity, Presence, Scuba Diving, Virtual Reality.

## Introduction

Participation in engaging activities significantly contributes to one's quality of life. Activities like scuba diving have been recognised for providing confidence, social inclusion, and self-efficacy for neurodivergent individuals who have dyslexia, autism spectrum disorder (ASD) or autism spectrum condition (ASC) and attention deficit hyperactivity disorder (ADHD). For example, aquatic activities help children with autism develop greater tolerance for touching and making eye contact with others while also acquiring new skills (Vonder Hulls et al., 2006). In a published PADI report, Denny (2018) shares her insights on autism in scuba diving and how scuba diving changes biases and improves inclusivity. However, accessibility challenges and cognitive constraints limit participation in tourism. Tourism research and practice remain largely centred on neurotypical experiences despite the growing recognition of neurodiversity, societal efforts towards inclusive design (e.g., autism certification system for hotels and destinations provided by IBBCES) and Sustainable Development Goals (SDGs) within the United Nations' 2030 Agenda and underline "leaving no one behind". As a result, neurodivergent tourists continue to be overlooked as a niche group, leading to missed opportunities for inclusive, accessible, and transformative

tourism experiences (Jepson et al., 2024). Moreover, tourism research has traditionally emphasised hedonic motivations, memorable experiences, and the benefit of on water spaces (see Kim, 2014) for those who are neurotypical.

Scuba diving has received growing academic attention, primarily in relation to protection and sustainability (e.g., Lucrezi et al., 2017), system and tourism management (Bideci, 2021), risk perception (Dimmock, 2009), motivation (Todd et al., 2002), and ecological impact education (Giglio et al., 2018). Compared to common approaches, it has the potential to become an integral part of rehabilitation and therapeutic programs, encouraging individuals to explore new abilities and feel independent contributing to participants` well-being, positive self-image, social inclusion and improved mental health. As Yerxa et al. (1990) state that engaging in "just-right challenges" (activities that are both enjoyable and appropriately demanding) promotes wellbeing, where scuba diving represents more than just a recreational pursuit for neurodivergent individuals. However, its potential for offering emotional and cognitive benefits for neurodivergent individuals, remains underexplored. One widely applied framework in this context is Attention Restoration Theory, introduced by Kaplan and Kaplan (1989) in environmental psychology, which posits that natural environments help cognitive restoration to reduce mental fatigue and support attentional recovery (Guo et al., 2025).

While attention restoration theory was initially applied to physical environments, recent tourism research has extended its relevance to digital and virtual spaces, including digital nature simulations (Browning et al., 2020) and virtual Airbnb experiences (Wong et al., 2023). These virtual environments have demonstrated potential for supporting psychological well-being through structured, predictable, and low-stimulus experiences, which are fundamental for neurodivergent visitors who may find traditional tourism overstimulating. VR-scuba experiences can offer a promising alternative compared to real-world intense sensory diving. Research shows that immersive virtual reality can simulate realistic underwater environments (Slater & Sanchez-Vives, 2016) while also allowing stimuli to be tailored to individual needs, making it accessible for users with varying sensory sensitivities (Parsons & Rizzo, 2008). However, the current literature on VR in tourism tends to prioritise technical accessibility such as device cost, weight, and user familiarity (Hagen et al., 2024), the risk of overdependence on technology and limited authenticity (Gao et al., 2022), and data privacy issues (Shukla et al., 2024) while paying limited attention to experiential accessibility, or how VR environments accommodate the sensory, cognitive, and emotional needs of these diverse users. This gap is particularly relevant in immersive, nature-based tourism contexts, where the needs of neurodivergent individuals remain largely unaddressed. Moreover, despite the promising application of attention restoration theory in both real and virtual

natural settings, its specific implications for neurodivergent users in VR environments have not been sufficiently examined.

To address this gap, this study investigates how immersive VR-enhanced scuba diving environments can support the cognitive and emotional well-being of neurodivergent individuals. Drawing on attention restoration theory (Kaplan & Kaplan, 1989) with presence (Slater, 2003) and embodiment (Kilteni et al., 2012), this research examines how features such as gaze-based navigation, adjustable stimuli, and controlled auditory input enhance immersive experiences while addressing over-stimulation or under-stimulation (Dunn, 1997). This research proposes a design approach that frames neurological differences not as deficits but as variations in cognition and perception that can shape meaningful, co-created tourism experiences.

**Scuba Diving And The Neurodivergent Tourist Experience**

The World Health Organisation (2025) estimates that there are around 1.3 billion people who experience serious disability, with many health inequities. In the UK alone, there are about 16.1 million people with a disability, representing 24% of the total population, according to the Department for Work and Pensions' Family Resources (House of Commons Library, 2024). Despite the interest in sports and leisure activities for individuals with disabilities has grown substantially, with research highlighting its benefits for physical health, mental well-being, and social inclusion, about 40% of adults and youths with a disability do not participate in adequate physical activity (<30 min) (Aitchison et al., 2022).

On that note, scuba diving offers a profound subaqueous experience (Bideci and Bideci, 2021) by creating an atmosphere that is serene, silent, and mysterious (Fisher, 2014), which serves as a gateway to another world (Nichols, 2024). It has been recognised as an exhilarating recreational activity, but recent studies (e.g., Morgan et al., 2019) indicate it also holds significant benefits for individuals with neurodivergent individuals (see Table 1). It is immersive in nature with minimum cognitive and accessibility barriers and therefore contributes to well-being (Mulligan et al. 2012; Santiago Perez et al. 2024). Being in this serene environment reduces the effects of gravity because of buoyancy and aids flexible movement, body awareness, improved motor skills, muscle strength, and relaxation that results in less tension and more mobility (Naumann et al., 2021a). Moreover, it contributes to overcoming aquaphobia, interacting with peers (Mehrholz et al., 2011), personal growth and learning (Stan, 2012), reduced social isolation (Taub et al, 1999), sense of competence (Carin-Levy & Jones, 2007) and achievement (Mortimer et al., 2014). Despite this optimistic picture and being labelled as an inclusive tourist activity for all ages, genders, and fitness levels (Gregory & Edney, 2019) and its potential for improving experiences, scuba

diving remains unexplored for neurodivergent individuals (Naumann et al., 2021b).

Neurodivergent individuals often face significant barriers to participation in scuba diving, including limited access to facilities, financial constraints, a lack of awareness and being marketed as adventure tourism (e.g., Giddy, 2018). Health inequities, stigma, and exclusion from education and employment further contribute to these challenges. However, compared to other adventure tourism activities like hiking or rafting, which offer unpredictable and sensory-overloaded environments, scuba diving offers a calmer atmosphere (e.g., aquatic therapy by Diveheart deep pool project).

**Table 1.** Scuba diving benefits for neurodivergent individuals

| Physical Benefits | Cognitive and Emotional Benefits |
|---|---|
| Weightlessness and Reduced Gravity: The buoyancy of water can reduce the effects of gravity, making movement easier for people with limited mobility. | Sense of Freedom and Independence: Scuba diving can provide a sense of freedom and independence, allowing individuals to explore a new environment and challenge their perceived limitations. |
| Increased Range of Motion: The water's resistance can help improve flexibility and range of motion. | Stress Reduction: The calm and focused environment of scuba diving can help reduce stress and anxiety. |
| Muscle Strengthening: The effort required to move and manoeuvre in the water can help build muscle strength. | Increased Self-Confidence: Successfully overcoming challenges associated with scuba diving can boost self-confidence and self-esteem. |
| | Social Interaction: Scuba diving can provide opportunities for social interaction and connection. |

**Virtual Reality In Scuba Diving Tourism And Neurodiversity**

Extended reality technologies, including VR, enhance tourist experiences by blending digital elements with physical environments to stimulate cognitive and emotional engagement (Flavián et al., 2019; Bideci & Bideci, 2023). In the marine world, these technologies have been used for several reasons, such as marine archaeology (Alexandrou et al., 2024), training (Scuba VR application by Hatsushiska et al., 2019), underwater cultural heritage (VISAS application by Bruno et al., 2016), and marine biology (McMillan et al., 2017). In all these fields of applications, the virtual environments are designed across three levels of realism (Hagen et al., 2024): (1) Hybrid environments are designed with 3D scenes of real underwater locations with marine life to enhance the presence. (2) Real environments consist of pre-recorded or live footage of actual marine

environments that create a sense of telepresence. (3) Simulated environments use a complete digital world.

While VR in scuba diving tourism has a very limited field of application and research, this technology presents a promising opportunity for emotional and cognitive well-being for neurodivergent tourists in recent years. Its applications in skill development and sensory processing with a controlled, predictable, and immersive environment help users. Especially for neurodivergent tourists, VR applications have been used to improve attention skills by offering interactive and engaging experiences with restorative environments and enhance visual attention capabilities (Patti et al., 2024). It is also an effective learning tool that provides hands-on practice (Franze et al., 2024), improves emotional regulation and sensory processing, and reduces anxiety (Mills et al., 2023).

A careful design is necessary to ensure lived experiences are created, tailored, safe and accessible to neurodivergent users (Yi et al., 2024). Related research also supports the role of VR's therapeutic function. For example, Browning et al. (2020) suggest that brief exposure to calming virtual natural settings can reduce stress, improve mood, and foster physiological relaxation and over time, the repeated exposure can enhance connection to the natural environment that supports emotional recovery. That is, combining with a careful design and awareness of neurodiversity, VR can increase the impact of desired well-being and psychological relief (Navarro-Haro et al., 2019) in a self-guided alternative to the real world (Guo et al., 2025).

**Presence And Embodiment In Vr-Enhanced Scuba Experiences**

In scuba diving, VR provides a sense of presence and embodiment in a controlled environment where individuals experience underwater without barriers (Fels et al., 2005), which are crucial elements for an inclusive scuba diving experience (Slater, 2003; Kilteni et al., 2012). The concept of presence shows how immersive technologies, when it is designed effectively, can stimulate a sense of "being there" with the just-right challenges that are crucial for deriving the psychological benefits typically representing a real-world nature exposure. Embodiment, in turn, deepens this understanding by highlighting how spatial awareness within VR contribute to a user's sense of self. These are essential components for neurodivergent individuals who may experience sensitivity or anxiety in their daily life environments. Embodiment can be achieved as neurodivergent scuba divers can still feel present with their virtual versions leading to motor awareness in a low-risk environment. This is in line with the attention restoration theory, which promotes the restorative attention in such a way that VR-enhanced scuba diving may act not only as a simulation of underwater but also as a therapeutic space supporting well-being. Together, both frameworks offer an alternative mode of engagement with nature and an

inclusive layout for designing virtual experiences with attention restoration theory's principles, while also ensuring embodied presence through adjustable, flexible and sensory-aware features (e.g., adaptable audio).

An inclusive design is crucial that prioritises a safe, inclusive and immersive service by sensory control, eye tracking, volume, and adjusted interfaces (Shaker et al, 2020). For example, Glaser and Schmidt (2022) found in their systematic literature review that ASD users' exposure level to motion sickness can differ. Therefore, sensory sensitive elements should be included in the design of VR, e.g., larger elements compared to the real world for easy navigation and different time processing for different needs (Standen & Brown, 2006). In this sense, a VR-enhanced scuba diving programme featuring pool diving (controlled and safe area) can provide interactive tasks and adaptive controls tailored to different cognitive levels like physical movement and communication with others in a hand-gesture-based language while immersed underwater (D'Isanto et al., 2019; Stefania et al., 2019). Whereas the underwater (on the sea, ocean, river, lake) environment is dynamic and constantly moving, which makes it more challenging for divers. Moreover, compared to underwater in the outside world, pool diving offers a secure and controlled environment (reduced the risk of injuries, such as drowning, decompression sickness and oxygen toxicity - Balestra et al., 2019) where the least knowledge and limited communication are required.

**Discussion And Future Research**

VR-enhanced scuba diving is a promising inclusive tourism service. However, while the desired outcome of this service is providing a good level of immersion, engagement and presence (Skola et al., 2020), it is not without its limitations, like interactivity. Yet, these kinds of limitations can be opportunities, as in such virtual environments, neurodivergent users' abilities can be extended to therapeutic elements (Dudley et al., 2023) and more autonomy and flexibility, such as adjusting volume, which is not possible in the real world.

Future research should prioritise the empirical validation of VR-enhanced scuba interventions for neurodivergent profiles. Given the variability in sensory, emotional, and cognitive needs, studies should adopt user-centred and co-design methods to customise features such as gaze-based navigation (Dudley et al., 2023). Practical implications are varied; for instance, VR design should incorporate different sensory features, addressing visual or auditory sensitivity by reducing brightness, providing the option to disable background noise, using muted colours, implementing directional sound design, and adjusting the lighting in virtual underwater environments. This approach enables neurodivergent users to feel comfortable with issues such as photophobia, sensory overload, or visual processing difficulties. Moreover, focused tasks using

nature-based elements, such as following a fish, can help sustain engagement. One of the most important aspects is autonomy and flexibility; therefore, user-led navigation at their own pace alongside guided activities can help control anxiety related to uncertainty or sudden changes. To enhance embodiment and spatial awareness, aligning avatars with body representation and incorporating haptic feedback can be beneficial. A key challenge is social interaction for neurodivergent users. Consequently, social components ought to be optional, enabling users to match appropriately and maintain an unbiased attitude to promote low-pressure social interaction.

Within the aforementioned frameworks, this study presents a research suggestion aimed at providing a cognitively and emotionally enriching touristic experience for neurodivergent individuals through VR-enhanced scuba diving. This research evaluates possible cognitive and emotional effects of VR-enhanced scuba diving on neurodivergent individuals. It examines whether the VR-enhanced scuba diving simulation provides a sense of achievement, confidence, and self-efficacy. It is crucial to explore the potential of VR-enhanced scuba diving in raising awareness about neurodivergent individuals and encouraging active participation in touristic activities. Future research can demonstrate how neurodivergent individuals enhance their self-confidence through scuba diving skills that increase social engagement via shared VR-enhanced scuba diving experiences and community-building opportunities. The results can be used to develop new methods to reduce anxiety and stress levels. Besides, the results can explore the involvement of neurodivergent individuals in VR-enhanced scuba diving, scuba diving in the real world and adaptive touristic activities that create awareness among families and caregivers and increase the number of trained scuba divers qualified to assist neurodivergent individuals and the availability of VR-enhanced scuba diving service providers.

**Contributors**

*Dr. Caglar Bideci, Lecturer in Marketing at the University of the West of Scotland, London Campus, UK and Dr. Mujde Bideci, Senior Lecturer in Marketing at Canterbury Christ Church University*

**Corresponding Author**

*Dr. Caglar Bideci, Lecturer in Marketing at the University of the West of Scotland, London Campus. Contact: caglarbideci@gmail.com / caglar.bideci@uws.ac.uk*

**References**

Aitchison, B., Rushton, A. B., Martin, P., Barr, M., Soundy, A., & Heneghan, N. R. (2022). The experiences and perceived health benefits of individuals with a disability participating in sport: A systematic review and narrative synthesis. Disability and Health Journal, 15(1), 101164.

Balestra, C., Germonpré, P., Rocco, M., Biancofiore, G., & Kot, J. (2019). Diving physiopathology: The end of certainties? Food for thought. Minerva Anestesiologica, 85, 1129–1137.

Bideci, C. (2021). Redesigning the scuba diving tourism system according to principles of sustainability. Swansea.

Bideci, C., & Bideci, M. (2023). Sweet to bitter: Dissonance of scuba diving experience. Tourism Management Perspectives, 48, 101167. https://doi.org/10.1016/j.tmp.2023.101167

Browning, M. H., Mimnaugh, K. J., Van Riper, C. J., Laurent, H. K., & LaValle, S. M. (2020). Can simulated nature support mental health? Comparing short, single-doses of 360-degree nature videos in virtual reality with the outdoors. Frontiers in Psychology, 10, 2667.

Bruno, F., Barbieri, L., Muzzupappa, M., & Cozza, M. (2016). Virtual and augmented reality tools to improve the exploitation of underwater archaeological sites by diver and non-diver tourists. In M. Ioannides, E. Fink, A. Moropoulou, M. Hagedorn-Saupe, A. Fresa, G. Liestøl, V. Vávra, & T. Pletinckx (Eds.), Digital Heritage. Progress in Cultural Heritage: Documentation, Preservation, and Protection (pp. 253-264). Springer. https://doi.org/10.1007/978-3-319-48496-9_22

Carin-Levy, G., & Jones, D. (2007). Psychosocial aspects of scuba diving for people with physical disabilities: An occupational science perspective. Canadian Journal of Occupational Therapy, 74(1), 6-14.

Carroll, D. D., Courtney-Long, E. A., Stevens, A. C., Sloan, M. L., Lullo, C., Visser, S. N., Fox, M. H., Armour, B. S., Campbell, V. A., Brown, D. R., & Dorn, J. M. (2014). Vital signs: Disability and physical activity—United States, 2009–2012. Morbidity and Mortality Weekly Report, 63(18), 407-413.

Denny, M. (2018). Scuba diving can help people with autism. PADI Blog. https://blog.padi.com/scuba-diving-can-help-people-autism/

Dimmock, K. (2009). Finding comfort in adventure: Experiences of recreational SCUBA divers. Leisure Studies, 28(3), 279-295.

D'Isanto, T., D'Elia, F., Raiola, G., & Altavilla, G. (2019). Assessment of sport performance: Theoretical aspects and practical indications. Sport Mont, 17, 79-82.

Dudley, J., Yin, L., Garaj, V., & Li, B. (2023). Inclusive immersion: A review of efforts to improve accessibility in virtual reality, augmented reality and the metaverse. Virtual Reality, 27, 2989–3020. https://doi.org/10.1007/s10055-023-00850-8

Fels, S., Yohanan, S., Takahashi, S., Kinoshita, Y., Funahashi, K., Takama, Y., & Chen, G. T. P. (2005). User experiences with a virtual swimming interface exhibit. In Entertainment Computing-ICEC 2005 (pp. 433-444). Springer.

Flavián, C., Ibáñez-Sánchez, S., & Orús, C. (2019). The impact of virtual, augmented and mixed reality technologies on the customer experience. Journal of Business Research, 100, 547-560.

Franze, A., Loetscher, T., Gallomarino, N. C., Szpak, A., Lee, G., & Michalski, S. C. (2024). Immersive virtual reality is more effective than non-immersive devices for developing real-world skills in people with intellectual disability. Journal of Intellectual Disability Research, 68(12), 1358-1373.

Gao, B. W., Zhu, C., Song, H., & Dempsey, I. M. B. (2022). Interpreting the perceptions of authenticity in virtual reality tourism through postmodernist approach. Information Technology & Tourism, 24(1), 31-55.

Giddy, J. K. (2018). A profile of commercial adventure tourism participants in South Africa. Anatolia, 29(1), 40-51.

Giglio, V. J., Luiz, O. J., Chadwick, N. E., & Ferreira, C. E. (2018). Using an educational video-briefing to mitigate the ecological impacts of scuba diving. Journal of Sustainable Tourism, 26(5), 782–797.

Glaser, N., & Schmidt, M. (2022). Systematic literature review of virtual reality intervention design patterns for individuals with autism spectrum disorders. International Journal of Human–Computer Interaction, 38(8), 753-788.

Gregory, S. F., & Dimmock, K. (2019). Alive and kicking: The benefits of scuba diving leisure for older Australian women. Annals of Leisure Research, 22(4), 550–574. https://doi.org/10.1080/11745398.2019.1605914

Guo, H., Ma, F., & Zhou, Z. (2025). Validation of technology acceptance model for virtual reality usage in collaborative learning to enhance learner performance. Innovations in Education and Teaching International, 62(2), 429-443.

Hagen, O., Aly, A., Jones, R., Varga, M., & Bazazian, D. (2024). Beyond the surface: A scoping review of vision-based underwater experience technologies and user studies. Intelligent Marine Technology and Systems, 2(1), 19.

Hatsushika, D., Nagata, K., & Hashimoto, Y. (2018). Underwater vr experience system for scuba training using underwater wired hmd. In OCEANS 2018 MTS/IEEE Charleston (pp. 1-7). IEEE.

House of Commons Library. (2024). UK disability statistics: Prevalence and life experiences. https://commonslibrary.parliament.uk/research-briefings/cbp-9602/

Jepson, A., Stadler, R., & Garrod, B. (2024). Tourism and neurodiversity: A problematisation and research agenda. Current Issues in Tourism, 27(4), 546-566.

Kaplan, R., & Kaplan, S. (1989). The experience of nature: A psychological perspective. Cambridge University Press.

Kilteni, K., Normand, J. M., Sanchez-Vives, M. V., & Slater, M. (2012). Extending body space in immersive virtual reality: A very long arm illusion. PLoS ONE, 7(7), e40867.

Kim, J. H. (2014). The antecedents of memorable tourism experiences: The development of a scale to measure the destination attributes associated with memorable experiences. Tourism Management, 44, 34-45.

Lucrezi, S., Milanese, M., Markantonatou, V., Cerrano, C., Sarà, A., Palma, M., & Saayman, M. (2017). Scuba diving tourism systems and sustainability: Perceptions by the scuba diving industry in two marine protected areas. Tourism Management, 59, 385–403.

McMillan, K., Flood, K., & Glaeser, R. (2017). Virtual reality, augmented reality, mixed reality, and the marine conservation movement. Aquatic Conservation: Marine and Freshwater Ecosystems, 27, 162–168. https://doi.org/10.1002/aqc.2820

Mehrholz, J., Kugler, J., & Pohl, M. (2011). Water-based exercises for improving activities of daily living after stroke. Cochrane Database of Systematic Reviews, (1).

Mills, C. J., Tracey, D., Kiddle, R., & Gorkin, R. (2023). Evaluating a virtual reality sensory room for adults with disabilities. Scientific Reports, 13(1), 495.

Mortimer, R., Privopoulos, M., & Kumar, S. (2014). The effectiveness of hydrotherapy in the treatment of social and behavioral aspects of children with autism spectrum disorders: A systematic review. Journal of Multidisciplinary Healthcare, 7, 93-104.

Mulligan, H., Whitehead, L. C., Hale, L. A., Baxter, G. D., & Thomas, D. (2012). Promoting physical activity for individuals with neurological disability: Indications for practice. Disability and Rehabilitation, 34(13), 1108-1113.

Naumann, K., Kernot, J., Parfitt, G., Gower, B., & Davison, K. (2021a). Water-based interventions for people with neurological disability, autism, and intellectual disability: A scoping review. Adapted Physical Activity Quarterly, 38(3), 474-493.

Naumann, K., Kernot, J., Parfitt, G., Gower, B., Winsor, A., & Davison, K. (2021b). What are the effects of scuba diving-based interventions for clients with neurological disability, autism or intellectual disability? A systematic review. Diving and Hyperbaric Medicine, 51(4), 355.

Navarro-Haro, M. V., Modrego-Alarcón, M., Hoffman, H. G., López-Montoyo, A., Navarro-Gil, M., Montero-Marin, J., García-Palacios, A., Borao, L., & García-Campayo, J. (2019). Evaluation of a mindfulness-based intervention with and without virtual reality dialectical behavior therapy® mindfulness skills training for the treatment of generalized anxiety disorder in primary care: A pilot study. Frontiers in Psychology, 10, 55.

Nichols, W. J. (2024). Blue mind: The surprising science that shows how being near, in, on, or under water can make you happier, healthier, more connected, and better at what you do. Hachette UK.

Parsons, T. D., & Rizzo, A. A. (2008). Affective outcomes of virtual reality exposure therapy for anxiety and specific phobias: A meta-analysis. Journal of Behavior Therapy and Experimental Psychiatry, 39(3), 250-261.

Patti, A., Vona, F., Barberio, A., Buttiglione, M. D., Crusco, I., Mores, M., & Garzotto, F. (2024). Training attention skills in individuals with neurodevelopmental disorders using virtual reality and eye-tracking technology. In International Conference on Human-Computer Interaction (pp. 368-381). Springer.

Santiago Perez, T., Crowe, B. M., Townsend, J. N., Rosopa, P. J., & Kaufman, M. R. (2024). Can scuba diving transform the lives of people with physical impairments? A mixed methods study. Disability and Rehabilitation, 46(21), 4965-4978.

Shaker, A., Lin, X., Kim, D. Y., Kim, J. H., Sharma, G., & Devine, M. A. (2020). Design of a virtual reality tour system for people with intellectual and developmental disabilities: A case study. Computing in Science & Engineering, 22(3), 7-17. https://doi.org/10.1109/MCSE.2019.2961352

Shukla, A., Mishra, A., Rana, N. P., & Banerjee, S. (2024). The future of metaverse adoption: A behavioral reasoning perspective with a text-mining approach. Journal of Consumer Behaviour, 23(5), 2217-2233.

Škola, F., Rizvić, S., Cozza, M., Barbieri, L., Bruno, F., Skarlatos, D., & Liarokapis, F. (2020). Virtual reality with 360-video storytelling in cultural heritage: Study of presence, engagement, and immersion. Sensors, 20(20), 5851.

Slater, M. (2003). A note on presence terminology. Presence Connect, 3(3), 1-5.

Slater, M., & Sanchez-Vives, M. V. (2016). Enhancing our lives with immersive virtual reality. Frontiers in Robotics and AI, 3, 236866.

Stan, A. E. (2012). The benefits of participation in aquatic activities for people with disabilities. Sports Medicine Journal/Medicina Sportivă, 8(1).

Standen, P. J., & Brown, D. J. (2006). Virtual reality and its role in removing the barriers that turn cognitive impairments into intellectual disability. Virtual Reality, 10, 241-252.

Stefania, M., Marsico, E., & Cassese, F. P. (2019). Assessment of the impact of an inclusive diving program, on subjects with cognitive disability: Analysis of the enhancement of cognitive processes. Journal of Physical Education and Sport, 19, 1937-1942.

Taub, E., Uswatte, G., & Pidikiti, R. (1999). Constraint-induced movement therapy: A new family of techniques with broad application to physical rehabilitation, clinical review. Journal of Rehabilitation Research and Development, 36(3), 237-251.

Todd, S. L., Graefe, A. R., & Mann, W. (2002). Differences in SCUBA diver motivations based on level of development. In S. Todd (Ed.), Proceedings of the 2001 Northeastern Recreation Research Symposium (pp. 107–114).

Vonder Hulls, D. S., Walker, L. K., & Powell, J. M. (2006). Clinicians' perceptions of the benefits of aquatic therapy for young children with autism: A preliminary study. Physical & Occupational Therapy in Pediatrics, 26(1-2), 13-22.

Wong, I. A., Lu, M. V., Lin, S., & Lin, Z. (2023). The transformative virtual experience paradigm: The case of Airbnb's online experience. International Journal of Contemporary Hospitality Management, 35(4), 1398-1422.

World Health Organisation. (2025). Disability. https://www.who.int/news-room/fact-sheets/detail/disability-and-health/

Yerxa, E. J. (1990). An introduction to occupational science, a foundation for occupational therapy in the 21st century. Occupational Therapy in Health Care, 6(4), 1-17.

Yi, Y. J., Heidari Matin, N., Brannan, D., Johnson, M., & Nguyen, A. (2024). Design considerations for virtual reality intervention for people with intellectual and developmental disabilities: A systematic review. HERD: Health Environments Research & Design Journal, 17(4), 212-241.