

Breaking Barriers: In depth analysis of gym accessibility among gym goers, including individuals with disabilities and those who train them.

by

Cassandra Maria Beattie

B.S., Kansas State University, 2018

M.S., Kansas State University, 2019

AN ABSTRACT OF A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

DOCTOR OF PHILOSOPHY

Department of Kinesiology
College of Health and Human Sciences

KANSAS STATE UNIVERSITY
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Abstract

Background: Nearly 80% of US adults do not meet physical activity guidelines. Yet, over a quarter of US adults hold a gym membership. Gyms are locations dedicated to physical activity participation, yet barriers persist negatively influencing gym-based physical activity (i.e., exercise). Individuals with disabilities (IWD) are less likely to participate in exercise behaviors as compared to their non-disabled counterparts. IWD battle their own unique set of barriers to gym-based exercise. Most gyms lack disability-educated staff, including personal trainers, further limiting the exercise opportunities for IWD. Exercise is essential for the health and wellness of IWD and those without disabilities. Therefore, the purpose of this dissertation is three-fold: Study one) How do gym-goers describe their gym experiences? Study two) How do individuals with congenital and acquired disabilities manage to overcome barriers to gym-based exercise? Study three) How have personal trainers managed to successfully overcome barriers to training IWD? **Methods:** This dissertation comprises three studies (Chapters 2, 3, 4). The first study utilized a qualitative design consisting of eleven semi-structured focus groups (33 participants) to explore the experiences of gym goers to better understand what facilitates or poses barriers to their gym attendance. A hybrid inductive-abductive approach and thematic content analysis was employed to interpret participant responses. The second study utilized a qualitative study design consisting of 10 individual interviews to determine gym-based exercise facilitators and barriers from the perspective of individuals with congenital and acquired disabilities meeting, surpassing, or partially meeting physical activity guidelines. A thematic content analysis was employed to interpret participant responses. Lastly, study three also utilized a qualitative study design with a thematic content analysis to explore the experiences of 10 personal trainers of differing educational and occupational background successfully training

IWD. Results: Chapter 2's inductive, thematic content analysis of focus group data revealed three themes regarding gym experiences: 1) experiencing discrimination negatively affects gym satisfaction and attendance 2) inclusive design facilitates gym satisfaction and attendance, and 3) alliances help and hinder gym satisfaction and attendance. A sense of belonging was found as an underlying element across all themes. Building on the inductive, thematic content analysis findings, an abductive approach was utilized to propose a new, adapted model called, "Belonging in the Gym," based on the original, "Belonging in Academia Model." In chapter 3 three themes were found regarding facilitators and barriers to gym-based exercise for IWD: 1) barriers and facilitators to gym use by IWD extend beyond gym layout, 2) experiences with other gym members are both positive and negative, and 3) personal trainers need special training, but should not apply special treatment when working with IWD. Chapter 4's findings expanded upon the third theme from Chapter 3 by exploring the diverse experiences of personal trainers who were currently training IWD. Personal trainers' insights were condensed into five themes that provide knowledge on how to better support the training of IWD and include: (1) specialized education and extended experience are needed for personal trainers working with IWD, (2) experience working with a diverse range of disabilities and differing expressions of each is vital for personal trainers' success in working with IWD, (3) an active network between personal trainers and allied healthcare providers is necessary to better support clients, (4) resource management is a must for personal trainers to improve accessibility to physical activity, and (5) personal trainers empower IWD to self-advocate for their physical activity needs. **Conclusion:** A sense of belonging both facilitates and serves as a barrier for gym experiences, influencing overall attendance and exercise behaviors of gym goers. Gym-goers with disabilities successfully completing exercise behaviors explain that influences for their exercise extend beyond gym

layout, to include positive and negative experiences with fellow gym-goers and personal trainers. Personal trainers affirmed that many IWD have negative experiences with other trainers and additional education, experience, networking, and advocacy is needed to change that. Personal trainers may be the most influential gym staff members to intervene with by utilizing educational interventions. Given the lack of public health interventions within gyms spaces, it is critical to conduct future research to expand the accessibility of gyms and further increase exercise behaviors among US adults.

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Approved by:

Major Professor
Dr. Katie M. Heinrich

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IWD. Results: Chapter 2's inductive, thematic content analysis of focus group data revealed three themes regarding gym experiences: 1) experiencing discrimination negatively affects gym satisfaction and attendance 2) inclusive design facilitates gym satisfaction and attendance, and 3) alliances help and hinder gym satisfaction and attendance. A sense of belonging was found as an underlying element across all themes. Building off the inductive, thematic content analysis findings, an abductive approach was utilized to propose a new, adapted model called, "Belonging in the Gym," based on the original, "Belonging in Academia Model." Results in chapter 3 revealed three themes regarding facilitators and barriers to gym-based exercise for IWD: 1) barriers and facilitators to gym use by IWD extend beyond gym layout, 2) experiences with other gym members are both positive and negative, and 3) personal trainers need special training, but should not apply special treatment when working with IWD. Chapter 4's findings expanded upon the third theme from Chapter 3 by exploring the diverse experiences of personal trainers who were currently training IWD. Personal trainers' insights were condensed into five themes that provide knowledge on how to better support the training of IWD and include: (1) specialized education and extended experience are needed for personal trainers working with IWD, (2) experience working with a diverse range of disabilities and differing expressions of each is vital for personal trainers' success in working with IWD, (3) an active network between personal trainers and allied healthcare providers is necessary to better support clients, (4) resource management is a must for personal trainers to improve accessibility to physical activity, and (5) personal trainers empower IWD to self-advocate for their physical activity needs. **Conclusion:** A sense of belonging both facilitates and serves as a barrier for gym experiences, influencing overall attendance and exercise behaviors of gym goers. Gym-goers with disabilities successfully completing exercise behaviors explain that barriers to their exercise expand beyond gym layout,

with positive and negative experience with fellow gym-goers and personal trainers serving as an influence. Personal trainers affirmed that many IWD have negative experiences with other trainers and additional education, experience, networking, and advocacy is needed to change that. Personal trainers may be the most influential gym staff members to intervene with by utilizing educational interventions. Given the lack of public health interventions within gyms spaces, it is critical to conduct future research to expand the accessibility of gyms and further increase exercise behaviors among US adults.

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Dedication

This dissertation is dedicated to all my loved ones that have chosen to believe in me during the times when I did not believe in myself. Thank you.

Preface

Chapters 2-4 have each been prepared for submission to scientific journals. Although the articles have yet to be accepted, they are written in the format each journal requires.

Chapter 1 - Introduction

1.1 Physical Activity Overview

Physical activity is classified as any bodily movement by skeletal muscle that raises energy expenditure above the resting metabolic rate (ACSM, 2014). Less than a quarter of US adults achieve enough physical activity to meet recommended guidelines (CDC, 2022; ODPHP, 2023). The current physical activity guidelines recommend completing at least 150 minutes of moderate-intensity aerobic activity, or 75 minutes of vigorous-intensity aerobic activity, or an equivalent combination of both (Piercy et al., 2018; USDHHS, 2018). In addition to aerobic physical activity, at least two days per week of muscle-strengthening activity for all major muscle groups are recommended (Piercy et al., 2018; USDHHS, 2018).

A commonly practiced subset of physical activity that is planned, structured, and repetitive, is exercise (ACSM, 2014). Many individuals struggle to achieve enough exercise to help meet physical activity guidelines due to various impairments or disabilities impacting their mobility, cognition, independent living, hearing, vision, or self-care (Smith et al., 2018; Rimmer et al., 2004; CDC, 2023a). To overcome this, individuals can “adapt” their exercise (OSU, 2024). Adaptive exercise consists of modifying exercise selection and programming based on various limitations stemming from one’s temporary disability (i.e., impairment) or permanent disability (ACSM, 2014; OSU, 2024). Individuals with disabilities or other chronic health conditions are encouraged to meet physical activity guidelines regardless of their limitations (ACSM, 2014).

The benefits of physical activity and exercise are abundant for all. Regular participation in physical activity and exercise is associated with a reduced risk of cardiovascular disease, cancer, type two diabetes, obesity, and secondary co-morbidities (Fletcher et al., 2018). Furthermore, meeting physical activity guidelines contributes to improved cognition, mental

health, muscle strength, bone strength, and healthy weight status (CDC, 2023b). For individuals with disabilities (IWD), the benefits of regular physical activity and exercise expand further into improving their ability to complete activities of daily life, improved perceptions of functional independence, improved physical fitness, improved management of disability-related symptoms, and a reduced risk for chronic health conditions (Smith et al., 2018). The benefits of physical activity and exercise are clear, especially for IWD.

1.2 Gym Space Overview

Gyms are fitness spaces focusing on the improvement of one's physical health and quality of life via physical activity participation (Cunningham et al., 2023; Richardson & Motl, 2020; Riseth et al., 2019). Gym-based physical activity is considered exercise (ACSM, 2014), which is the focus of this dissertation. Most gyms offer both group and individual activities for aerobic and muscle-strengthening exercises (Riseth et al., 2019; Richardson et al., 2017). Gyms also offer a variety of exercise equipment for aerobic and muscle-strengthening activities (Riseth et al., 2019; Richardson et al., 2017). There are a variety of different gym types, including large commercial gyms, boutique gyms, adaptive gyms, CrossFit gyms, sports performance gyms, personal training-only gyms, yoga and Pilates studios, women's only gyms, and even more gyms catering to specific activities or populations (Spraul, 2024; Spraul, 2023). The gym industry has experienced continual growth over the last four decades, yet many gym-goers cite barriers impeding gym accessibility.

Barriers to gym use are broad and largely include personal (i.e., individual) and social factors (i.e., interactions among individuals and their environment) (Andajani et al., 2004; Sharon-David et al., 2021). Individuals often express a lack of motivation, exercise knowledge and previous exercise experience, and as a result may feel intimidated by the gym (Ross, 2023;

Sperandei et al., 2016; Valerio, 2019;). Gyms are social environments, and their atmosphere can be molded by fellow members' stigma, bias, and social norm beliefs, leading gym goers to feel the need to monitor their exercise behaviors to fit in (Coen et al., 2018). Ultimately, this leads many gym goers to feel dissatisfied with their experience and reduces their likelihood to attend, lowering exercise levels (Gjestvang et al., 2021). Additional gym barriers outside of personal and social factors include high gym membership costs, personal training costs, poor customer service, poor equipment selection, poor equipment quality, and a lack of family accommodations (MacIntosh & Law, 2015; Ross, 2023; Slade, 2014). Many of these gym barriers, such as cost, limit the accessibility of these spaces. When considering specific populations that attend gyms, such as IWD, the list of barriers expands.

1.3 Disability Lens Overview

Disability is any condition of the body or mind hindering individuals from completing or interacting in regular daily activities, such as physical activity (CDC, 2020). Leading a physically active lifestyle is essential in managing the quality of life for IWD (Smith et al., 2018). The outdoor environment poses numerous barriers to the physical activity of IWD, such as inclement weather, uneven surfaces, sidewalk availability, steep hills, lighting, presence or absence of crosswalks, and lack of curb ramps (Rosenburg et al., 2013). Indoor fitness spaces, such as gyms, offer a more controlled environment making gyms a prime location for IWD to engage in long-term physical activity behaviors, such as exercise (Richardson & Motl, 2020). Gyms also offer group fitness programs, individual fitness training, exercise equipment, and in some cases, specialized exercise equipment for their members (Richardson et al., 2017; Langely, 2013; Rimmer et al., 2017). Despite these offerings, many IWD report their gyms do not

adequately support their exercise training needs (Cunningham et al., 2023; Langely, 2013; Rimmer et al., 2017).

Gyms possessing appropriate resources (e.g., exercise equipment) and a supportive social environment are recognized as positive determinants of exercise participation for IWD (Cunningham et al., 2023). Many gym goers with disabilities have documented the lack of appropriate resources to accommodate their training needs including lack of open space, inaccessible doors, lack of ramps, and inaccessible gym equipment (Calder et al., 2018; Rimmer et al., 2017; Sharon-David et al., 2021). Many IWD also note the overall lack of disability knowledge among gym staff, with little to no qualified fitness professionals available (e.g., personal trainers) to host group training or one-on-one training (Hill et al., 2023; Rimmer et al., 2004; Rimmer et al., 2017). Gym barriers expand beyond inadequate resources, but also encompass the social environment (Sharon-David et al., 2021). IWD have reported that gym culture (i.e., values and beliefs shaping and informing member behavior) creates an image of what gym-goers should look like (i.e., strong, muscular, aesthetically pleasing, and able-bodied) (Richardson et al., 2017), influencing many IWD to feel they do not belong (Richardson et al., 2017). Outside of gym resources and their social environment, IWD have also discussed the high costs associated with attending a gym (Sharon-David et al., 2021). Many of these individuals may have fixed incomes, making the high gym membership costs an entry barrier into the gym (Sharon-David et al., 2021; Rimmer et al., 2017; Calder et al., 2018). Gyms are physical and sociocultural environments that should act as enabling environments for exercise. However, limited public health interventions have been developed to reduce gym barriers for IWD (Cunningham et al., 2023; WHO, 2023b).

1.4 Qualitative Methodologies Overview

1.4.1 Inductive, thematic content analysis

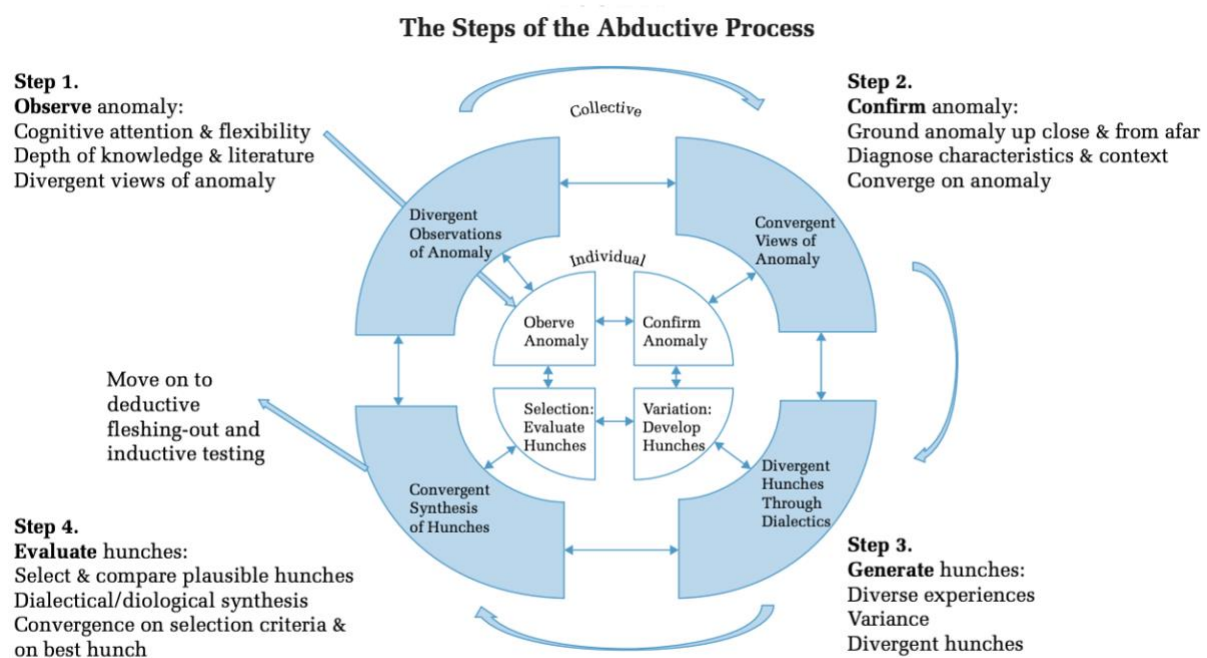
Inductive, thematic content analysis is a qualitative data analysis approach that includes a data-driven process of coding, categorizing, and theme development that does not derive meaning from any of the researchers' analytic preconceptions (Noel et al., 2017; Naeem et al., 2023). The inductive approach allows the researchers to dive into the data (e.g., focus groups or interviews) without any thought of what codes and themes may emerge, allowing the codes and themes to emerge from the data (Noel et al., 2017; Naeem et al., 2023). Taking an inductive approach to thematic content analysis permits researchers to update, remove, and add additional codes as they continually work through and revisit the data as the researchers critically consider how their assumptions, biases, and interpretations may shape the analysis (Noel et al., 2017; Naeem et al., 2023). As codes emerge, they are categorized together based on commonalities. Categories are then analyzed to derive meaning for theme development (Noel et al., 2017; Naeem et al., 2023). Inductive, thematic content analysis was utilized in studies one through three (Chapters 2-4) to derive codes and themes from focus group data and individual interview data.

1.4.2 Abductive Analysis

Abductive analysis is a qualitative approach that takes an observed phenomenon (i.e., anomaly) and seeks to find the best possible explanation for it (Timmermans & Tavory, 2012; Sætre & Van de Ven, 2021). First, this consists of confirming the phenomenon exists through examining a variety of cases (i.e., interviews) in the field and/or with quantitative data (Timmermans & Tavory, 2012; Sætre & Van de Ven, 2021). This is followed by developing possible explanations based on the researcher's experiences in the field and those gathered from

interviews, searching for any novel empirical findings that can be compared to existing theories. Through systematic methodological analysis potential explanations are evaluated to ensure reliable and valid findings (Timmermans & Tavory, 2012; Sætre & Van de Ven, 2021). Often, explanations incorporate theory, sometimes resulting in the refinement or modification of existing theoretical frameworks (Timmermans & Tavory, 2012; Sætre & Van de Ven, 2021). Abductive analysis was used in the first study (Chapter 2) in combination with an inductive, thematic content analysis to help explain what influences gym satisfaction and gym attendance by gym goers.

Figure 1-1 The Steps of the Abductive Process by Sætre and Van de Ven, 2021.



1.4.3 Positionality statement

While collecting and analyzing data for this dissertation, it was necessary to consider the influence of researcher positionality by using reflexivity. Reflexivity requires examining your own beliefs, judgements, and background assumptions that are grounded in your social position,

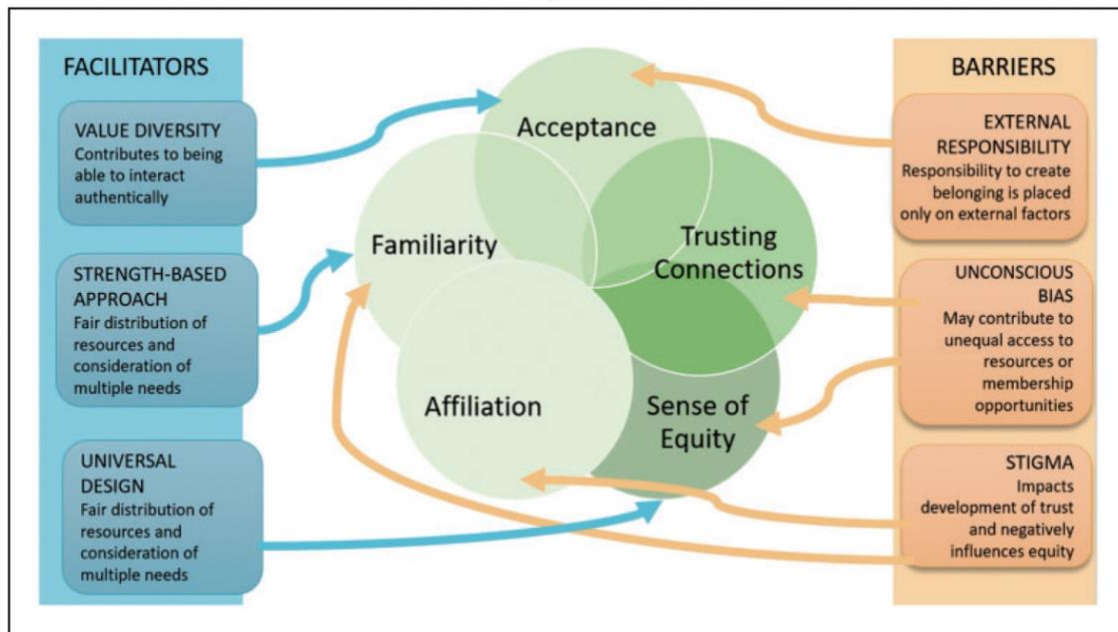
considering the biased effects this may have on your research findings (McCorkel & Myers, 2003). Reflexivity works closely with objectivity to increase the reliability and generalizability of the phenomenon at hand, allowing for more representative conclusions without undue influence of positionality (McCorkel & Myers, 2003). In this way, I had to consider and acknowledge that I am a Hispanic, able-bodied, and college-educated female. I may not be of high socio-economic status, but I was raised around Midwesterners who were. Most of my life I did not consider what life must be like with a disability. However, I spent the last two years volunteering with non-profit organizations supporting the exercise habits of individuals with disabilities and spent over six years within gym settings as both a gym-goer and personal trainer. Moreso, I pursued a certification in Gender, Women, and Sexuality Studies to enhance my understanding of intersectionality (i.e., how intersecting power relations influence social relations and individual experiences, including race, class, gender, sexuality, ability, ethnicity, age, among other factors). In this way, I developed a greater understand of how my positionality may influence findings and actively tried to reduce any bias that might result (Esposito & Evans-Winters, 2021).

1.5 Sense of Belonging Overview

A sense of belonging occurs when someone feels like an integral part of their surrounding community (Teng et al., 2019). A sense of belonging is associated with a greater sense of self-efficacy (i.e., an individual's belief in their ability to execute behaviors necessary to produce a specific outcome) and improved perceptions of individual well-being (Teng et al., 2019; Whiteman-Sandland et al., 2016; Bandura & Adams, 1977). Limited studies have explored how a sense of belonging develops throughout different settings. For example, Teng et al., (2019) developed a five-stage continuum on how a sense of belonging develops in the social

environment of academia (See Figure 1-2). No studies to date have explored how a sense of belonging develops in the gym.

Figure 1-2 Sense of Belonging in Academia by Teng et al., 2019.



The five-stage continuum to develop a sense of belonging in academia consists of affiliation, familiarity, acceptance, trusting connections, and a sense of equity. The first stage, affiliation, refers to the close associations with individuals, groups, or organizations that produce feelings of attachment and commonality (Teng et al., 2019). Affiliation is the foundation for the development of a sense of belonging (Teng et al., 2019). Affiliations make individuals feel connected to their organization or institution and that they have the right to share the same space. Feeling like an individual has a right to be in a space, and regularly inhabiting that space, leads to the second stage of belonging: familiarity (Teng et al., 2019). Familiarity consists of regular exposure to the physical, institutional, or social environment (Teng et al., 2019). Familiarity also includes individuals becoming acquainted with others in their environment to identify one another's strengths and cultivate meaningful interactions (Teng et al., 2019). Through

familiarization and increased positive interactions, feelings of acceptance begin to flourish (Teng et al., 2019). Acceptance is the third stage of the sense of belonging continuum. Acceptance results after affiliation and familiarity combine to build closer relationships that permit feelings of safety (Teng et al., 2019). When individuals feel safe in their relationships, it enhances their ability to act authentically instead of molding their personality to those around them (Teng et al., 2019). Acceptance creates mutual respect, empowers individuals to self-advocate, and to feel like an equal part of their group (Teng et al., 2019). As feelings of acceptance expand and relationships grow, trusting connections are established. Trusting connections is the fourth stage of the sense of belonging continuum and refers to the reciprocal trust between individuals (Teng et al., 2019). Trusting connections result in individuals feeling as though their actions and words are respected, deepening their sense of belonging (Teng et al., 2019). Trusting connections stemming from authentic interactions and respect typically result in an individual's needs being met, contributing to a sense of equity (Teng et al., 2019). The final stage to a sense of belonging is a sense of equity, which represents the deepest level of belonging by addressing individual needs through unprejudiced resource allocation (Teng et al., 2019). A sense of belonging can be influenced by a variety of facilitators and barriers.

Facilitators to a sense of belonging in academia consist of valuing diversity (i.e., prioritizing including and involving individuals from differing backgrounds), employing strength-based approaches (i.e., recognizing and utilizing each other's strengths), and utilizing universal design (i.e., creating designs accessible to people of all abilities, disabilities, etc.) (Teng et al., 2019). Barriers to a sense of belonging in academia include external responsibility (i.e., responsibility to create belonging placed only on external factors), unconscious bias (i.e., social stereotypes about certain groups affecting how others feel or think about them), and

stigma (i.e., discrimination towards an individual or group based on perceived characteristics) (Teng et al., 2019).

Academic settings (e.g., classrooms) and gyms share similarities as they are both sociocultural environments that can influence a sense of belonging (Teng et al., 2019). Many facilitators and barriers influencing a sense of belonging in academia share similarities to facilitators and barriers influencing gym goers (Teng et al., 2019; Valerio, 2019). Fostering a sense of belonging within the gym may eliminate numerous barriers to gym attendance by individuals with or without disabilities, improving gym experiences and increasing exercise levels.

1.6 Purpose of Dissertation

This body of work aims to investigate gym accessibility and its impact on gym-based physical activity (i.e., exercise) from the perspectives of individuals with and without disabilities by exploring the following questions: 1) How do gym-goers describe their gym experiences? Gyms are fitness spaces open to all, yet many gyms underserve IWD, leading to the second question of this dissertation: 2) How do individuals with congenital and acquired disabilities overcome barriers to gym-based exercise? Personal trainers aid in the development and execution of exercise behaviors, yet many IWD report negative experiences with ill-equipped trainers leading to the final question of this dissertation: 3) How have personal trainers managed to successfully overcome barriers to training IWD? The first research question was addressed by conducting an online qualitative study consisting of semi-structured focus groups among gym-goers to better understand what experiences facilitate or pose barriers to attending the gym. The second research question was addressed through a qualitative study consisting of individual interviews among gym-goers with congenital and acquired disabilities regarding their gym

experiences to identify barriers, facilitators, and suggestions to increase exercise participation.

Lastly, the third research question was addressed with a qualitative study consisting of individual interviews among personal trainers successfully training IWDs to identify facilitators and suggestions to increase trainers' confidence to work with IWD.

Chapter 2 – Qualitative Exploration of Gym Goers Experiences in the Gym

2.1 Abstract

Over 66 million United States (US) adults have a gym membership, yet most do not meet the physical activity guidelines. Many gym goers report negative feelings and an overall dissatisfaction with their gym contributing to their reduced attendance and physical activity. Negative feelings are multidimensional and can include feeling intimidated by equipment and other members, membership costs, poor representation, a lack of family accommodation, etc. A sense of belonging can counter many of the negative feelings associated with gym goers' dissatisfying experiences. This study explored the experiences of gym goers regarding their gym membership, training environment, and gendered experiences to better understand what facilitates or poses barriers to attending the gym. Eleven semi-structured focus groups (n = 33) were conducted online to examine gym goers' experiences. A hybrid inductive-abductive approach to thematic content analysis was employed and identified three over-arching themes of 1) experiencing discrimination negatively affects gym satisfaction and attendance 2) inclusive design facilitates gym satisfaction and attendance, and 3) alliances help and hinder gym satisfaction and attendance. These themes were mapped to the, "Belonging in Academia Model," resulting in an adapted model, "Belonging in the Gym." Our findings provide insights useful for understanding negative feelings, with potential for helping increase gym attendance and ultimately physical activity levels. Multidimensional interventions helping gym goers feel like they belong should be employed to increase gym attendance and physical activity levels.

Keywords: gym membership, physical activity, barriers, facilitators, attendance, intimidation

2.2 Introduction

Nineteen percent of US adults (66.5 million) have a gym membership, and almost 50% attend the gym twice weekly (Spraul, 2024; IHRSA, 2022; Anderson et al., 2021). Gyms offer indoor spaces for physical activity and have substantially increased in number and in memberships each year since the 1980s (McKenzie, 2016; Spraul, 2024). Commercial gyms are among the most popular and serve the broadest population of gym goers; they include gyms such as Gold's Gym, Anytime Fitness, Planet Fitness, and Crunch Fitness, (Spraul, 2023) and were the focus of this study. As gym numbers have increased, they have emerged as places to build friendships and communities, not solely for prioritizing health (McKenize, 2016; Whiteman-Sandland et al., 2016).

Despite the abundance of gyms, nearly 80% of US adults are not achieving adequate physical activity, while most gym goers are also not meeting full physical activity guidelines (CDC, 2020; USDHHS, 2018; Gjestvang et al., 2020). The physical activity guidelines recommend completing at least 150 minutes of moderate-intensity aerobic activity, or 75 minutes of vigorous-intensity aerobic activity, or an equivalent combination of both, and at least two days per week of muscle-strengthening activity for all major muscle groups (Piercy et al., 2018; USDHHS, 2018). Meeting physical activity guidelines provides many health benefits, including improvements in brain health, weight status, disease risk, muscle, and bone strength, and the ability to carry out activities of daily life (CDC, 2023). One factor contributing to reduced physical activity is an overall dissatisfaction with one's gym, resulting in less gym attendance.

While some gym goers report satisfaction with their gym community, most say they are dissatisfied with their experiences, making them less likely to attend (Efi & Anastasia, 2013; Valerio, 2019). Reasons for gym dissatisfaction vary and include personal (i.e., individual) and

social reasons (i.e., interactions among individuals and their environment) (Sharon-David et al., 2021). Individuals may feel intimidated by the gym, especially if they lack training knowledge and experience or have body image concerns (Valerio, 2019; Sperandei et al., 2016; Ross, 2023). Socially, gym goers may fall victim to bias and stigma, leading them to adjust their exercise selections to meet gender norms (Coen et al., 2018). Similarly, feeling isolated from other gym goers creates disconnection and a lack of belonging (Cardone, 2019). Gym culture (i.e., values and beliefs shaping and informing member behavior), lacking family accommodations, cost, and poor service (e.g., broken workout equipment, limited fitness programming, unfriendly staff) are among the top reasons for dissatisfaction with gym spaces (MacIntosh & Law, 2015; Slade, 2014; Ross, 2023). Poor representation of gender, age, sexuality, racial and ethnic background, and family status, combined with social norms and gender expectations are other factors that influence dissatisfaction with gym interactions (Coen et al., 2018; Cardone, 2019). Critically, the categorizations of these reasons are not rigid, and factors may intersect, increasing dissatisfaction.

Since almost half of gym goers report feeling gym dissatisfaction, exploring how positive and negative experiences of gym goers influence their gym satisfaction and attendance is critical. Increased gym attendance will help more people meet physical activity guidelines (Gjestvang et al., 2021). Therefore, this qualitative study explored the experiences of gym goers regarding their gym membership, training environment, and gender expectations to better understand what facilitates or poses barriers to attending the gym.

2.3 Methods

2.3.4 Design and Participants

Using an online qualitative study design, semi-structured focus groups (i.e., consisting of open-ended questions) were conducted via Zoom (San Jose, CA) and generally lasted 45-60

minutes. Study participation was voluntary; however, all participants were invited to enter a raffle for one of five Amazon gift cards (\$20, \$30, \$40, \$50, and \$60).

Study participants were recruited via word-of-mouth and social media platforms (i.e., Facebook, Twitter, and Instagram) by sharing study flyers displaying a QR code and Bitlink to the screening survey for eligibility. Of the 129 people who clicked the screening survey, 68 met the inclusion criteria, which included being a current and/or former gym-goer within the last three years, regularly attended the gym at least 3-5 times per month, between the ages of 20-64, English-speaking, reside in the Midwest (i.e., Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin), use both aerobic and resistance training equipment in the gym, and not attend a CrossFit and/or specialty gym. In addition to determining eligibility, the screening survey also gathered demographic data (i.e., age, sexual orientation, race, ethnicity). Thirty-three people provided informed consent and participated in one of 11 focus groups. The study received IRB approval from the university's Institutional Review Board, approval #IRB-10726, on 2 July 2021.

2.3.5 Procedures

Before the focus groups began, all participants signed an informed consent form acknowledging that the focus group would be recorded, and no identifying information would be retained. Each focus group session was conducted by two researchers, one to ask questions and one to record notes. Nineteen base questions and additional probing questions were asked based on how much feedback the participants provided (See Appendix A). Participants were asked to describe their gym membership, gym environment, gym experiences, and potential gendered experiences.

The primary researcher met weekly with team members throughout the study's focus groups to assess if data saturation occurred (i.e., no new emerging data/themes). Previous research suggests data saturation can be achieved between 4-8 focus groups (Hennink & Kaiser, 2022). After completing eight focus groups, three more were completed to ensure no new data/themes emerged. Each focus group was transcribed verbatim. Member checking ensured accuracy and that the recorded responses correctly reflected their experiences.

2.3.6 Data Analysis

Two researchers who facilitated the focus groups analyzed transcriptions using Microsoft Word (Version 14.0. Redmond, WA). First, comparative method was utilized by using an inductive, iterative thematic analysis (Braun & Clarke, 2006; Timmermans & Tavory, 2012; Creswell, 2017). Each researcher independently coded the transcripts by highlighting words and phrases to elucidate the study's purpose. Codes representing commonalities across responses were first developed using an inductive approach (Hennein and Lowe, 2020). After each transcript was coded, both researchers met to examine sample quotes during the coding process to ensure the code definitions aligned with participant responses (Hennein and Lowe, 2020). Similar or duplicative codes were combined, resulting in 120 unique codes. Trustworthiness was achieved via credibility and dependability by utilizing researcher triangulation and compelling, definitive research processes to review and develop themes (i.e., a comparative method; Lincoln & Guba, 1986). Researcher triangulation was achieved by using multiple coders (Lincoln & Guba, 1986).

Specific steps for the analysis were as follows. After two rounds of inductive analysis, codes were grouped into categories using an abductive approach where researchers began with a set of observations and sought the simplest, most probable explanation based on current theory

or understanding (Timmermans & Tavory, 2012; Sætre & Van de Ven, 2021). For this the Belonging in Academia Model was used as a framework for thematic content analysis (Teng et al., 2019; Hennein and Lowe, 2020). Thus, inductive analysis was used to identify various codes, including ‘body ideals,’ ‘gender-specific exercises,’ and ‘gendered images.’ We grouped these codes into the category titled “social norms.” Using thematic content analysis, we included this category underneath the broad theme of “experiencing discrimination negatively affects gym satisfaction and attendance.” Then, for the abductive approach using the Belonging in Academia Model (Teng et al., 2019), we mapped this theme to the barriers of the original model (i.e., external responsibility, unconscious bias, and stigma). All 120 codes were organized into nine categories of barriers and facilitators based on commonalities and spread amongst the three themes. The nine categories of barriers and facilitators were mapped to the Belonging in Academia Model, with some barriers being novel and others repetitive of the original framework. This process resulted in an adapted model, Belonging in the Gym. Lastly, the theoretical model was sent back to focus group participants to gain additional feedback, ensuring participants’ responses were correctly interpreted and represented.

2.4 Results

Thirty-three individuals participated in one of 11 focus groups between July and September 2021. They provided self-identified demographic information. Twenty-four participants were women, eight were men, and one was gender non-conforming. Most participants (60.6%, $n = 20$) were ages 20-29 years. Seventy-eight percent ($n = 26$) of participants were heterosexual, 15.2% ($n = 5$) were bisexual, 3% ($n = 1$) were homosexual, and 3% ($n = 1$) preferred not to respond. The majority of participants were white (78.7%, $n = 26$),

followed by Black/African American (9.1%, n = 3), Filipino (6.1%; n = 2), Middle Eastern (3.0%, n = 1), and 3% (n = 1) indicated they preferred not to respond.

2.4.7 Focus Group Findings

Our analysis revealed three prominent themes: 1) experiencing discrimination negatively affects gym satisfaction and attendance 2) inclusive design facilitates gym satisfaction and attendance, and 3) alliances help and hinder gym satisfaction and attendance. Participant excerpts are quoted verbatim; however, brackets are used for clarification. See Appendix B for a full table of themes and quotes.

2.4.7.1 Theme 1: Experiencing discrimination negatively affects gym satisfaction and attendance.

Most barriers to gym goers' gym satisfaction and attendance relate to their experiences in the gym regarding unconscious bias and stigma, social norms, marginalization, and external responsibility. Participants discussed the influence of unconscious bias and stigma facilitating negative emotion among gym goers, contributing to many feeling as though they do not belong in the gym. Unconscious bias diminished a sense of equity among gym goers and their ability to develop trusting connections with others, while stigma diminished their ability to feel accepted. One participant expressed her frustrations over unconscious bias, stating,

I know what people think of women, especially in the gym. Whether they consciously believe it or not, many of us are perceived as less knowledgeable regarding exercise, and this automatically makes me feel inferior when I walk in the gym. It just makes me feel insecure, and that can be overwhelming, so I try to go in when it's not busy or work out alone.

Participants expressed that the presence of unconscious bias makes gyms appear to cater to men more than other genders. By catering to the needs of only one gender, many individual needs can go unmet, reducing a sense of equity. Additionally, by catering to men, many individuals and their gym contributions are overlooked, reducing opportunities to develop trusting connections with others. Participants expressed discomfort with a predominately male presence in the gym, which led to a negative stigma. One man noted his frustration related to the negative stigma about men by saying,

Sometimes, I feel uncomfortable around the women at the gym when I don't know them because I want to make sure I am not bothering them. I get nervous to accidentally make eye contact, and they think I am some creep. Their safety and comfort are more important to me than my own, so I will just leave the area and go someplace else.

Feeling accepted in an environment leads individuals to feel they can be authentic. Stigma can cause many individuals to be fearful of being their authentic selves in case they are misinterpreted.

Additionally, social norms can influence an individual's ability to act authentically and feel accepted. Although many women expressed unconscious biases negatively influencing their gym experience, many men commented on the negative impact of social norms. One man said,

There's a lot of expectations as a dude, especially if you aren't really big or really strong; it's like, get out of my way at [my gym] since the men are built like monsters. It makes you feel like you have to work your ass off, or they'll take your key away.

The impact of social norms was not exclusive to men. Women felt the impact of social norms. One woman recounted her experiences in the gym by sharing,

I try to watch how heavy I lift so I don't bulk up too much. I know everyone says I won't get big, but I get afraid to veer away from this preconceived notion of what a woman's body should look like. Cheer and gymnastics made me feel like I had to look small to look good.

Many participants who identified as women expressed their frustrations with unconscious bias, stigma, and social norms, collectively leading them to feel that they do not belong in the gym or that gyms are not designed for them. This dissatisfaction amongst women left many feeling marginalized (i.e., treated as insignificant or unimportant within society or a group), as if their presence and needs in the gym were unimportant. When women's needs were not recognized or met, a sense of equity within these spaces was lost, negatively affecting their motivation to attend the gym. One woman recalled an experience where her needs and capabilities were disregarded by saying,

There's been times where men have literally tried to take weights from me because they didn't think I would use them, so I must not need them. I had to fight with them over it to get them back; they didn't understand why I couldn't go to a different machine to grab weights for the machine they took the weights from. I get crap from men all the time like this by assuming I must be weak and can't lift like them.

The marginalization of women in the gym left many struggling to feel that they belong. Most participants suggested that the gyms acknowledge and facilitate solutions to overcome these barriers, whether they are marginalization or stigma. Placing the responsibility of combatting these barriers only on those running the gym creates another final barrier: external responsibility. One participant remarked on the gym's responsibility to better serve women,

There are always a lot of men in the main weights area and it makes it intimidating to try out new equipment. The gym should supply gym attendants that stand by the machines to help women and others that feel intimidated.

Gym goers expect gym management to change the gym's culture by hiring diverse gym staff, creating inclusive gym policies, or spearheading educational opportunities. These practices may help mitigate unconscious bias, stigma, oppressive social norms, and marginalization. However, when members rely on external mechanisms to create change, their responsibility lessens, reducing personal opportunities to create safe spaces where opinions can be shared, respected, and accepted.

2.4.7.2 Theme 2: Inclusive design facilitates gym satisfaction and attendance.

Many facilitators to gym goers' satisfaction and attendance related to universal design, strength-based approaches, and valuing diversity. Participants discussed how a universal gym design and increased accessibility influence attendance by creating a sense of equity by meeting gym-goers' needs. One woman shared,

Now that I have started to use the equipment, I have noticed that the gym equipment has not been made for women or those of smaller frame, but for more manly bodies that are bigger and taller. We need universal equipment and layouts for all body types. I have always wished there were more open areas with mats and mirrors, so people could have the option to choose their own adventure there instead of getting in the way of or carving out space between machines.

Another participant added that one way to feel more inclined to attend the gym is through strength-based approaches building on gym-goers' exercise knowledge. This participant said,

I would like more instruction, but I don't necessarily need a personal trainer. More like example workout plans. I feel intimidated going into the gym without some sort of plan, so if the [gym name] had resources like sample workouts, this could be beneficial for at least women and could be for men, but it would make me and probably others feel more confident, too, for more than running or walking on a treadmill, or taking a dance class. The old gym I attended had workouts written on the wall you could follow along with, and even had paper copies of these workouts to take home and use.

Improving gym-goers' exercise knowledge expands the equipment they can utilize, allowing gym familiarity within these spaces to develop. Increasing familiarity within these spaces can enhance gym goers' perceptions of belonging. Feeling a sense of belonging facilitates gym goers' confidence to access and engage with people at the gym and can increase gym attendance and physical activity.

Gym satisfaction and attendance are influenced through feelings of acceptance. Feeling accepted can be negatively impacted by a lack of representation and diversity within the gym. Many participants remarked on the gender divide in the gym and how a broader representation of women created greater comfort in these spaces. One woman said,

I would not want to continue to go to a gym without more female representation. Seeing other women getting up there on the equipment with the confidence that they belong there is helpful for me. The culture is changing from women on cardio machines and men on lifting machines to women getting into strength and conditioning and getting toned and stronger. Seeing more women in the gym, combined with making more friends whether they are girls or not, has really helped me. It's easier to go someplace made to

feel comfortable with friends as opposed to going someplace else. The more women I see in my area, the more comfortable I feel there.

One woman added,

I appreciate the multi-generational feel of [my gym] and how it has shaped the culture and atmosphere to de-emphasize the focus on 20-year-olds doing hard workouts, and in turn, helped make the space feel more comfortable for a wider range of demographics. This minimized pressure or an intimidation factor and has helped many of us feel we belong when we don't have to fight for a space here.

Lastly, one participant shared his desire for gyms to accommodate families. He shared,

I wish the gym would accommodate the needs of those with children more often, or just the needs of others in general. I often see them tailored to college students or young adults with no children. I want family access. I'm not from the US, so I don't like leaving my family behind without me. I want to see more people like me, more parents, different backgrounds, so I can feel my family, and I have a space there, too.

Participants noted that increasing the diversity of member representation may include a broader range of gender, age, sexuality, racial and ethnic background, family status, and training styles and goals. Increasing diversity and representation of gym goers reduces the stress of needing to "fit in." More diversity and representation increase opportunities for interaction with other gym goers that can develop into friendships and feel more accepted. Feeling more accepted in the gym increases overall comfort in these spaces and can lead to increased gym attendance and physical activity levels.

2.4.7.3 Theme 3: Alliances help and hinder gym satisfaction and attendance.

Alliances are belonging or affiliating with similar others (e.g., belonging to a group such as powerlifters, video gamers, runners, morning gym-goers, or CrossFitters). When exploring what a gym offers, many gym-goers described how they met fellow members with similar training goals, styles, or habits with whom they could develop alliances with. One participant noted,

I started out at the gym on a weight loss journey, but meeting the powerlifters at the gym is what really drew me into staying in the gym. I've enjoyed building alliances or like friendships with the regulars I see at [my gym]; it's where I have met some of my closest friends.

Another participant added to this by saying,

I fit in at gyms with more powerlifters and bodybuilders since I bounce between the two. I always feel looked at and like an outsider when I go to commercial gyms since I don't train the same as the people there.

However, a lack of alliances with others in the gym can negatively influence an individual's gym experiences. Some gym-goers expressed no desire for alliances or connection to others when they went to their gym. One participant shared,

Getting involved with others in your gym environment is like a double-edged sword.

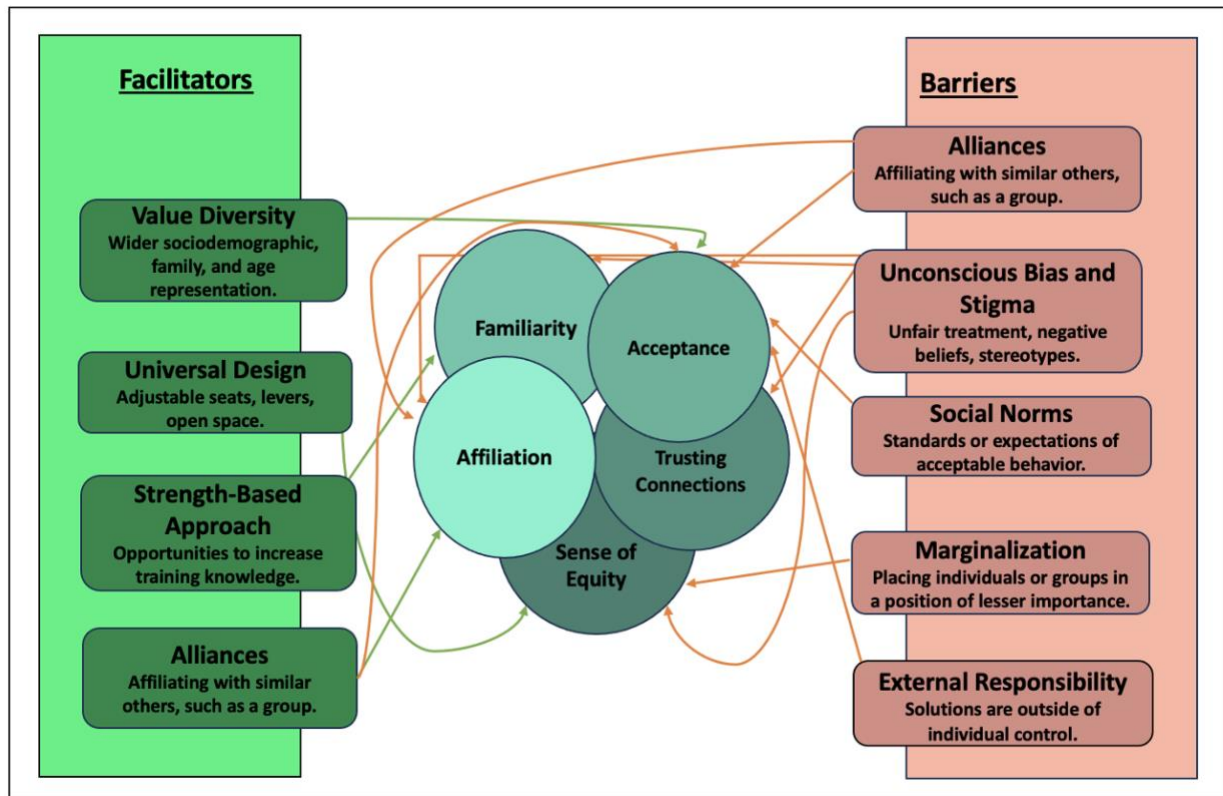
Sure, you might be able to join a tight niche, but this also means you open the door to the drama of being involved with other gym people in that niche. I would rather keep to myself than get involved with that.

Others felt that existing alliances throughout the gym made the gym appear less tailored for them, and instead tailored for others who train in specific ways. Additionally, due to pre-existing alliances, many individuals felt unable to authentically present themselves in the gym or train

how they wanted. One participant shared, “Sometimes, I see people using certain equipment in the gym, and all I can think is, ‘Well, that’s the *powerlifters* equipment, I can’t use that!’”

Gym goers do not want to have to make space for themselves in the gym; instead, they want to feel like the gym is a space where they already belong. The Belonging in Academia Model explains that a sense of belonging increases a person’s engagement with their environment and well-being through a continuum of five stages: affiliation, familiarity, acceptance, trusting connections, and a sense of equity (Teng et al., 2019). A sense of belonging can be facilitated by valuing diversity, taking strength-based approaches, and utilizing universal design (Teng et al., 2019). A sense of belonging can also be reduced by barriers, including external responsibility, unconscious bias, and stigma (Teng et al., 2019). The original model consisted of six barriers and facilitators (i.e., external responsibility, unconscious bias, stigma, value diversity, strength-based approach, and universal design), while the updated model (Figure 2-1) consists of nine barriers and facilitators. Three new barriers emerged, including alliances, social norms, and marginalization, while one new facilitator emerged, including alliances. We discovered two duplicate facilitators from the original model. Value diversity was duplicated from the original model, but value diversity encompassed greater representation of gym goers in the new model. Universal design was duplicated from the original model, but in the new model, universal design encompassed greater accessibility. Our data also suggested that unconscious bias and stigma from the original model shared numerous similarities and were condensed to one barrier.

Figure 2-1 Belonging in The Gym Model adapted from The Belonging in Academia Model by Teng et al., 2019.



2.5 Discussion

This qualitative study examined the experiences of gym goers regarding their gym membership, training environment, and gender expectations to understand what facilitates or poses barriers to attending the gym. Three primary themes emerged in our thematic content analysis including 1) experiencing discrimination negatively affects gym satisfaction and attendance 2) inclusive design facilitates gym satisfaction and attendance, and 3) alliances help and hinder gym satisfaction and attendance. Further abductive analysis found that barriers and facilitators to gym-goers' satisfaction and attendance shared similarities with barriers and facilitators to a sense of belonging, which led to the development of a modified Belonging in the Gym Model (See Figure 2-1).

The barriers to a sense of belonging share similarities with the barriers to gym satisfaction and attendance reported by gym goers. Poor representation, other gym goers' behaviors, and intimidation pose problems for finding affiliations within the gym and disrupt the foundation of belonging (Teng et al., 2019; Valerio, 2019). Without affiliation to facilitate familiarity within gym spaces, individual perceptions of acceptance are also disrupted. Negative bias and stigma, poor body perceptions, harmful gym culture, negative social norms, a lack of training knowledge and experience, and monitoring gender expectations all contribute to gym goers struggling to present their authentic selves and feel acceptance (Teng et al., 2019; Coen et al., 2018; Ross, 2023; MacIntosh & Law, 2015). Individuals unable to present their authentic selves are hindered in developing trusting connections and support systems (Teng et al., 2019). A sense of equity develops when fellow gym goers and staff build trusting connections that culminate from stages of acceptance, familiarity, and affiliations. Gym costs, quality of services, and lack of accommodations (e.g., families with children) all can contribute to a reduced sense of equity (Teng et al., 2019; MacIntosh & Law, 2015; Slade, 2014). A lack of sense of belonging contributes to gym dissatisfaction by reducing emotional and physical well-being.

Alliances within the gym is a powerful factor influencing a sense of belonging. Alliances can positively contribute to feeling a sense of belonging to a specific setting or environment. At the same time, alliances can also be exclusionary, causing someone to feel that they do not belong (Teng et al., 2020). Previous research demonstrates that finding alliances with others typically increases a person's sense of attachment to that space, increasing feelings of belonging (Teng et al., 2020). However, many participants also indicated no desire to have alliances with others at the gym. They were uncomfortable making friends or working out with others, even if they shared similar training styles, goals, or demographic characteristics. Gym goers' disinterest

in finding alliances does not align with current literature that suggests membership contributes to a sense of community, overall increasing feelings of belonging, particularly in specialized CrossFit gyms (Whiteman-Sandland et al., 2016). At the same time, some research has found that individual characteristics (e.g., level of introversion or extroversion) can influence how likely they are to interact in a gym setting and seek out alliances with others (MacIntosh & Law, 2015). Potentially, some individuals will be more competitive and less social. Future research should further investigate why individuals resist alliances with other gym goers and its influence on physical activity levels.

Social norms may discourage gym goers from finding alliances. Based on our findings, it is common for gym culture to encourage individuals to find alliances with other gym-goers based on various commonalities. However, finding alliances with others in the gym may inadvertently reinforce harmful social norms. Our findings align with previous research that found that strength training, including different styles of strength training (e.g., bodybuilding), has normalized the gender binary of men vs. women (Coen et al., 2018). With the normalization of the gender binary in the gym comes the normalization of men as the larger, stronger, more muscular gender in strength training while seemingly normalizing women to look strong but not too muscular (Coen et al., 2018). Our participants largely agreed with past findings surrounding social norms relating to one's training style, causing many to monitor what they do in the gym and for others to deviate from the norm (Coen et al., 2018). Without being able to feel safe or comfortable to be their authentic selves, many participants lack acceptance in the gym, contributing to their low sense of belonging. Many participants also remarked that certain gym areas seemed off-limits to them due to their affiliation with group memberships, such as bodybuilders or powerlifters. Similarly, previous research describes invisible expectations

indicating certain gym spaces are to be used by specific individuals (e.g., men and strength training areas of the gym; Coen et al., 2018). Normalizing gender expectations that prioritize the needs of one group over others minimizes and excludes other gym goers.

Minimizing the needs of gym-goers while simultaneously prioritizing the needs of others can leave many individuals feeling marginalized. In our study, women regularly remarked on the presence and needs of men being prioritized within the gym. Coen et al. (2018) found that many gym spaces tend to be hyper-masculine and, as a result, cause discomfort among both men and women. Similar to Coen and associate's findings, both men and women remarked on the discomfort of hyper-masculinization of gyms. Many women reported feeling as though certain areas of the gym were the "men's areas," while some men feared having their rights in the gym revoked for not feeling big or strong enough. Our participants found discomfort when engaging in physical activity around differing genders, aligning with previous literature (Valerio, 2019). Our findings agree with past literature that gym spaces create disadvantages for men, women, and non-binary individuals (Coen et al., 2018; Valerio, 2019). Future research should aim to create gender-inclusive spaces that do more than simply engage men in the gym.

Numerous study participants noted their satisfaction with gyms where the diversity and representation of different demographic backgrounds were prevalent. For example, participants discussed feeling less intimidation and pressure when their gym represented all ages. Past literature supports these results since members of inclusive gyms, those where individuals of differing age ranges, family status, racial/ethnic backgrounds, socioeconomic status, disability status, weight status, etc. are present, have greater gym satisfaction (Coen et al., 2018; Cardone, 2019). Previous literature has also discussed gyms as prime locations for intercultural interactions, strengthening mutual acceptance and support (Cardone, 2019). Although our

participants did not explicitly discuss differing cultures within the gym, future research should differentiate various cultural backgrounds to understand better how cultural backgrounds influence gym motives and overall comfort. Previous literature has discussed the overall discomfort of attending a gym that only appears to cater to and represent a specific body type, mirroring the responses of many of our study participants (Ross, 2023). One study found that including diverse body sizes helped reduce anxiety and increased the frequency and quality of physical activity in the gym (Ross, 2023). Based on our findings and previous research, improving the diversity and representation of others at the gym may also help combat marginalizing effects on specific populations, such as those struggling with disability or obesity.

Participants discussed facilitators that encouraged gym attendance. Universal design, including accessibility, were prime factors discussed as helping improve gym experiences. Participants discussed the importance of improving universal gym design to increase accessibility by offering equipment accommodating bodies of all shapes, sizes, and capabilities. These findings parallel previous literature that suggests gym accessibility can be improved by targeting the gym's built environment, including the indoor gym structure, available equipment, and staff knowledge (Sharon-David et al., 2021; Rimmer et al., 2017; Calder et al., 2018). Additionally, studies suggest that improving gym accessibility and design through modifications to the built environment, available equipment, and fitness class offerings (e.g., introduction to resistance training, adaptive training, post-pregnancy training, etc.) reach a more diverse demographic (Sharon-David et al., 2021; Rimmer et al., 2017; Calder et al., 2018). Encouraging alliances that boost the representation of broader demographic groups at the gym helps improve overall diversity.

Facilitating a more diverse, accessible gym may provide more opportunities for alliances. Previous research has demonstrated that alliances with a particular group in a setting creates a sense of attachment and commonality as the base for developing a sense of belonging (Teng et al., 2020). Similarly, study participants discussed how finding similar others at the gym was one avenue for building friendships that contributed to greater comfort, belonging, and gym engagement. Finding alliances with others in the gym via common training styles or goals, sports participation, or similar background characteristics helps provide a sense of belonging and increases gym engagement (Williams et al., 2007). One study suggested that smaller groups may offer better opportunities for alliances (Teng et al., 2019). Two studies suggested that larger groups lessen interaction opportunities and can promote marginalization or negative stereotypes (Teng et al., 2019; Cardone, 2019). Future research should examine alliances among gym goers of both large and smaller gyms and why alliances may flourish or suffer.

This study has several strengths. First, this study's qualitative design of semi-structured focus groups led to data saturation, including rich, compelling data that cannot always be gathered quantitatively. Nuances in responses and the complexity behind participants' facilitators and barriers were thoroughly explored. Secondly, this study did not separate focus groups based on one's self-identified gender. The co-ed style of focus groups allowed for in-depth discussion amongst participants by offering differing perspectives of different genders. Future research should consider utilizing more demographically diverse focus groups (e.g., age, gender, race, ethnicity, sexuality, income, education, marital status, etc.) to generate rich discussions of differing views.

Numerous limitations were present. The cross-sectional design of the current limited our as this precludes causality. Future research should employ longitudinal studies assessing the

effectiveness of long-term interventions at increasing a sense of belonging in a gym. Focus groups were held via Zoom, which limited focus group size and back-and-forth discussion since Zoom does not allow more than one individual to speak without audio interference. Smaller focus groups limited the number of viewpoints shared within each. Future research should aim to conduct larger in-person focus groups to gather additional viewpoints and richer discussion. Although researchers accounted for demographic differences (e.g., gender, sexuality, race, ethnicity, etc.), the sample was still relatively homogeneous in gender, sexuality, and race. Future research should aim to gather a more diverse sample of gym goers to better assess the differences in experiences and sense of belonging. These data could help inform gym management why attrition is high and aid any efforts to combat this.

2.5.8 Conclusion

This study highlights barriers and facilitators to gym goers' satisfaction and attendance. Most individuals in this study indicated feeling discomfort or intimidation in their gym, ultimately contributing to feeling as though they do not belong. Some individuals noted that feeling a lack of belonging subsided over time, but many indicated its continuing presence. Gyms are locations where individuals can be physically active and yield both mental and physical health benefits, yet physical inactivity trends and gym dissatisfaction persist. Therefore, it is essential to intervene within gym spaces and among gym-goers to increase a sense of belonging, as this is related to increased social and physical well-being, social support, and self-efficacy. The needs of all gym-goers are not adequately met, and increasing a sense of belonging in the gym may offer one method to reduce negative feelings in the gym and ultimately increase physical activity levels and gym satisfaction. This information could inform interventions in gyms to improve gym satisfaction, leading to increased attendance and physical activity levels.

2.6 References

- Anderson, D. J. F., Kim, A., & Zhang, J. J. (2021). The fitness industry in the USA. In García-Fernández, J. and Gálvez-Ruiz, P. (Eds.), *The Global Private Health & Fitness Business: A Marketing Perspective* (pp. 69-75). Emerald Publishing Limited.
<https://doi.org/10.1108/978-1-80043-850-720211014>
- Bandura, A., & Adams, N. E. (1977). Analysis of self-efficacy theory of behavioral change. *Cognitive Therapy and Research*, 1(4), 287-310.
- Cardone, P. (2019). The gym as intercultural meeting point? Binding effects and boundaries in gym interaction. *European Journal for Sport and Society*, 16(2), 111-127.
- Centers for Disease Control and Prevention (CDC). (2023, August 1). Benefits of physical activity. <https://www.cdc.gov/physicalactivity/basics/pa-health/index.htm#:~:text=Regular%20physical%20activity%20is%20one,ability%20to%20do%20everyday%20activities>
- Centers for Disease Control and Prevention (CDC). (2022, December 15). Exercise or physical activity. <https://www.cdc.gov/nchs/fastats/exercise.htm>
- Coen, S. E., Rosenberg, M. W., & Davidson, J. (2018). “It's gym, like gym not Jim”: Exploring the role of place in the gendering of physical activity. *Social Science & Medicine*, 196, 29-36. <https://doi.org/10.1016/j.socscimed.2017.10.036>
- Efi, T., & Anastasia, T. (2013). Does satisfaction affect a member's psychological commitment to a fitness center? *Journal of Physical Education and Sport*, 13(4), 522.
DOI:[10.7752/jpes.2013.04082](https://doi.org/10.7752/jpes.2013.04082)

- Gjestvang, C., Stensrud, T., Hansen, B. H., Kalle, E., & Haakstad, L. A. (2020). Are fitness club members likely to meet the current physical activity recommendations? *Translational Sports Medicine*, 3(2), 75-83. <https://doi.org/10.1002/tsm2.120>
- Gjestvang, C., Abrahamsen, F., Stensrud, T., & Haakstad, L. A. (2021). What makes individuals stick to their exercise regime? a one-year follow-up study among novice exercisers in a fitness club setting. *Frontiers in Psychology*, 12. DOI:[10.3389/fpsyg.2021.638928](https://doi.org/10.3389/fpsyg.2021.638928)
- Hennein, R., & Lowe, S. (2020). A hybrid inductive-abductive analysis of health workers' experiences and well-being during the COVID-19 pandemic in the United States. *PLoS One*, 15(10). <https://doi.org/10.1371/journal.pone.0240646>
- Hennink, M., & Kaiser, B. N. (2022). Sample sizes for saturation in qualitative research: A systematic review of empirical tests. *Social Science & Medicine*, 292. <https://doi.org/10.1016/j.socscimed.2021.114523>
- International Health, Racquet, and Sportsclub Association (IHRSA). (2022, June 20). *U.S. health club membership reaches over 66 million Americans*. <https://www.ihrsa.org/about/media-center/press-releases/u-s-health-club-membership-reaches-over-66-million-americans/>
- Lincoln, Y. S., & Guba, E. G. (1986). But is it rigorous? Trustworthiness and authenticity in naturalistic evaluation. *New directions for program evaluation*, 1986(30), 73-84. <https://doi.org/10.1002/ev.1427>
- MacIntosh, E., & Law, B. (2015). Should I stay or should I go? Exploring the decision to join, maintain, or cancel a fitness membership. *Managing Sport and Leisure*, 20(3), 191-210. <https://doi.org/10.1080/23750472.2015.1025093>
- McKenzie, S. (2016). *Getting physical: The rise of fitness culture in America*. University Press of Kansas.

- Piercy, K.L.; Troiano, R.P.; Ballard, R.M.; Carlson, S.A.; Fulton, J.E.; Galuska, D.A.; George, S.M.; Olson, R.D. (2018). The Physical Activity Guidelines for Americans. *Journal of the American Medical Association (JAMA)*, 320(19), 2020–2028.
[doi:10.1001/jama.2018.14854](https://doi.org/10.1001/jama.2018.14854)
- Ross, C. (2023). Fitness v fatness? Bodies, boundaries and bias in the gym. *Qualitative Research in Sport, Exercise and Health*, 15(1), 104-122.
<https://doi.org/10.1080/2159676X.2022.2098808>
- Sharon-David, H., Siekanska, M., & Tenenbaum, G. (2021). Are gyms fit for all? A scoping review of the barriers and facilitators to gym-based exercise participation experienced by people with physical disabilities. *Performance Enhancement & Health*, 9(1), 100170.
<https://doi.org/10.1080/2159676X.2022.2098808>
- Slade, S. M. (2014). *Adult Women's Perceived Facilitators, Barriers, and Health Benefits of Sustaining a Membership in a Commercial Fitness Facility*. The University of Western Ontario (Canada).
- Sperandei, S., Vieira, M. C., & Reis, A. C. (2016). Adherence to physical activity in an unsupervised setting: Explanatory variables for high attrition rates among fitness center members. *Journal of Science and Medicine in Sport*, 19(11), 916-920.
<https://doi.org/10.1016/j.jsams.2015.12.522>
- Spraul, T. (2023, July 14). *What is a commercial gym?* Exercise.
<https://www.exercise.com/grow/what-is-a-commercial-gym/>
- Spraul, T. (2024, January 13). *Gym membership statistics in 2024*. Exercise.
<https://www.exercise.com/grow/gym-membership-statistics/>

- Timmermans, S., & Tavory, I. (2012). Theory construction in qualitative research: From grounded theory to abductive analysis. *Sociological Theory*, 30(3), 167-186.
<https://doi.org/10.1177/0735275112457914>
- U.S. Department of Health and Human Services (USDHHS). (2018). *Physical activity guidelines for Americans* (2nd ed.). https://health.gov/sites/default/files/2019-09/Physical_Activity_Guidelines_2nd_edition.pdf
- Valerio, R. (2019, May 03). *Fitness industry roundup: 'Gym intimidation is real.'* International Health, Racquet, and Sportsclub Association. <https://www.ihrsa.org/improve-your-club/industry-news/fitness-industry-roundup-gym-timidation-is-real/>
- Whiteman-Sandland, J., Hawkins, J., & Clayton, D. (2018). The role of social capital and community belongingness for exercise adherence: An exploratory study of the CrossFit gym model. *Journal of health psychology*, 23(12), 1545-1556.
<https://doi.org/10.1177/1359105316664132>
- Y. Teng, M., Brown, M. L., Jarus, T., & Yvonne Bulk, L. (2020). How does a sense of belonging develop in postsecondary? A conceptual Belonging in Academia Model (BAM) from sighted perspectives. *Research in Education*, 108(1), 80-103.
<https://journals.sagepub.com/doi/full/10.1177/0034523719882455>

Chapter 3 – Experiences of Gym Members With Congenital Disabilities and Acquired Disabilities

3.1 Abstract

Individuals with disabilities (IWD) are at increased risk for chronic health conditions. Much of this risk can be countered via exercise, yet IWD are mostly inactive. Gyms are locations where IWD can exercise; however, barriers exist. This study explored the experiences of IWD who regularly used gym settings to identify barriers, facilitators, and suggestions to increase exercise participation. Interviews were conducted with ten participants with a range of disabilities, acquired and congenital, focusing on their gyms' offerings, environment, communities, staff members, and experiences with each. A thematic analysis was employed. Three themes emerged: barriers and facilitators to gym use by IWD extend beyond gym layout, experiences with other gym members are both positive and negative, and personal trainers need special training but should not apply special treatment when working with IWD. Future research could examine the effects of an educational intervention among gym staff on the experiences of gym members with disabilities.

Keywords: exercise, physical activity, barriers, facilitators, accessibility

3.2 Introduction

Up to 27% of adults in the United States and 16% globally experience disability, making disability a normal component of being human (CDC, 2020; WHO, 2023a; Ginis et al., 2021). Disability is “any condition of the body or mind that makes it more difficult for the person with the condition to do certain activities (activity limitation) and interact with the world around them (participation restrictions)” (CDC, 2020, para 1). The term disability is used broadly and includes individuals born with a disability (i.e., congenital) and others who acquire a disability (i.e., acquired; Modell et al., 2018). More frequently, acquired disabilities are due to age related factors (i.e., degenerative disc disease), but can also result from accidents or traumatic events yielding traumatic injuries (i.e., traumatic brain injury, spinal cord injury, amputation; Modell et al., 2018). A disability may impact vision, movement, thinking, hearing, communication, or a combination (CDC, 2020). Individuals with disabilities (IWD) confront barriers that impact their physical activity levels and, ultimately, their health status (Richardson et al., 2017).

IWD have a greater risk for early mortality and chronic health conditions and are less likely to meet the physical activity guidelines (WHO, 2023a). The current physical activity guidelines recommend completing at least 150 minutes of moderate-intensity aerobic activity, or 75 minutes of vigorous-intensity aerobic activity, or an equivalent combination of both, and at least two days per week of muscle-strengthening activity for all major muscle groups (Piercy et al., 2018; USDHHS, 2018). Strong epidemiological evidence suggests that physical inactivity (i.e., performing insufficient amounts of physical activity, that is not meeting specified physical activity guidelines) contributes to the development of chronic health conditions such as obesity, cardiovascular diseases, and diabetes (CDC, 2022; González et al., 2017). Evidence suggests that

some IWD will die 20 years earlier and have twice the risk of developing depression, asthma, diabetes, stroke, and obesity (WHO, 2023a).

Although physical activity is classified as any bodily movement by skeletal muscle that raises energy expenditure above the resting metabolic rate, exercise is slightly different (ACSM, 2014). Exercise is a subset of physical activity that is planned, structured, and repetitive (ACSM, 2014). Exercise is the typical form of physical activity practiced within the gym; therefore, this paper will use the term exercise to encompass gym-based physical activity (ACSM, 2014).

Exercise provides an array of health benefits, yet IWD are mostly inactive. The benefits of exercise include improved physical and mental well-being, improved physical fitness, greater perceptions of independence, and reduced risk for chronic health conditions, including secondary co-morbidities (Smith et al., 2018). Unfortunately, public health interventions to increase exercise in IWD are scarce (WHO, 2023b). Recent efforts to increase health equity for IWD are essential to improving their well-being and quality of life. Addressing environmental barriers to exercise for IWD may provide insight to increase exercise and, thus, reduce health disparities.

IWD prefer to be active in gym spaces, offering a more controlled and safer environment compared to the outdoors, yet barriers to exercise persist (Hassett et al., 2009; Kennedy et al., 2022; Sharon-David et al., 2021; Calder et al., 2018). Gyms vary in offerings (i.e., classes, equipment, training staff, etc.), but adaptive specialty gyms have become more common (Kassel, 2023). These gyms may have specific equipment and staff trained to work with IWD. At the same time, IWD may prefer CrossFit gyms and traditional gyms without specialization. Despite the variety of gyms and their services, the current literature suggests numerous barriers to exercise for IWD exist (Sharon-David et al., 2021; Rimmer et al., 2017; Calder et al., 2018). Barriers include the built environment surrounding the gym, the structure inside, equipment

offerings, staff knowledge of disability, costs, and the social environment (Sharon-David et al., 2021; Rimmer et al., 2017; Calder et al., 2018). Despite numerous well-documented barriers to exercise for IWD, some overcome these obstacles and adhere to or exceed the physical activity guidelines through exercise.

Given the prevalence of disabilities and the well-documented risk for early mortality and chronic health conditions among IWD, it is critical to find innovative ways to improve their quality of life. Increasing exercise may be one solution; however, barriers to gym use must be overcome. In fact, some IWD surpass, meet, or partially meet the physical activity guidelines primarily through gym-based exercise. Therefore, this study aimed to explore barriers and facilitators to gym-based exercise among IWD from the perspective of those surpassing, meeting, and partially meeting the physical activity guidelines. We also aimed to explore differences between IWD with congenital and acquired disabilities. To our knowledge, little to no literature exists from this perspective.

3.3 Methods

3.3.9 Design and Participants

A virtual qualitative study was employed to examine gym experiences for IWD participants with acquired and congenital disabilities. Study participants were recruited via social media (i.e., Facebook, Twitter, and Instagram), word-of-mouth, and by study flyers displaying a QR Code and Bitlink to the screening survey to determine eligibility. Fourteen IWD clicked the screening survey, 12 were eligible to participate, and 10 participated. To be eligible to participate, participants had to be at least 18 years of age or older, a US resident, English-speaking, have attended a gym within the past three years, and self-identify as having their disability diagnosis for at least one year. Semi-structured individual interviews were held

virtually over Zoom. Interview duration averaged 45 minutes. Although study participation was voluntary, all participants received a \$50 incentive as compensation for their time. The study received IRB approval from the university's Institutional Review Board, approval #11364, on 24 October 2022.

3.3.10 Procedures

3.3.10.1 Individual Interview Procedures

Eligible individuals were contacted by a research team member for Zoom interview scheduling. Prior to the interview, all participants electronically signed an informed consent document acknowledging that the interview would be recorded and anonymized. The lead researcher conducted each interview using 13 base questions and additional probing questions as needed (See Appendix C). Participants were asked to describe their background as an adaptive athlete, what has brought, kept, or pushed them away from the gym, and overall, their experiences within the gym that served as barriers and how they pushed past these barriers.

The lead researcher met weekly with research team members throughout the interview process to assess whether data saturation occurred (i.e., no new emerging data/themes). After completing seven interviews, the research team recognized that data saturation was close. After completing another three interviews with no new or emerging data, the research team concluded that data saturation was achieved (Francis et al., 2010). All interviews were transcribed verbatim. Member checking enhanced accuracy and that the recorded responses accurately reflected participants' responses.

3.3.10.2 Follow-Up Survey Procedures

After finishing their individual interview, participants were emailed a link to a follow-up survey using Qualtrics (Provo, Utah, USA). The follow-up survey consisted of 25 questions,

including multiple-choice, sliding scale, and one short answer question. Participants were asked to specify what kind of disability they have (i.e., congenital and/or acquired) and the specific category/type of this disability (i.e., above knee amputation, cerebral palsy, other [specified], etc.). Participants were asked to specify the type of gym they attend or attended (i.e., adaptive gym, traditional gym, CrossFit gym, or other) and if they their gym attendance was current or former. Four rating questions asked participants to rate their overall satisfaction with their gym's offering and its personal trainers. A ten-point Likert scale was used where 0 was least satisfied, and 10 was completely satisfied. Participants indicated how many days per week they completed moderate/vigorous aerobic activity, muscle-strengthening (e.g., strength training), and the average minutes per session for each. This information was used to determine participants' weekly physical activity levels and if they met the guidelines. Lastly, participants were asked an open-ended probing question asking for additional experiences, barriers, facilitators, or suggestions they had to share post-interview. All individual interview completed the follow-up survey for a 100% response rate.

3.3.11 Data Analysis

3.3.11.1 Individual Interview Analysis

Two research team members analyzed interview transcripts using Taguette (Rampin et al., 2017). A comparative method consisting of an inductive, iterative thematic content analysis was employed to develop themes (Braun & Clarke, 2006; Timmermans & Tavory, 2012; Creswell, 2017). Researchers repetitiously refined codes, restructuring and combining code categories and resulting themes until complete agreement was reached. Each researcher independently coded the transcripts by highlighting words and phrases to illuminate the study's purpose. Researchers routinely reviewed previously analyzed data and applied new emerging

codes. After completion of transcription coding, researchers met to confirm that individual code meaning was coherent and duplicative codes were merged, resulting in 80 distinctive codes. All 80 codes were organized into seven categories based on similarities. Next, researchers returned to the literature to assist in theme development (Braun & Clark, 2006). Four themes representing the seven categories emerged. This process was constant, repetitively moving between interview transcripts, codes, and categories to accurately represent participant experiences. Lastly, a negative case analysis was completed with no inconsistent viewpoints over the four identified themes (Katz, 2001). Data trustworthiness was fulfilled via credibility and dependability by using researcher triangulation and applying a well-reasoned, definitive analytical processes to evaluate and establish themes (i.e., a comparative method; Lincoln & Guba, 1986). Multiple coders were used to achieve researcher triangulation (Lincoln & Guba, 1986).

3.3.11.2 Follow-Up Survey Analysis

Descriptive statistics including means $\pm$ standard deviations ($M \pm SD$) were calculated for all data using SPSS version 27 (IBM, Armonk, NY, USA).

3.4 Results

Interview participants ($n = 10$) were aged 25 to 65, with half (50%) between 25 and 34 years of age. The majority were male (60%). Sixty percent of participants had an acquired disability, and 40% were born with a congenital disability. Twenty percent of participants reported having a traumatic brain injury, 20% a complete spinal cord injury, 10% an incomplete spinal cord injury, 10% an invisible wound (e.g., PTSD), and 40% reported other (i.e., congenital femoral deficiency, severe degenerative disc disease, myasthenia gravis, phocomelia). Most participants surpassed or met the physical activity guidelines (70%); see Table 3-1. All participants indicated they were training in a gym, even if it was not their primary exercise

location. Participants attended adaptive gyms (40%), followed by traditional gyms (30%), a combination of gyms/home gyms (20%), and CrossFit gyms (10%). On average, participants ranked their gym as adaptive-friendly (8.1 ± 1.8).

Table 3-1 Participants' Weekly Physical Activity Summary.

Variable	N	Days/Week (M $\pm$ SD)	Minutes/Session (M $\pm$ SD)
Moderate physical activity	10	4.00 ± 1.63	92.50 ± 158.06
Vigorous physical activity	10	2.10 ± 1.85	51.00 ± 75.11
Strength training	10	3.30 ± 1.49	48.50 ± 30.19
Surpassed physical activity guidelines	6	—	—
Met physical activity guidelines	1	—	—
Partially met physical activity guidelines	3	—	—

3.4.12 Individual Interview Findings

Thematic analysis of interviews resulted in three prominent themes, including (1) barriers and facilitators to gym use by IWD extend beyond gym layout, (2) experiences with other gym members are both positive and negative, and (3) personal trainers need special training, but should not apply special treatment when working with IWD. Participant excerpts are quoted verbatim; however, brackets are used for additional clarification. See Appendix D for a complete table of themes and quotes.

3.4.12.1 Theme 1: Barriers and facilitators to gym use by IWD extend beyond gym layout.

Most barriers for IWD in gym settings are gym, class, or equipment-related but not necessarily related to the gym design (i.e., floor space, door size, handicap-accessible bathrooms,

etc.). Many participants discussed the overall costs of a gym membership and training costs, with some participants noting that they were charged higher training fees due to the complexity of training IWD. One participant with a congenital disability said,

A lot of us, maybe 80% of people, are on disability, and so that's \$150 a month of savings. You're trying to work out, but you're paying \$150 to \$100 a month to try to go to a gym; it's not really accessible.

This same participant was fortunate to find a local organization that served as a facilitator to gym attendance and shared,

I will say that the organization [redacted name] when they offered the free membership to gyms for people with disabilities, that was a lifesaver for half of the people... They came up with a solution where there are a lot of disabled athletes that can't go to a gym that are on fixed incomes, so they came up with a plan to help you get a free membership.

Aside from problematic gym costs, another problem discussed includes the accessibility of gyms that offer any form of adaptive training (i.e., equipment, personal trainers, and classes). Although adaptive gyms, equipment, personal trainers, and classes exist, finding a gym offering any form of adaptive training nearby remains a serious barrier. For example, one participant with a congenital disability shared the difficulty of accessing gyms that can accommodate them, with some gyms too far away or hard to find. When they are available, they may be unable to take on another individual. According to this participant,

Because they're in Virginia Beach and I'm from Hampton, it's a good drive [to this gym]. So, I'm going to try going there starting tomorrow, but because they're in Virginia Beach... and it's, like, 4:30 in the afternoon, and traffic to go over there and come back...

Finding gyms for IWD is problematic, but this problem only intensifies when examining the barriers associated with classes. Fitness classes can be a fantastic resource for IWD, but often, class sizes are limited, frequency is sparse, and adaptations are inadequate. One participant who developed a congenital disability in early adulthood came across this problem at their adaptive-friendly gym and said,

For classes she [the gym owner] has about 15 adaptive athletes total, and only five seats per class, and she gets the same four people all the time everyday so really all the rest of us are fighting over one seat and so sometimes she has not helped me because she over booked her classes and like today, I got frustrated that I couldn't get into her class.

Many individuals noted that classes for adaptive athletes are not held daily. Alternatively, when classes are held daily, they are only offered once per day at a time that may not accommodate everyone's schedule. One participant with a congenital disability noted, "We don't want classes once a week. What does that do? We want classes more frequently. You offer that to everybody else, so why can't we have that? So yeah, you want to have it more frequently." Aside from limited class size and frequency, class design can pose accessibility problems, primarily when differing levels of disability are lumped into the same class. As one participant said, "[the coach] comes in useful, but I kind of get pushed aside even at the adaptive fitness center because I am not needing a lot of their style of coaching and adapted work." Another participant with an acquired disability echoed this sentiment, noting,

Disability has such a big range of what they can do. A lot of people can't do the same movements or even use the machine the same. You almost have to have a similar disability to do similar movements, but even then, that's not a guarantee.

Our analysis revealed that despite some gyms being adaptive-friendly, more work needs to be done to reach a more comprehensive network of IWD. Traditional gyms could reach more IWD by modifying certain pieces of equipment. Many participants noted that they did not require much special equipment, but minor modifications to existing equipment could be helpful for those with acquired or congenital disabilities. For example, one participant with a congenital disability shared their frustration despite loving the equipment their gym offers, saying,

I love that equipment, but I can't get the bar [demonstrates how they cannot reach the bar on the lat pull-down machine]. Too short! I often times would either avoid it, or I would ask someone next to me, "Hey, do you mind," but then that poses a problem when that person leaves, and you don't want to, like, let go and slam it.

Other participants shared how their gym has solved some equipment problems by installing various levers that can move the seat away from the equipment, modify handles, or even lower handles to a shorter distance to facilitate use. One participant with an acquired disability explained,

There is not a lot of adaptive equipment in the gym, so you just learn. When I was at Missouri State, they did have a few things that were adaptive, too. They had a lever that would slide the seat over, and then I could wheel into it, but I don't think I have seen that in more than a couple places.

Although having accessible equipment should facilitate increased exercise, one problem that may hinder the use of this is a lack of exercise knowledge. Participants noted that their exercise knowledge is impacted by their disability level and time spent adapting to a disability. For example, one participant with an acquired disability shared their apprehension about specific exercises due to their lack of knowledge. They said,

I don't want to be doing the fitness or the weights wrong, you know, that's why I think I have a tendency of, if it gets too hard, I think well I'll do it this way, when it's, like, no you have to do it this way regardless of how hard it can be. So, I think having classes will be beneficial for me.

Lack of knowledge is a factor prevalent across many of our participants with acquired disabilities who are trying to learn their "new normal." However, many of our participants with congenital disabilities noted that they experience greater ease in the gym since they have spent more time adapting to the world. Whether navigating their new normal or using much of this equipment, there are times when having additional hands may be helpful, but experiences with fellow gym users can also be a complicated matter.

3.4.12.2 Theme 2: Experiences with other gym members are both positive and negative.

Experiences with gym members can be positive and negative, influencing IWD's comfort in using the gym. Many participants noted unwelcomed gazes and stares from fellow gym members and staff. One participant with an acquired disability noted,

I may go to a normal gym, and people will stare at you cuz I can't do normal stuff so, I'm trying when I got my service dog, and it just was uncomfortable to go to a normal gym cuz it's just... hard.

It is not only unwelcomed gazes that cause discomfort. Some participants described incidents where other gym members' questions caused discomfort. Another participant with an acquired disability shared their frustrations at the questions,

People, they always wanna ask how'd you get hurt. Like, dude, I don't want to talk about it. I talk to a counselor for it but when I go to the gym, I just want to get my workout in.

Between unwelcome stares or questions from fellow gym members or staff, analysis reveals a lack of social awareness around communicating and engaging with IWD. Many IWD would like to interact with the gym community. However, there is an underlying fear that the community may view this as their “good deed of the day,” which hinders motivation to interact. However, despite this problem, there are still some positive moments where IWD and other gym members communicate and interact. For example, one participant with a congenital disability stated, “There’s always people that were like, ‘Hey, I’ll do this, or I’ll move this,’ or you know, so you could get to where you need to go.” This support from fellow gym members and staff served as a facilitator to exercise and eased navigation of gym spaces.

Additionally, interactions with gym members can be just as complicated when the IWD’s disability is invisible. One participant noted that appearing “normal” caused discomfort because they needed some adaptation. They felt like people with more noticeable disabilities were given preference at their gym for adaptive athletes. They said, “I’m this weird in-between clientele; I’m not a spinal cord injury patient; I don’t require a high level of adaption.” Due to their lower adaptation requirements, their experiences with other gym members were negative.

3.4.12.3 Theme 3: Personal trainers need special training but should not apply special treatment when working with IWD.

Specialty training provides a foundation for working with IWD. Participants noted that some personal trainers and coaches had a physical or occupational therapy background, but most did not. While specialty certifications exist, only some personal trainers, coaches, or class instructors have them. One participant with a congenital disability said, “I think that having someone on staff, at least one person on staff, who has some training to deal with people with different needs than the regular staff would be helpful.” Specialty certifications and additional

training holistically address the needs of IWD. Specialty certifications teach personal trainers and coaches how to adapt exercise to the needs of IWD while promoting strategies to improve communication and interact with IWD. For example, a participant with a congenital disability said,

I think they need to take more classes or whatever to help them. I want trainers to, like, really listen to us, you know... I think trainers need to have open ears, open mind, about working. A lot of positivity cuz a lot of us are coming in there that are self-conscious, especially the ones that have been injured because they're coming from an able-Bodied life and now all of a sudden, their life is completely turned upside down so, like, you know, we need trainers that are really encouraging but not to the point where you're just... I don't like being babied; you want to, like, push them in a really encouraging way.

IWD want to be pushed, they want to be heard, they want to be encouraged, but they do not want to be treated specially or differently. IWD enjoy challenging workouts; however, a “challenging” workout may look different from individual to individual, and specific equipment that is challenging to one individual may not be challenging for the next. Many participants had experiences where they felt like they were not being pushed hard enough, making them feel like they were back in physical therapy. The same participant emphasized,

Yeah, we definitely don't want to go into the gym and work with a trainer and feel like we're doing physical therapy. You want to feel like it is a workout. We need to come out of there sweating, we need to be out of breath, because I like to feel the burn, you don't want to feel, like, okay, you know I could have just done that at home.

IWD want to experience the same intensity as their fellow gym members are, and to be seen as more able-bodied than some may believe. However, they want to do so safely. Therefore, specialized education might be necessary for personal trainers and coaches working with IWD. Our analysis suggests that more personal trainers, coaches, class instructors, and general gym staff need additional education to improve interactions and experiences with IWD. Interestingly, no participants noted the presence of personal trainers or instructors with disabilities, nor the desire for gyms to hire personal trainers and instructors with disabilities.

3.5 Discussion

This qualitative study examined the perspectives of IWD who overcame various barriers to gym exercise to surpass, fully meet, or partially meet physical activity guidelines. We accounted for differences in experiences by those with congenital and acquired disabilities. Three overarching themes emerged from our analysis. They covered barriers and facilitators to gym exercise for IWD that extend beyond the built environment to encompass more than gym layout, including interactions with other gym members and the need for special training for personal trainers and staff who work with IWD.

Overcoming traditional built environment barriers such as gym layout only partially described the experiences of gym participants in the present study. Indeed, overall gym costs (e.g., memberships, personal training, and class costs), gym proximity, and the lack of non-modifiable and adaptive equipment options were significant hurdles for IWD. These results align with previous research (Sharon et al., 2021; Rimmer et al., 2017; Richardson et al., 2017; Calder et al., 2018). Several studies describe that many gyms may meet the minimum legal requirements for IWD to access their facility yet continue to send discouraging messages from the training environment (Richardson et al., 2017; Rimmer et al., 2017). One example of discouraging

messages from the training environment includes having handicap-accessible doors and bathrooms but inaccessible equipment and classes (Richardson et al., 2017). Having only portions of a gym be accessible, with the remainder being inaccessible, can lead IWD to feel excluded and elicit feelings of anger, reduced self-worth, and pain (i.e., psycho-emotional distress; Richardson et al., 2017). Inaccessible equipment, discouraging messages, negative feelings, limited access to gyms, and high costs negatively influence gym-based exercise for IWD (Sharon et al., 2021; Richardson et al., 2017).

Participants also noted numerous exercise class barriers. Limitations in class capacity and infrequent offerings posed barriers to exercise among study participants. Participants noted how classes with limited adaptability were not challenging, leading to poor class experiences. Similarly, Rimmer and colleagues (2017) found that accessibility of classes is a barrier, but usability is an equally challenging barrier to satisfying gym exercise. Aside from exercise class challenges, a significant difference between individuals with acquired disabilities and those with congenital disabilities was that those with acquired disabilities often recounted what they used to be able to do. However, those with congenital disabilities had a history of adapting to what was available.

In our study, IWD described both positive and negative experiences with other gym members. Participants chronicled the importance of creating a supportive gym community through positive interactions. Some note that equipment became accessible if they asked for help from a fellow gym member. A positive social support environment has been shown to facilitate participation in exercise for IWD (Kennedy et al., 2022). Social support may take various forms, such as direct supervision, peer support, specialist support, orientation, and education (Kennedy et al., 2022; Gottlieb & Bergen, 2010). Social connectedness and a sense of belonging within

these spaces emerge when these support mechanisms combine (Kennedy et al., 2022; Sharon et al., 2021). Feeling connected and a sense of belonging may help minimize personal and social exercise barriers that contribute to uncomfortable interactions (Kennedy et al., 2022; Sharon et al., 2021).

Just as positive interactions with fellow gym members facilitated exercise, negative interactions were a barrier to exercise. IWD described unpleasant interactions, unwelcome gazes, and unsolicited questions regarding their disability, impeding their desire to go to the gym. Similar to previous research, these interactions highlight a general lack of social awareness around engaging IWD (Campbell, 2013; Calder-Dowe et al., 2020). Future research should explore how social awareness and its influence on exercise affects the gym's social environment. Interestingly, our findings suggest that those with congenital disabilities may have greater ease navigating some barriers to exercise and could serve as role models for those with acquired disabilities. To our surprise and contrary to previous research, participants did not express a preference or desire to hire personal trainers and class instructors with disabilities. Previous research suggests that this strategy may help address sociocultural barriers by alleviating issues related to a lack of social awareness among gym members (Richardson et al., 2017). At the same time, previous research documents peer modeling's effectiveness in improving fitness and decreasing cardiovascular risk (Rowland et al., 2018). Therefore, participants in the current study may have been unaware of the benefits of hiring personal trainers and class instructors with disabilities. Personal trainers and class instructors are often regarded as vital to creating a healthy gym environment and should represent the members they serve to promote inclusivity (Richardson et al., 2017).

Individuals in our study indicated that they did not want special treatment. Many study participants indicated their desire for strenuous, challenging exercise, yet that desire was rarely met. When exercise does not feel challenging, IWD have low-quality exercise experiences. Quality exercise experiences are essential to IWD, as these experiences lead to greater perceptions of subjective well-being (Ginis et al., 2024). For many IWD, quality exercise is strenuous and challenging, allowing them to experience autonomy, a sense of belonging, engagement, mastery, and meaning (Ginis et al., 2024). Without quality experiences, IWD are dissatisfied with personal training and classes that can be reminiscent of physical therapy sessions. Similarly, previous research highlights IWD's poor experiences with personal trainers and instructors (Richardson et al., 2017).

Participants indicated that most gyms do not typically have personal trainers and staff with the knowledge or experience to accommodate their training needs. This finding aligns with past literature (Richardson et al., 2017; Cunningham et al., 2023; Rimmer et al., 2017). Previous research has found that educational interventions for those working with IWD help build a more inclusive atmosphere and raise disability awareness, improving experiences and competency for all (Ross et al., 2021). Future research should continue to examine the effects of educational interventions among gym staff on the experiences and exercise levels of gym members with disabilities. Aside from personal trainer and class instructor barriers, individual barriers to exercise participation included limited exercise training knowledge and fear of getting hurt.

This study has several strengths. To our knowledge, this is the first study to examine the gym experiences of individuals with congenital ($n = 4$) and acquired ($n = 6$) disabilities. Our data suggest that gym experiences differ based on these criteria. Future research should take care to differentiate between individuals with congenital versus acquired disabilities. This study's

qualitative design of semi-structured interviews led to data saturation, including rich, compelling data that cannot always be gathered quantitatively. Nuances in responses and the complexity behind our participants' facilitators and barriers were explored in greater detail.

Nonetheless, several limitations existed. Individual characteristics (e.g., race, ethnicity, specified gender, educational level, class, age, among other factors) that may affect exercise among IWD were not explored due to our small and relatively homogenous sample size. Intersectionality explores how these individual characteristics overlap and influence individual experiences and social relations. Future research should explore how these characteristics (e.g., race, ethnicity, specified gender, educational level, class, age, among other factors) intersect with disability to influence gym experiences and subsequent exercise engagement. These data could better inform public health interventions, ideally lessening the health disparities among IWD. The cross-sectional approach of the current study precludes the ability to make causal inferences. Longitudinal research is needed to understand how individuals with congenital and acquired disabilities surpass, meet, or partially meet the physical activity guidelines despite barriers.

3.5.13 Conclusion

This study highlights barriers and facilitators to exercise among individuals with congenital and acquired disabilities. Most individuals (70%) in our study surpassed or met the physical activity guidelines through gym-based exercise. Meeting the physical activity guidelines reduces the likelihood of early mortality and chronic health conditions that disproportionately affect IWD. However, despite the well-documented health benefits, exercise rates remain low among IWD. The benefits of gym-based exercise include a controlled and safer environment. Indeed, the prevalence of specialty gyms for IWD is increasing. Unfortunately, simply increasing the number of specialty gyms is insufficient to solve the problem of physical inactivity. Barriers

to exercise among IWD include gym costs, equipment selection, class offerings, interactions with other gym members, and special training for personal trainers and class instructors who work with IWD. The gym-based exercise needs of IWD are not adequately met, and educational interventions for both gym staff (i.e., personal trainers and instructors) and IWD may mitigate barriers to exercise in this population.

3.6 References

- American College of Sports Medicine (ACSM). (2014). *ACSM's Guidelines for Exercise Testing and Prescription* (9th ed.). (L. S., Pescatello; R. Arena; D. Riebe; P. D. Thompson, Eds.). Lippincott Williams & Wilkens.
- Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Calder, A., Sole, G., & Mulligan, H. (2018). The accessibility of fitness centers for people with disabilities: A systematic review. *Disability and Health Journal*, 11(4), 525-536. <https://doi.org/10.1016/j.dhjo.2018.04.002>
- Calder-Dawe, O., Witten, K., & Carroll, P. (2020). Being the body in question: Young people's accounts of everyday ableism, visibility and disability. *Disability & Society*, 35(1), 132-155. <https://doi.org/10.1080/09687599.2019.1621742>
- Campbell, F. K. (2014). *Ableism: A Theory of Everything?. Ableism, Racism and Conflicts of Participation & Inclusion in Society and the Labour Market, Hamburg, Germany.* <https://youtu.be/dY3EMNaB5p0>
- Centers for Disease Control and Prevention. (2020, September 16). *Disability and health overview.* <https://www.cdc.gov/ncbddd/disabilityandhealth/disability.html#:~:text=According%20to%20the%20World%20Health,%2C%20walking%2C%20or%20problem%20solving>
- Centers for Disease Control and Prevention. (2022, September 8). *Physical inactivity.* <https://www.cdc.gov/chronicdisease/resources/publications/factsheets/physical-activity.htm>

- Creswell, J. W. & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. (5th ed.). SAGE Publications.
- Cunningham, C., O'Donoghue, G., Cosgrave, S., Sands, T., Leacy, B., Markiewicz, I., ... & Shields, N. (2023). Gym staff perspectives on disability inclusion: A qualitative study. *Disability and Rehabilitation*, 45(3), 441-448.
<https://doi.org/10.1080/09638288.2022.2036826>
- Francis, J. J., Johnston, M., Robertson, C., Glidewell, L., Entwistle, V., Eccles, M. P., & Grimshaw, J. M. (2010). What is an adequate sample size? Operationalising data saturation for theory-based interview studies. *Psychology and Health*, 25(10), 1229-1245.
<https://doi.org/10.1080/08870440903194015>
- Ginis, K. A. M., van der Ploeg, H. P., Foster, C., Lai, B., McBride, C. B., Ng, K., ... & Heath, G. W. (2021). Participation of people living with disabilities in physical activity: A global perspective. *The Lancet*, 398(10298), 443-455. [https://doi.org/10.1016/S0140-6736\(21\)01164-8](https://doi.org/10.1016/S0140-6736(21)01164-8)
- Ginis, K. A. M., Gee, C. M., Sinden, A. R., Tomasone, J. R., & Latimer-Cheung, A. E. (2024). Relationships between sport and exercise participation and subjective well-being among adults with physical disabilities: Is participation quality more important than participation quantity? *Psychology of Sport and Exercise*, 70(102535), 1-8.
<https://doi.org/10.1016/j.psychsport.2023.102535>
- González, K., Fuentes, J., & Márquez, J. L. (2017). Physical inactivity, sedentary behavior and chronic diseases. *Korean Journal of Family Medicine*, 38(3), 111-115. <https://doi.org/10.4082/kjfm.2017.38.3.111>

- Gottlieb, B. H., & Bergen, A. E. (2010). Social support concepts and measures. *Journal of Psychosomatic Research*, 69(5), 511-520. <https://doi.org/10.4082/kjfm.2017.38.3.111>
- Hassett, L. M., Moseley, A. M., Tate, R., Harmer, A. R., Fairbairn, T. J., & Leung, J. (2009). Efficacy of a fitness centre-based exercise programme compared with a home-based exercise programme in traumatic brain injury: A randomized controlled trial. *Journal of Rehabilitation Medicine*, 41(4), 247-255. <https://doi.org/10.2340/16501977-0316>
- Kassel, G. (2023, June 16). *Many fitness places to completely ignore disabled bodies – That’s starting to change, but there’s plenty room to grow*. Well+Good. <https://www.wellandgood.com/adaptive-fitness/>
- Katz, J. (2001). A theory of qualitative methodology: The social system of analytic fieldwork. In R. Emerson (Ed.), *Contemporary field research: A collection of readings* (pp. 127-148). Waveland Press, Incorporated.
- Kennedy, R. A., McKenzie, G., Holmes, C., & Shields, N. (2022). Social support initiatives that facilitate exercise participation in community gyms for people with disability: A scoping review. *International Journal of Environmental Research and Public Health*, 20(1), 1-22. <https://doi.org/10.3390/ijerph20010699>
- Lincoln, Y. S., & Guba, E. G. (1986). But is it rigorous? Trustworthiness and authenticity in naturalistic evaluation. *New directions for program evaluation*, 1986(30), 73-84. <https://doi.org/10.1002/ev.1427>
- Modell, B., Darlison, M. W., Malherbe, H., Moorthie, S., Blencowe, H., Mahaini, R., & El-Adawy, M. (2018). Congenital disorders: Epidemiological methods for answering calls for action. *Journal of Community Genetics*, 9(4), 335-340. <https://doi.org/10.1007/s12687-018-0390-4>

- Piercy, K.L.; Troiano, R.P.; Ballard, R.M.; Carlson, S.A.; Fulton, J.E.; Galuska, D.A.; George, S.M.; Olson, R.D. (2018). The Physical Activity Guidelines for Americans. *Journal of the American Medical Association (JAMA)*, 320(19), 2020–2028.
[doi:10.1001/jama.2018.14854](https://doi.org/10.1001/jama.2018.14854)
- Rampin et al., (2021). Taguette: Open-source qualitative data analysis. *Journal of Open Source Software*, 6(68), 3522, <https://doi.org/10.21105/joss.03522>
- Richardson, E. V., Smith, B., & Papathomas, A. (2017). Disability and the gym: Experiences, barriers and facilitators of gym use for individuals with physical disabilities. *Disability and Rehabilitation*, 39(19), 1950-1957. <https://doi.org/10.1080/09638288.2016.1213893>
- Rimmer, J. H., Padalabalanarayanan, S., Malone, L. A., & Mehta, T. (2017). Fitness facilities still lack accessibility for people with disabilities. *Disability and Health Journal*, 10(2), 214-221. <https://doi.org/10.1016/j.dhjo.2016.12.011>
- Ross, S. M., Schram, B., McCarty, K., Fiscella, N., Leung, W. C. W., & Lindland, K. (2021). Promoting inclusion of adults with disabilities in local fitness programs: A needs assessment. *Developmental Disabilities Network Journal*, 2(1), 101-117.
<https://uen.pressbooks.pub/ddnjv2i1/chapter/promoting-inclusion-of-adults-with-disabilities-in-local-fitness-programs-a-needs-assessment/>
- Rowland, S. A., Berg, K. E., Kupzyk, K. A., Pullen, C. H., Cohen, M. Z., Schulz, P. S., & Yates, B. C. (2018). Feasibility and effect of a peer modeling workplace physical activity intervention for women. *Workplace Health & Safety*, 66(9), 428-436.
<https://doi.org/10.1177/216507991775369>
- Sharon-David, H., Siekanska, M., & Tenenbaum, G. (2021). Are gyms fit for all? A scoping

- review of the barriers and facilitators to gym-based exercise participation experienced by people with physical disabilities. *Performance Enhancement & Health*, 9(1), 100170.
<https://doi.org/10.1016/j.peh.2020.100170>
- Smith, B., Kirby, N., Skinner, B., Wightman, L., Lucas, R., & Foster, C. (2018). Physical activity for general benefits in disabled adults: Summary of a rapid evidence review for the UK Chief Medical Officers' update of the physical activity guidelines. *Public Health England*. Retrieved November 22, 2023, from
https://assets.publishing.service.gov.uk/media/5bc0abf9e5274a36388e6ed5/Physical_activity_for_general_health_benefits_in_disabled_adults.pdf
- Timmermans, S. & Tavory, I. (2012) Theory construction in qualitative research: From grounded theory to abductive analysis. *Sociological Theory*, 30(3), 167–186.
<https://doi.org/10.1177/0735275112457>
- World Health Organization (WHO). (2023, March 7a). *Disability*. https://www.who.int/health-topics/disability#tab=tab_1
- World Health Organization (WHO). (2023, March 7b). *Disability*. <https://www.who.int/news-room/fact-sheets/detail/disability-and-health#:~:text=Risk%20factors%3A%20Persons%20with%20disabilities,out%20of%20public%20health%20interventions.>
- U.S. Department of Health and Human Services (USDHHS). (2018). *Physical activity guidelines for Americans* (2nd ed.). https://health.gov/sites/default/files/2019-09/Physical_Activity_Guidelines_2nd_edition.pdf

Chapter 4 – Empowering Personal Trainers to Work With Individuals With Disabilities

4.1 Abstract

The benefits of regular physical activity for individuals with disabilities (IWD) are well recognized. Nonetheless, IWD report several barriers to physical activity participation, including limited access to qualified and experienced personal trainers. Limited research exists from the perspective of personal trainers. This qualitative study aimed to examine the experiences of personal trainers who were successfully working with IWD. Individual interviews were conducted with ten personal trainers, focusing on educational and occupational background, experiences training IWD, and experiences training IWD within gym settings. Using a thematic analysis, five themes emerged: (1) specialized education and extended experience are needed for personal trainers working with IWD, (2) experience working with a diverse range of disabilities and differing expressions of each is vital for personal trainers' success in working with IWD, (3) an active network between personal trainers and allied healthcare providers is necessary to better support clients, (4) resource management is a must for personal trainers to improve accessibility to physical activity, and (5) personal trainers empower IWD to self-advocate for their physical activity needs. Future research could examine the effects of an adaptive educational hands-on intervention among personal trainers.

Keywords: fitness professionals, adaptive, education, experience, physical activity, barrier, facilitator

4.2 Introduction

One of four US adults has some form of disability that impacts their mobility, cognition, independent living, hearing, vision, or self-care (CDC, 2023). Disability is any condition and impairment of the body or mind that impedes individuals from completing certain activities or interacting in normal daily activities, including physical activity (CDC, 2020). Individuals with disabilities (IWD) who regularly participate in physical activity have a reduced risk of chronic health conditions, improved physical and mental health, increased feelings of empowerment, and a greater sense of social inclusion (CDC, 2022; Smith et al., 2018; Hill et al., 2023). However, despite clear evidence describing the benefits of physical activity, most IWD are not physically active (Smith et al., 2018; Rimmer et al., 2004).

Gyms are locations where IWD can prioritize their physical activity. Gym-based physical activity is considered exercise, a subset of physical activity that is planned, structured, and repetitive (REF). Despite the gym's focus on prioritizing exercise, barriers also persist in these locations. Gym barriers to IWD's exercise behaviors include built environment issues (e.g., lack of open space, inaccessible doors, lack of ramps, slick surfaces), inaccessible gym equipment, facilities not meeting American with Disabilities Act guidelines, and a lack of qualified fitness professionals (e.g., personal trainers) to work with (Hill et al., 2023; Rimmer et al., 2004; Rimmer et al., 2017; Obrusnikova et al., 2021; Dolbow & Figoni, 2015). Personal trainers play a unique role in supporting the health and wellness of IWD by helping engage them in exercise behaviors (Hill et al., 2023; Cunningham et al., 2023). Personal trainers do this by helping IWD set clear, individualized, meaningful goals and helping motivate their clients to achieve those goals (Cunningham et al., 2023). Often, IWDs' training goals involve developing more physical independence (Cunningham et al., 2023). For example, many IWD may have the goal to walk

again, to independently transfer in and out of their wheelchair, to eventually attend the gym alone without assistance, or to feel more confident within the gym and other locations (Hill et al., 2023; Cunningham et al., 2023). Trusting relationships develop between personal trainers and their clients that provide safety nets for IWD to vocalize what needs are still not being met within their facility (Hill et al., 2023; Cunningham et al., 2023). The relationships personal trainers create with their clients also provides peer support, improving the social inclusion of IWD in the gym, and aiding their comfort to exercise within these spaces (Hill et al., 2023; Cunningham et al., 2023).

Despite the positive role personal trainers can have in the health and wellness of IWD, many IWD report negative experiences with their trainers (Hill et al., 2023; Rimmer, 2004; Steiner, 2014; Obrusnikova et al., 2021). These negative experiences may stem from a lack of knowledge, skill, and confidence to work with IWD. Training IWD requires knowledge and experience in “adapting” exercise (i.e., modifying exercise selection and programming based on limitations or impairments stemming from their disability; ACSM, 2014; OSU, 2024). Limited certifications include education on adaptive skills and hands-on experience to produce qualified and confident trainers to work with IWD (Hill et al., 2023; Melton et al., 2008; Obrusnikova et al., 2021; Steiner, 2014). The limited availability of specialty certifications leads to few well-equipped trainers who can be employed, contributing to the negative experiences and barriers reported by IWD at gyms (Melton et al, 2018; Hill et al., 2023).

Although a growing body of literature has explored the barriers to exercise participation from the viewpoint of IWD, limited research is available from the perspective of personal trainers. Three recent qualitative studies explored the beliefs and experiences of personal trainers working with IWD (Hill et al., 2023; Cunningham et al., 2023; Obrusnikova et al., 2021).

Authors found that personal trainers struggled with managing the pre-existing attitudes of other gym users, limited knowledge of exercise opportunities for IWD, cost-restraints, built environment constraints, limited transportation resources, lack of accessible equipment, lack of disability-specific training for gym/fitness staff, and a lack of collaboration with healthcare providers (Hill et al., 2023; Cunningham et al., 2023; Obrusnikova et al., 2021; Osario & Blauwet, 2017; Sharon-David et al., 2021; Rimmer et al., 2017). The most impactful barriers were a lack of disability-specific training for personal trainers, cost-restraints, and a lack of collaboration with healthcare providers (Hill et al., 2023; Obrusnikova et al., 2021; Sharon-David et al., 2021; Rimmer et al., 2017).

Although these studies provide valuable observations into the barriers personal trainers face in training IWD, further research is needed from the perspectives of personal trainers that have successfully overcome barriers to training IWD. To address this gap, this study aimed to examine the experiences of personal trainers who were successfully working with IWD.

4.3 Methods

4.3.14 Participants

An online qualitative study was conducted to explore personal trainers' experiences working with IWD. Study participants were recruited through non-profit organizations specializing in adaptive exercise for IWD by sharing study flyers displaying a QR Code and Bitlink to the screening survey for eligibility. Of the twelve personal trainers who clicked the screening survey, 11 were eligible to participate, and 10 did. To be eligible to participate, participants had to be at least 18 years of age or older, a US resident, English-speaking, have an active personal trainer certification or were actively certified within the past three years, and if self-identifying as having a disability, having their disability diagnosis for at least one year.

Semi-structured individual interviews were conducted online via Zoom. Interviews generally lasted 45 minutes. Study participation was voluntary, and a \$50 incentive was provided as compensation for their time. The study received IRB approval from the university's Institutional Review Board (approval #11364, on 24 October 2022).

4.3.15 Procedures

4.3.15.1 Individual Interview Procedures

Upon completing the screening survey, eligible individuals were contacted by a research team member to schedule an interview at an agreeable time for the participant. Before the interview began, each participant electronically signed an informed consent form acknowledging that the interview would be recorded but that no identifying information would be retained. The primary researcher conducted each interview using 14 base questions and additional probing questions as needed (see Appendix E). Participants were asked to describe their background as a personal trainer (e.g., degrees, certifications, years of experience, etc.), experience working with IWD, knowledge of adaptive training, adaptive friendliness of their gym, and knowledge of training programs for trainers or clients. The primary researcher regularly met with research team members throughout the interview process to assess data saturation (i.e., when no new emerging data/themes appeared). After completing seven interviews, the research team felt like data saturation was close. After completing another three interviews with no new or emerging data, the research team agreed that data saturation was achieved (Francis et al., 2010). Each interview was transcribed verbatim. Member checking ensured accuracy, and the recorded responses correctly reflected participants' experiences.

4.3.15.2 Follow-Up Survey Procedures

Upon completing the individual interview, participants received a link via email to a follow-up survey using Qualtrics (Provo, Utah, USA). The 25-question follow-up survey gathered demographic data, gym use information, and a final opportunity for any additional feedback. If identifying as having a disability, participants were asked to specify what kind of disability they had (i.e., congenital and/or acquired) and the specific category/type of the disability (i.e., traumatic brain injury, spinal cord injury, other [specified], etc.). Participants were asked to specify the type of gym they attend or attended (i.e., CrossFit gym, adaptive gym, traditional gym, or other). Participants were also asked to specify that they were actively working as a personal trainer. Two rating questions asked participants to rate their overall satisfaction with their gym and its trainers. An additional two rating questions asked participants to rate the adaptive friendliness of their gym. A ten-point Likert scale was utilized where 0 was least satisfied or not adaptive friendly, and 10 was completely satisfied or very adaptive friendly. Lastly, participants were asked an open-ended probing question asking for additional experiences, barriers, facilitators, or suggestions they had to share post-interview. Of the ten individual interview participants, all completed the follow-up survey (100% response rate).

4.3.16 Data Analysis

4.3.16.1 Individual Interview Analysis

Trustworthiness was fulfilled through credibility and dependability by applying researcher triangulation and using imperative, definitive research processes to examine and produce themes (i.e., a comparative method; Lincoln & Guba, 1986). Researcher triangulation was met by using two coders (Lincoln & Guba, 1986). A primary and secondary coder analyzed interview transcripts using Taguette (Rampin et al., 2017). A comparative method was used to develop themes consisting of an inductive, iterative thematic analysis (Braun & Clarke, 2006;

Timmermans & Tavory, 2012; Creswell, 2017). Researchers independently coded the transcripts by highlighting words and phrases that addressed the study's purpose. Researchers iteratively refined codes, reorganizing and collapsing categories of codes and resulting themes until consensus was reached. The secondary coder familiarized themselves with all interview transcripts and coded some (approximately 33%) of the interviews. The secondary coder regularly met with the primary coder to compare codes to confirm that similar themes and concepts were being interpreted. The researchers regularly returned to previously analyzed data and applied any relevant new codes as they emerged. After all transcripts had been coded, the primary and secondary coder met to ensure that individual code meaning was clear and similar codes were combined, yielding 105 unique codes. All 105 codes were used to form 12 categories based on commonalities. Next, researchers returned to the literature to assist in theme development (Braun & Clark, 2006). Five themes representing the 12 categories were developed. These themes were consistent with and added to previous research. This process was iterative, repeatedly moving between the participants' responses, codes, and categories to capture the participants' experiences accurately. A negative case analysis was completed with no conflicting viewpoints across the five identified themes (Katz, 2001).

4.3.16.2 Follow-Up Survey Analysis

Descriptive statistics were calculated using SPSS version 27 (IBM, Armonk, NY, USA). Means $\pm$ standard deviations ($M \pm SD$) and frequencies were calculated for all data.

4.4 Results

Interview participants ($n = 10$) were aged 18 to 54, with 60% between 35 and 44. The majority were female (60%). Only 10% of participants had an acquired disability, while 90% reported no disability. Most participants (80%) reported IWD as their primary training

population, while 20% reported only training some IWD. Participants reported primarily training IWD in adaptive gyms (40%), followed by traditional gyms (30%), CrossFit gyms (20%), and a combination of gyms/home gyms (10%). On average, participants ranked their gym as adaptive-friendly (7.8 ± 2.3). Although all participants were certified personal trainers, some worked in other complementary occupations, as shown below in Table 4-1. Table 4-1 also displays the educational background of all participants.

Table 4-1 Participant Occupational and Educational Background.

Additional Occupational Category	N
Physical therapist	2
Occupational therapist	1
Athletic trainer	1
Speech pathologist	1
Brain injury specialist	1
Assistant professor	1
Highest level of education completed	
High school degree	3
Bachelor's degree	2
Master's degree	1
Doctoral degree	4

4.4.17 Individual Interview Findings

Thematic analysis of interviews resulted in five prominent themes, including (1) specialized education and extended experience are needed for personal trainers working with IWD, (2) experience working with a diverse range of disabilities and differing expressions of each is vital for personal trainers' success in working with IWD, (3) an active network between personal trainers and allied healthcare providers is necessary to better support clients, (4)

resource management is a must for personal trainers to improve accessibility to physical activity, and (5) personal trainers empower IWD to self-advocate for their physical activity needs. In the rest of this section, participant excerpts are quoted verbatim; however, brackets are used for additional clarification. See Appendix F for an exhaustive table of themes and quotes.

4.4.17.1 Theme 1: Specialized education and extended experience are needed for personal trainers working with IWD.

Most personal trainers made positive remarks regarding their comfort in training IWD. However, nearly all trainers discussed the education and experience required to achieve high comfort and confidence in working with IWD. For example, one trainer said, “It doesn’t matter what your personal training background is [e.g., general certification], but you want to get the specialty training for the adaptive population.” Trainers discussed how a general personal training certification is only the first step to becoming qualified to work with IWD, as this provides foundational knowledge, such as programming and periodization skills. However, specialized certifications provide additional education on training modifications and programming for individuals of varying disabilities. One participant who assists in training trainers noted,

We teach trainers how to work with all kinds of limitations and often will go through upper, lower, and seated [athletes] on day one so people are getting the physiological things that they need to understand about adaptive training... On day two, we talk about intellectual disability and neurological [disability] and shift our focus into more about cueing.

Specialized education is a powerful tool in empowering personal trainers to feel confident and prepared to engage IWD in exercise. However, further experience is needed to apply the new

training principles acquired through these specialty certifications. Most participants noted the need for hands-on experience with IWD, as much of their training consisted of trial-and-error as they determined the best training fit for the individuals' limitations, capabilities, and needs. One participant added to this by saying,

I would say a lot of my education with the adaptive community has been from in-person trial and error... I would say that's where I get most of my knowledge. [My adaptive knowledge] would be from, like, the day-to-day hands-on experience with these athletes...Being hands-on is the best way to learn.

Hands-on experience aided in building confidence among trainers to apply their knowledge from general and specialized certifications to IWD. Without hands-on experience, many trainers felt nervous or uncomfortable training IWD despite additional education. One trainer said,

You can take a class, but you will still be nervous and uncomfortable until you get the hands-on experience. That's a lot of what [name omitted] did. Nothing really prepares us, each injury like a spinal cord injury is all different. My education helped a lot, but not everyone has that.

Working with IWD required a case-by-case approach. Many individuals may have the same disability yet different symptoms, emphasizing the need for trainers to not only gain extended experience working with IWD but also aim to gain experience with a diverse population of IWD.

4.4.17.2 Theme 2: Experience working with a diverse range of disabilities and differing expressions of each is vital for personal trainers' success in working with IWD.

Participants had diverse educational and occupational backgrounds, with many doubling as health professionals. As a result, the sample population had an extensive background working with a diverse range of disabilities (e.g., neuromuscular, neurological, physical, intellectual, etc.),

including acquired and congenital, with some developing over time while others resulted from traumatic incidents. Participants discussed the overall differences between types of disabilities, the unique differences between two individuals with the same disability, and the day-to-day differences of the same disability. One participant discussed the diversity of spinal cord injuries and said,

I can think of three different people with a spinal cord injury that I work with. They are all so very different even at the same level of injury: the way they present, the way they're able to move, you know which muscles are working, everyone is so different, and that's just one disability.

Another trainer added to the experience of working with unique and differing expressions of disability by sharing,

One of the things we talked about in brain injury, for example, is that if you've met one person with a brain injury, you've met one person with a brain injury, right? That doesn't mean you know the population... There are some neat little categories [of disability] where you're upper, you're lower, you're seated, or you're neuro... Those are good generalizations into how we train them, but within neuro [disabilities] in particular, there's such a diverse population and such a diverse range of limitations.

New trainers or trainers new to working with IWD experienced nervous feelings during their initial training sessions as they got to know each individual's unique symptomology of their disability and how this varied. One trainer commented on her nervousness about working with a new IWD, despite her extensive background in adaptive training,

I always find myself nervous to work with the person [IWD] in an exercise setting. It takes a little bit. I don't feel confident until I've learned the person, and I believe that's

because you can have two people with spinal cord injuries, and their capabilities are vastly different from one another.

Personal trainers believed that working with IWD should have the approach of “every person is kind of an N of one,” where everyone is treated as having new and unique limitations that the trainer must take time to explore. Getting to know each individual and their specific limitations and capabilities allowed trainers to create challenging training programs that met the needs of IWD while providing a platform to create fun, healthy relationships around physical activity. One way trainers gained access to a more diverse population of IWD was by actively participating in referral networks with allied healthcare providers.

4.4.17.3 Theme 3: An active network between personal trainers and allied healthcare providers is necessary to better support clients.

Personal trainers and healthcare providers are valuable assets in the health and wellness of IWD. When working collaboratively, the trainer and healthcare provider can help an IWD understand the next steps in their health, fitness, or rehabilitation journey. Many trainers discussed barriers influencing these relationships, including a lack of healthcare provider knowledge about exercise training programs, limited publicity of existing personal training programs for IWD, and a general lack of communication between trainers and healthcare providers. Many participants discussed the difficulties healthcare providers faced in finding reliable trainers to refer patients to due to the saturated field of other types of training certifications. As such, trainers suggested going out into the community to develop these relationships with healthcare providers. One participant said,

Reaching out to your local physical therapy departments and saying, ‘Hey, this is what I provide. This is what I’m looking to do. Please send me your patients once they get

cleared from physical therapy or occupational therapy,’ or whatever it is; I think that is a great place to start, too.

Although participants suggested that trainers should go out into the community to establish these relationships, it is still crucial for healthcare providers to actively seek out these relationships, too. One participant commented on the healthcare providers lacking training opportunity knowledge by saying,

There are some physicians, health groups, and primary care groups that are massively driven and do a good job of connecting their patients [IWD] with those types of things [preventive measures for their disease management]. There are others [IWD] that are just left to freely find them and be on their own.

Participants discussed the benefit of arranging meet-and-greet events for healthcare providers, IWDs, and personal trainers at their gyms. These events increase awareness of training opportunities for IWD and facilitate a more robust network between personal trainers, healthcare providers, and IWD. All trainers agreed that referral networks between trainers and healthcare providers should be more robust. Thus, trainers and healthcare providers need to work together to increase the accessibility of training opportunities for IWD.

Theme 4: Resource management is a must for personal trainers to improve accessibility to physical activity.

Improving IWDs’ access to training opportunities requires more than a network of personal trainers and healthcare providers; it also requires a better understanding of available resources and their allocations. Many exercise barriers for IWD are cost related. Personal training, gym memberships, group training, and specialized equipment costs impeded IWDs from participating in physical activity. Despite these financial barriers, trainers have managed to

navigate these obstacles and lessen the financial burden on IWD. For example, one trainer discussed finding and utilizing grants to aid IWD by sharing,

Find a grant to pay for a class, to pay the coaches, right? After a few months of an athlete training, and I feel comfortable, I can integrate them, and maybe the cost is 50% off. I think if you can make it free to start, it helps, or really lowers the cost.

Participants explained that many non-profit organizations supply grant funding for gyms to support personal trainers' one-on-one training, group training, and equipment costs. Although grant funding may only make a limited number of personal training seats or classes accessible, it still removed an entry barrier to accessing personal training services. Other trainers have opted for alternative resources to supply cost-free training to IWD. One trainer explained her donation-based solution by sharing,

We now have classes for these athletes Monday through Thursday from 4:30 p.m. to 5:30 p.m., and this is completely donation-based, completely free for these athletes. It's a great way for them to feel included in a gym, to feel part of something, and also to get the camaraderie of being in a group setting, learning how to be fit again from their new life.

Donation-based training is another resource for lessening the financial burden on IWD.

Donation-based training also aided in developing a stronger sense of community support amongst gym members, facilitating greater social inclusion for IWD. Trainers also internally turned to their gym management to advocate for resources to meet IWD needs. For example, one trainer discussed the benefit of gyms purchasing specialized equipment for IWD and additional methods of reducing the financial burden on IWD by sharing,

Buying your athlete's equipment for the gym comes off your taxes... It's for a lot of people that are maybe living on disability [income]. I also think some type of sliding

scale [membership] system can also be implemented... Or you can offer scholarship opportunities or something, right? We have a founding member program that if you, as a member of the gym, want to pay for somebody else's [membership] in the gym, you can. Participants suggested that sliding scale memberships, scholarships, or fellow members sponsoring IWDs are additional resources, improving IWDs' access to training opportunities if possible. Between grant funding, non-profit support, donations, various forms of gym memberships, and overall gym member support, several resources exist that can aid IWD's exercise levels. Many of these resources required the trainer to advocate for the IWD. Study participants discussed that one of the primary responsibilities of trainers working with IWD was to advocate for IWD and to teach them to advocate for themselves.

4.4.17.4 Theme 5: Personal trainers empower IWD to self-advocate for their physical activity needs.

Personal trainer responsibilities consisted of more than just exercise training. Personal trainers also taught IWD to advocate for themselves. Study participants advised that other personal trainers should teach IWD to self-advocate by empowering them to feel confident in their ability to train alone. One trainer shared,

My goal is to make them [IWD] as independent as possible with these exercises so they can be doing them even after our training sessions and throughout the week... One of my [clients] is going to the gym multiple times a week now alone, whereas she never even left her house before the [training] program.

Study participants believed empowering IWD to train independently gives them a voice to express their needs at the gym. One trainer explained the importance of empowering IWD to train independently by saying, "Sometimes, it takes a person being present in that space [the

gym] who has the specific needs to advocate for themselves or to figure out what [the IWD] can do to make their space work.”

Another participant added that part of empowering IWD to feel capable of self-advocating is reminding them that they are more than their disability. This participant shared,

You must acknowledge that, yeah, there are going to be many places you [the IWD] go in that you’re going to have to advocate for yourself big time, and you’re still a whole person, and you’re not your injury [or disability].

Participants remarked on the difficulty some IWDs had finding the confidence to self-advocate for their needs. Participants added that the personal trainer’s role included creating a safe space for IWD to share their struggles and needs openly. One trainer said,

The gym is really scary. You, as a [personal trainer], are probably really intimidating whether you realize it or not, right? So, I think making sure that they [IWD] know they don’t have to be afraid that they’re going to be judged or shamed if they tell me something [is important] ... It’s having that safety component in the relationship.

Therefore, study participants suggested that there will be times when the trainer may have to advocate for their client to empower the IWD to feel that they, too, can speak up. For example, many IWD felt underrepresented within their gym spaces. As a result, personal trainers advocated for increased representation among members and staff. One trainer shared their experience in advocating for greater representation of IWD by stating,

Representation is huge, that’s a big one impacting exercise facilitation. Are we having people with disabilities working in these [gym] spaces? Not just serving on a board to help with the establishment of this place in making sure it’s successful, but also, are we seeking to employ people who have disabilities? I think that those people [IWD] can

create the representation needed and reach out to those [IWD] that are maybe in a similar position.

Empowering personal trainers to feel confident in their capabilities to work with IWD also fostered relationships that empowered their clients with disabilities. Safe, trusting relationships between personal trainers and IWD provided a safe space for IWD to have a voice. Providing IWD a voice, advocating for their needs, and increased representation empowers IWD to feel they can speak up for themselves even when training independently in the gym.

4.5 Discussion

This qualitative study aimed to examine the experiences and perspectives of personal trainers of differing educational and occupational backgrounds who are currently training IWD. Five underlying themes emerged from our analysis about improving personal trainer readiness and fitness industry support for IWD. These themes ranged from specialized education and experience, working with a diverse range of IWD, the trainer's network and use of resources, and the trainer's role in empowering clients with disabilities.

Education and experience were two powerful factors that influenced trainers' comfort and confidence to provide high-quality service to IWD. Study participants strongly agreed that a general personal training certification was insufficient to prepare trainers to work with IWD. Several studies suggest the need to develop specialized certifications to train a diversity of IWD safely and effectively through appropriate exercise adaptation (Hill et al., 2023; Melton et al., 2008; Obrusnikova et al., 2021; Steiner, 2014;). Obrusnikova et al. (2021) highlights the lack of disability-related certifications and calls attention to the need to revise certification standards to better prepare trainers to supply safe, individualized, effective training for IWD. Participants

agreed that recruiting poorly qualified and unconfident trainers can have adverse effects on clients with disabilities.

Many study participants pursued higher education (e.g., bachelor's, master's, and doctoral degrees) in addition to their personal training certification. Several participants also worked complementary occupations allowing them to gain additional disability knowledge (e.g., physical therapists or occupational therapists). These participants asserted that their additional education combined with their separate occupations gave them more opportunities to gain hands-on experience and practical skill application. Previous research suggests that most IWD feel their trainers lack the proper knowledge and skill to train IWD (Hill et al., 2023; Obrusnikova et al., 2021; Rimmer et al., 2004; Rimmer et al., 2017). However, study participants suggest that additional certifications, education and complementary occupations may be a solution to producing qualified trainers. Almost all participants emphasized that specialized certifications and higher education were important, but combining knowledge with experience was even more important. Participants indicated that hands-on experience was key to developing competency in applying adaptive training principles and to feel confident to do so successfully.

Previous research notes the need for extra time and proper training to acquire the knowledge, skills, and experience to provide high-quality training to IWD (Obrusnikova et al., 2021). Many IWD have reported negative training experiences with their personal trainers being due to their limited knowledge and experience (Hill et al., 2023; Obrusnikova et al., 2021). Participants discussed the irrelevance of knowledge without proper practical application potentially resulting in negative experiences for both the client and trainer. Therefore, participants suggested that trainers take extra time to gain hands-on experience with IWD, to improve the trainer's confidence and the overall the overall training experience. Given the range

of disabilities, participants also discussed the case-by-case approach to disability fueling the need for more experience with a diverse spectrum of disabilities and their unique expressions.

Understanding the unique symptomology of a client's disability can be an overwhelming task for someone with only limited experience. Many study participants had secondary careers as health professionals, providing them with extensive experience working with IWD. As such, participants recognized that many individuals may have the same disability and differing symptoms. Study participants emphasized that of the various forms of disability, many disabilities are also congenital or acquired, with some acquired disabilities having been acquired traumatically. Obrusnikova et al. (2021) found that personal trainers need further experience practicing effective communication to understand the individual range in symptoms, as well as gain competency in identifying invisible symptoms of disability instead of the obvious physical symptoms. Study participants collectively agreed. Many participants working with clients with spinal cord injuries noted the additional experience required to identify invisible symptoms. Moreso, participants also emphasized the need for experience practicing effective communication (e.g., listening to the client describe their symptoms as opposed to assuming) with their client to effectively adapt their exercise training.

Without secondary careers as healthcare providers, finding opportunities to gain additional experience with IWD may prove to be challenging. Previous research suggests that partnering with healthcare providers may provide one avenue for experience with various unique disability cases while simultaneously providing mentorship (Cunningham et al., 2021). Participants noted partnering with healthcare providers as an effective way to gain experience working with IWD whose symptoms are visible or invisible. Future research should consider

studying the effectiveness of a mentoring program between personal trainers and healthcare providers in preparing trainers to work with diverse disability expressions.

Participants agreed collaborating with healthcare providers improved the quality of training and amount of training available to IWD, emphasizing the need for active referral networks. However, participants discussed how the lack of active referral networks is largely due to healthcare providers' limited awareness of accessible training programs for IWD. These findings align with previous research (Hill et al., 2023; Obrusnikova et al., 2021; Osario & Blauwet, 2017). Several studies cite the limited awareness of accessible training programs because of limited communication between healthcare providers and personal trainers, with insufficient time available for providers to establish these relationships (Hill et al., 2023; Obrusnikova et al., 2021; Steiner, 2014). One study suggested the fitness industry's need to promote personal trainers' roles in supporting IWD to engage in exercise (Hill et al., 2023). Study participants agreed and encouraged trainers to assume responsibility in establishing referral networks with allied healthcare providers by arranging meet-and-greet events for healthcare providers, IWDs, and personal trainers at their facilities (Hill et al., 2023). Meet-and-greet events allow personal trainers to display their qualifications and excitement to work with IWD. Future research should examine the effectiveness of meet-and-greet events in producing referral networks between trainers and healthcare providers.

A key barrier impacting IWD's physical activity levels is accessing cost-friendly training. Hill et al. (2023) suggested that personal trainers may be more cost-effective than allied healthcare in the individual's health and wellness, yet trainers are largely underutilized. However, studies also suggest personal trainers working with IWD face financial barriers themselves (Hill et al., 2023; Obrusnikova et al., 2021). Providing reduced trainings cost for

IWD creates the need for trainers to find additional funding to be fully compensated (Hill et al., 2023; Obrusnikova et al., 2021). Participants managed to overcome most financial constraints for themselves and IWD by exploring funding resources available to them. Nonprofit organizations were highlighted as crucial assets supporting IWD's training expenses. Numerous study participants applied for grant funding from allied organizations to supplement the costs of one-on-one training, group training, and equipment. Seeking funding from allied organizations reduces one entry barrier by lessening the financial burden on IWD and personal trainers. Future research should aim to better understand how to connect personal trainers and allied organizations supporting IWD.

Additional studies suggested that gym management is responsible for improving awareness of their training services for IWD while supporting the accessibility of these services (Cunningham et al., 2023; Hill et al., 2023; Obrusnikova et al., 2021). Dolbow and Figoni (2015) found that although ADA guidelines mandate equal access to public facilities, including accommodations for IWDs, most gyms are not 100% ADA compliant. Study participants added to this by suggesting ADA compliance alone is not enough and requires gym personal trainers to advocate for IWD's needs including affordable memberships, affordable personal training costs, and adaptive-friendly equipment.

Study participants agreed that personal trainer responsibilities include advocating for client needs and encouraging clients to self-advocate in the gym. Hill et al., (2023) found that personal trainers represent the ethos and culture of the gym environment and can help facilitate the acceptance and inclusion of those with disabilities. Moreso, Cunningham et al., 2023 found that disability inclusion in the gym is supported by staff training and a positive environment. As such, participants suggested trainers advocate for more cost-friendly training options, increased

representation of IWD in the gym, staff training, and more accessible/adaptive friendly equipment to expand the inclusion and acceptance of their gym to IWD. Personal trainers advocating for the acceptance and inclusion of IWD create more positive gym experiences among IWD (Hill et al., 2023; Steiner, 2014). Study participants agreed and added that supporting disability inclusion increases IWD's confidence to train alone in the gym. Participants also believed that preparing IWD to train alone aids their ability to self-advocate. Encouraging IWD to self-advocate requires personal trainers to foster a safe environment to vocalize individual needs. Study participants believe that providing a safe environment to vocalize individual needs and ultimately supporting these requests empowers IWD in the gym.

This study had several strengths. To our knowledge, this is the first study to examine the experiences of trainers working with IWD who come from diverse educational and occupational backgrounds. Our data suggest that personal trainer readiness to train IWD differs based on their educational and occupational background. A further strength of the differing educational and occupational backgrounds was that it provided perspectives of trainers working with various disability client populations. Future research should take care to differentiate between personal trainers who have pursued additional certifications, higher education, or have complementary occupations outside of personal training. Our qualitative design of semi-structured interviews led to data saturation, including descriptive, compelling data that cannot always be gathered quantitatively. Given the rich data, participant responses were thoroughly explored.

Several limitations were present. Study criteria required that personal trainers had either an active training certification or were actively certified within the past three years. However, the personal trainer criteria conflicted with the disability criteria of having their diagnoses for at least one year. An individual could potentially meet the personal trainer requirements, but not the

disability requirements, although that was not the case among anyone who was screened for eligibility. Additionally, trainers meeting study criteria who were not actively training IWD may have influenced the accuracy of their responses. Next, the cross-sectional nature of the current study is limited as our results were unable to analyze behavior over a period of time.

Longitudinal research will be crucial in understanding how personal trainers of differing educational and occupation backgrounds successfully overcome barriers to training IWD. Social desirability may have contributed to more positive results among participants. Finally, despite using an online design, participant responses primarily came from three US states. Future research should include participants from a broader range of US states to better assess subjective experiences training IWD, including those of personal trainers and adaptive sport coaches. These data could inform personal trainers and coaches seeking information on how to better prepare themselves to work with IWD and provide a better understanding of their role in the care network of IWD.

4.5.18 Conclusion

Personal trainers that have successfully pursued specialized disability education, higher education, and have additional jobs in the health and fitness world provided valuable insights on how to better prepare personal trainers to train IWD and what is needed within the fitness industry for more trainers to be well-prepared to train IWD. Participants asserted that trainers must expand their disability education through specialized certifications or higher education combined with hands-on experience. Study participants emphasized the importance of hands-on experience, with referral networks as one avenue to potentially gain additional experience and knowledge on IWD. Participants also indicated that personal trainers must assume responsibility for establishing these referral networks with allied healthcare providers and identify additional

allied organizations (e.g., non-profit organizations). Allied organizations can provide resources or financial relief for personal trainers working with IWD. Personal trainers also must advocate for the needs of IWD at their respective facilities and encourage their clients to advocate for themselves. Gyms should act as enabling exercise environments; however, barriers persist regarding the readiness of trainers to work with a diverse range of IWD. Better preparing personal trainers to provide high-quality training for a wide range of disabilities may improve the IWD's experience with personal trainers. This information could inform multi-level interventions among personal trainers, community allies (e.g., healthcare providers or organizations), and IWDs, leading to increased levels of exercise.

4.6 References

- American College of Sports Medicine (ACSM). (2014). *ACSM's Guidelines for Exercise Testing and Prescription* (9th ed.). (L. S., Pescatello; R. Arena; D. Riebe; P. D. Thompson, Eds.). Lippincott Williams & Wilkens.
- Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Centers for Disease Control and Prevention. (2020, September 16). *Disability and health overview*.
<https://www.cdc.gov/ncbddd/disabilityandhealth/disability.html#:~:text=According%20to%20the%20World%20Health,%2C%20walking%2C%20or%20problem%20solving>
- Centers for Disease Control and Prevention. (2023, May 15). *Disability impacts all of us*.
<https://www.cdc.gov/ncbddd/disabilityandhealth/infographic-disability-impacts-all.html>
- Centers for Disease Control and Prevention. (2022, September 8). *Physical inactivity*.
<https://www.cdc.gov/chronicdisease/resources/publications/factsheets/physical-activity.htm>
- Creswell, J. W. & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. (5th ed.). SAGE Publications.
- Cunningham, C., O'Donoghue, G., Cosgrave, S., Sands, T., Leacy, B., Markiewicz, I., ... & Shields, N. (2023). Gym staff perspectives on disability inclusion: A qualitative study. *Disability and Rehabilitation*, 45(3), 441-448.
<https://doi.org/10.1080/09638288.2022.2036826>
- Dolbow, D. R., & Figoni, S. F. (2015). Accommodation of wheelchair-reliant individuals by community fitness facilities. *Spinal Cord*, 53(7), 515-519. DOI: [10.1038/sc.2015.26](https://doi.org/10.1038/sc.2015.26)

- Hill, J., Massey, E., & Gullo, H. (2023). Understanding the experience of community-based fitness professionals supporting people with disability to engage in sport and exercise: a national survey. *Disability and Rehabilitation*, 1-11.
<https://doi.org/10.1080/09638288.2023.2246890>
- Katz, J. (2001). A theory of qualitative methodology: The social system of analytic fieldwork. In R. Emerson (Ed.), *Contemporary field research: A collection of readings* (pp. 127-148). Waveland Press, Incorporated
- Lincoln, Y. S., & Guba, E. G. (1986). But is it rigorous? Trustworthiness and authenticity in naturalistic evaluation. *New directions for program evaluation*, 1986(30), 73-84.
<https://doi.org/10.1002/ev.1427>
- Melton, D. I., Katula, J. A., & Mustian, K. M. (2008). The current state of personal training: An industry perspective of personal trainers in a small southeast community. *Journal of strength and conditioning research/National Strength & Conditioning Association*, 22(3), 883. DOI: [10.1519/JSC.0b013e3181660dab](https://doi.org/10.1519/JSC.0b013e3181660dab)
- Oregon State University (OSU). (2024). *Adaptive exercise clinic*.
<https://health.oregonstate.edu/fsf/adaptive-exercise-clinic>
- Obrusnikova, I., Cavalier, A. R., & Blair-McKinsey, A. E. (2021). Certified personal trainers' beliefs about providing personal training for adults with intellectual disability in a community fitness facility. *Disability and Health Journal*, 14(3), 101100.
<https://doi.org/10.1016/j.dhjo.2021.101100>
- Osoria, H. L., & Blauwet, C. A. (2017). Prescribing Exercise to Individuals with Disabilities: What Are the Concerns? *Current Sports Medicine Reports*, 16(4), 268-273.
DOI: [10.1249/JSR.00000000000000379](https://doi.org/10.1249/JSR.00000000000000379)

- Rampin et al., (2021). Taguette: Open-source qualitative data analysis. *Journal of Open Source Software*, 6(68), 3522, <https://doi.org/10.21105/joss.03522>
- Rimmer, J. H., Riley, B., Wang, E., Rauworth, A., & Jurkowski, J. (2004). Physical activity participation among persons with disabilities: barriers and facilitators. *American journal of preventive medicine*, 26(5), 419-425. <https://doi.org/10.1016/j.amepre.2004.02.002>
- Rimmer, J. H., Padalabalanarayanan, S., Malone, L. A., & Mehta, T. (2017). Fitness facilities still lack accessibility for people with disabilities. *Disability and Health Journal*, 10(2), 214-221. <https://doi.org/10.1016/j.dhjo.2016.12.011>
- Sharon-David, H., Siekanska, M., & Tenenbaum, G. (2021). Are gyms fit for all? A scoping review of the barriers and facilitators to gym-based exercise participation experienced by people with physical disabilities. *Performance Enhancement & Health*, 9(1), 100170. <https://doi.org/10.1016/j.peh.2020.100170>
- Smith, B., Kirby, N., Skinner, B., Wightman, L., Lucas, R., & Foster, C. (2018). Physical activity for general benefits in disabled adults: Summary of a rapid evidence review for the UK Chief Medical Officers' update of the physical activity guidelines. *Public Health England*. Retrieved November 22, 2023, from https://assets.publishing.service.gov.uk/media/5bc0abf9e5274a36388e6ed5/Physical_activity_for_general_health_benefits_in_disabled_adults.pdf
- Steiner, S. (2014). *The Competencies of Fitness Professionals: View From the Disability Community* (Doctoral dissertation, University of Illinois at Chicago).

Timmermans, S. & Tavory, I. (2012) Theory construction in qualitative research: From grounded theory to abductive analysis. *Sociological Theory*, 30(3), 167–186.

<https://doi.org/10.1177/0735275112457>

Chapter 5 - Discussion

5.1 Summary of Findings

The studies presented in this dissertation aim to (Chapter 2) examine experiences of gym goers; (Chapter 3) determine gym-based exercise facilitators and barriers from the perspective of individuals with congenital and acquired disabilities; and (Chapter 4) examine the experiences of personal trainers successfully training IWD. Overall, facilitators and barriers to gym goers' satisfaction and gym attendance are powerful in shaping their experiences and influence their likelihood to attend the gym. Barriers and facilitators to gym goers' satisfaction and attendance contained elements of belonging. Many gym goers noted positive experiences with fellow gym goers that contributed to their continual gym attendance, such as creating alliances with those sharing similar training styles or goals. However, most gym-goers had negative experiences to share, indicating a general discomfort and dissatisfaction with their gyms. The discomfort and dissatisfaction led participants to feel less inclined to attend their gym, negatively influencing their exercise behaviors. IWD regularly reported feeling as though they did not belong in gyms, and that gyms were not as accommodating to them as their counterparts without disabilities. Furthermore, IWD reported the lack of accommodations spanned past common gym-design barriers (e.g., slick floors, limited floor space, door size, etc.) and included factors such as costs, accessible training classes, frequency of class offerings, limited individual exercise knowledge, limited accessible gyms nearby, and insufficiently qualified personal trainers. Personal trainer background (i.e., educational, and occupational history that provided experience working with IWD) influenced trainer confidence and readiness to train IWD. Personal trainers noted the need to not only gain specialized education or training, but also having the hands-on experience needed with a variety of disability expressions. Robust networks with healthcare providers may

offer one method of gaining additional experience in applying adaptive training skills, yet many trainers have yet to establish these networks themselves. Networks with healthcare providers open the door for fostering referral pathways for IWD to find affordable training programs, however, access to affordable training becomes limited without proper funding to compensate trainers. Additional funding can be sourced by establishing relationships with allied organizations and advocating for gym community support. To make training more accessible for IWD in their respective gyms, trainers must advocate for their needs.

5.2 Explanation of Results

Figure 5-1 visually represents this dissertation's primary findings. The arrows indicate the influence each factor has on one another. Chapter 2 found that discrimination, inclusivity, and alliances all influence gym satisfaction and gym attendance, while elements of a sense of belonging influence and often undermine each of these factors. Gym goers experiencing discrimination through stigma, bias, marginalization, among other variables, report negative experiences making them less inclined to attend. Many participants note a lack of inclusion stemming from limited accommodations for all human body types and physical capabilities (e.g., those with congenital or acquired disabilities). Yet, other gym-goers felt more inclined to attend, in addition to feeling a greater sense of belonging, when making alliances with fellow gym goers. Given the elements of a sense of belonging throughout the study's themes, an adapted model, "Belonging in the Gym," was proposed to frame the study's findings. Without the presence of belonging facilitators, such as a universal design to promote a sense of equity, many IWD struggle to find accessible gyms accommodating their needs. Interventions utilizing elements to a sense of belonging should be conducted in future research, however, it is important

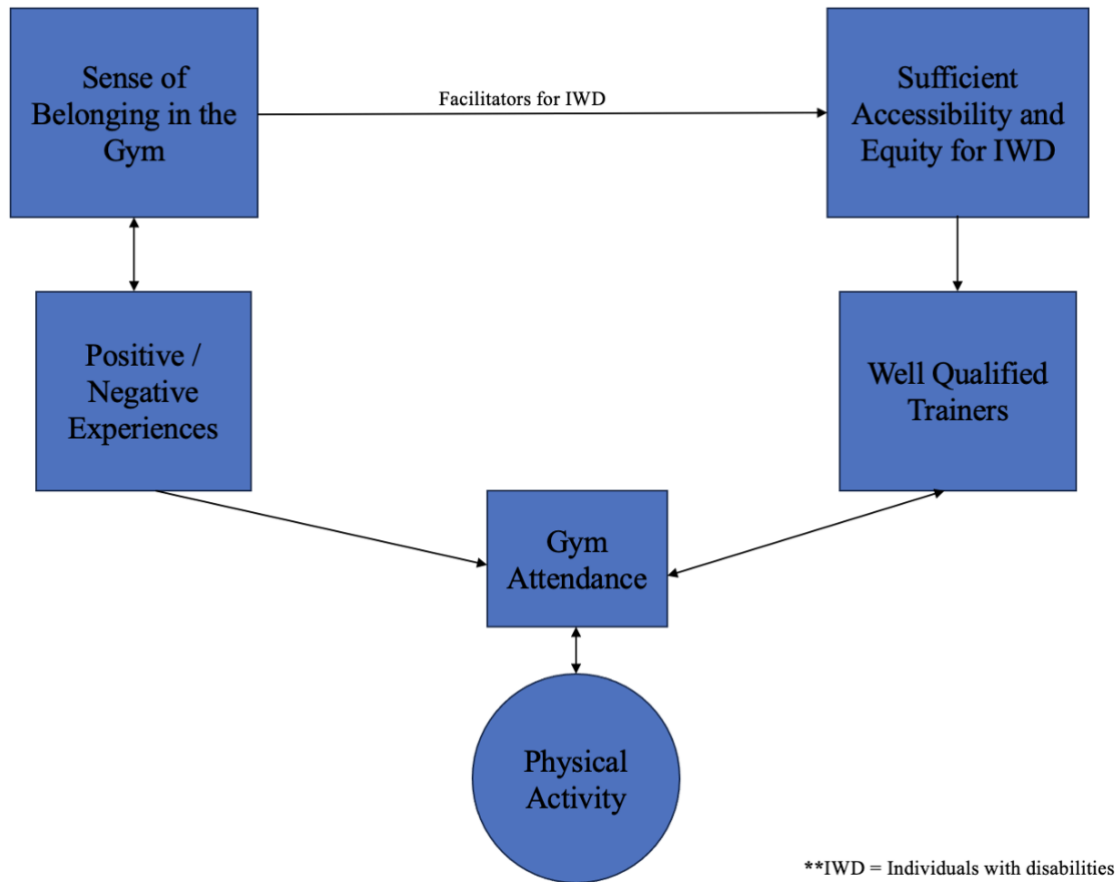
to note that facilitating a sense of belonging may not necessarily be a “one size fits all” solution for all gym goers’ experiences due to the large variability in individuals’ gym preferences.

Chapter 3 reveals that individuals with congenital and acquired disabilities find barriers and facilitators to gym-based exercise extend beyond gym layout (e.g., lack of universal design), and include gym costs, gym proximity, individual knowledge, experiences with other gym goers, accessible training environments, accessible classes, and qualified trainers. Difficulty accessing qualified personal trainers is an important barrier influencing gym-based exercise, accessibility, and equity for IWD. Without qualified personal trainers, many IWD struggle to find one-on-one exercise sessions as well as group exercise classes led by individuals knowledgeable in adaptive exercise. As well, many IWD struggle to find affordable personal trainers they can work with. Chapter 4 expands upon the experiences between personal trainers and IWD from the perspective of trainers.

Most personal training participants have additional education (i.e., bachelor’s, master’s, or doctoral degrees) and secondary occupations as healthcare providers in combination with their training certification and specialized training certification. The additional education and secondary occupations provide further experience for working with IWD. Personal trainer participants take a case-by-case approach when working with IWD showing the need for gaining additional experience. Personal trainers agree that there is a need for specialized education and training to work with IWD; however, they also emphasize a greater need to accumulate hands-on experience applying this knowledge and skillset. Personal trainer participants suggest that trainers assume responsibility in developing referral networks with allied healthcare providers for additional experience applying their skills and also to reach more IWD. For trainers to successfully train more IWD, participants highlight the need to become familiar with allied

organizations along with identifying supplemental funding to finance the training of IWD. Trainers may also turn to their gym community to supplement costs of training IWD, which may require advocating for the needs of IWD and empowering IWD to also advocate for their needs. Without qualified trainers with the skills and advocacy to accommodate IWD, fewer IWD may attend the gym, further decreasing their exercise behaviors. Indeed, previous research demonstrates belonging, and accessibility can influence exercise behaviors of those with or without disabilities (Teng et al., 2019; Rimmer et al., 2017; Calder et al., 2018; Cunningham et al., 2023). Overall, this dissertation expands on previous research by exploring the perspective of IWD with both congenital and acquired disabilities meeting, surpassing, or partially meeting physical activity guidelines via exercise. This dissertation also provides new information on the perspectives of trainers from differing educational and occupational backgrounds that have successfully overcome numerous barriers to gym-based exercise for IWD.

Figure 5-1 Conceptual model depicting the relationship between studies 1-3.



5.3 Strengths and Limitations

There are several strengths of this dissertation research. Two different qualitative methodologies (i.e., hybrid inductive-abductive approach and thematic content analysis) were utilized to facilitate a nuanced understanding of factors influencing the experiences of gym goers with and without disabilities and how these factors impact their gym-based exercise behaviors. Data were collected and analyzed by multiple researchers to reduce individual bias and increase trustworthiness of the findings (Lincoln & Guba, 1986). Trustworthiness was also established through credibility and dependability by applying researcher triangulation (i.e., use of multiple coders) and using clear, meticulous research processes to review and develop themes (Lincoln & Guba, 1986). Additionally, fieldnotes were taken throughout the entirety of data collection by the

primary researcher to reduce individual bias and aid in the credibility of study findings. This dissertation's first study utilized a hybrid inductive-abductive approach and thematic content analysis of semi-structured focus group data. Focus group data saturation was achieved with 11 groups that provided rich, compelling data that cannot always be gathered quantitatively. This study utilized a co-ed style of focus groups to greater facilitate in-depth discussion offering differing perspectives of different genders. Studies two and three utilized an inductive, iterative thematic content analysis of individual interview data that was further enhanced by qualitative survey data collection. The interview portions of each study achieved data saturation after seven interviews, with researchers completing an additional three interviews to ensure data saturation was met. Survey data provided additional descriptive data on interview participants.

Still, several limitations were present that should be noted. The cross-sectional nature of all three studies limited this dissertation as the results precludes causality and cannot establish a cause-and-effect relationship. The first study was conducted at the end of the COVID-19 pandemic and as such, focus groups were held via Zoom. Holding focus groups via Zoom limited focus group size and alternating discussion as the platform does not allow for more than one individual to speak at a time without audio interference. Thus, the smaller focus groups limited the number of viewpoints shared and limited organic, rich discussion. Despite having 33 individuals participate in the focus group, the sample was limited in the types of gyms participants reported experiences from. The majority of participants shared experiences from within large commercial gyms. Future research should aim to organize more diverse focus groups with participants from a variety of differing gym types and may provide more representative responses of gym goers' experiences. Moreover, using the term, "gym," may also have influenced participant responses. Although gyms are regularly identified as fitness spaces

for improving one's health, fitness centers, health clubs, and sports training facility can also be considered the same. As such, it is possible using the term, "gym," in study recruitment biased participant responses. Participant responses were also limited in that the majority of participants reported their gym experiences regarding individual exercise with few participants also participating in sports. Future research should also aim to assess the perspectives of gym-goers utilizing gym spaces to train for sporting events as their perspectives may offer nuances into gym goers' experiences.

5.4 Future Directions

This dissertation highlights numerous areas for future research. Although a sense of belonging was identified as a critical factor influencing gym-goers experiences, no research to date has conducted interventions aimed at facilitating a sense of belonging in the gym to assess the effectiveness on increasing exercise behaviors. It is possible that interventions aimed at facilitating a sense of belonging within gyms may be ineffective at increasing exercise behaviors. Quantitative data are needed to support the qualitative claims that a sense of belonging may increase exercise behavior. This dissertation also found that numerous barriers exist that influence IWD's gym-based exercise, yet no studies to date have employed interventions within the gym combatting the identified barriers. Future research should employ gym-based interventions implementing gym-based policies focused on facilitating an accessible, equitable training environment (e.g., hiring IWDs in various gym positions including gym management, front desk staff, group exercise instructors, and personal trainers). Personal trainers play a critical role in accessing, educating, and empowering IWD to exercise. There are various specialized certifications preparing trainers to work with IWD, however no studies to date have identified which certifications are the most effective in preparing trainers. Furthermore, personal trainers

networking with healthcare providers may provide opportunities for trainers to gain additional opportunities to work with IWD. Fostering relationships between personal trainers and healthcare providers may increase the awareness of both professionals of their role in supporting IWD, and better prepare both in providing accessible exercise training programs. Future research should explore the influence of mentoring relationships between personal trainers and healthcare providers on the confidence of trainers and satisfaction of training experiences by IWD.

References — Chapter 1 and 5

- American College of Sports Medicine (ACSM). (2014). *ACSM's Guidelines for Exercise Testing and Prescription* (9th ed.). (L. S., Pescatello; R. Arena; D. Riebe; P. D. Thompson, Eds.). Lippincott Williams & Wilkens.
- Andajani-Sutjahjo, S., Ball, K., Warren, N., Inglis, V., & Crawford, D. (2004). Perceived personal, social and environmental barriers to weight maintenance among young women: A community survey. *International Journal of Behavioral Nutrition and Physical Activity*, 1(1), 1-7. DOI: [10.1186/1479-5868-1-15](https://doi.org/10.1186/1479-5868-1-15)
- Bandura, A., & Adams, N. E. (1977). Analysis of self-efficacy theory of behavioral change. *Cognitive Therapy and Research*, 1(4), 287-310.
- Centers for Disease Control and Prevention (CDC). (2023a, May 15). *Disability impacts all of us*. <https://www.cdc.gov/ncbddd/disabilityandhealth/infographic-disability-impacts-all.html>
- Centers for Disease Control and Prevention (CDC). (2023b, August 1). Benefits of physical activity. <https://www.cdc.gov/physicalactivity/basics/pa-health/index.htm#:~:text=Regular%20physical%20activity%20is%20one,ability%20to%20do%20everyday%20activities>
- Centers for Disease Control and Prevention (CDC). (2022, August). *Physical Activity Among Adults Aged 18 and Over: United States, 2020*. <https://www.cdc.gov/nchs/products/databriefs/db443.htm>
- Centers for Disease Control and Prevention (CDC). (2020, September 16). *Disability and health overview*.

<https://www.cdc.gov/ncbddd/disabilityandhealth/disability.html#:~:text=According%20to%20the%20World%20Health,%2C%20walking%2C%20or%20problem%20solving>

Cunningham, C., O'Donoghue, G., Cosgrave, S., Sands, T., Leacy, B., Markiewicz, I., ... & Shields, N. (2023). Gym staff perspectives on disability inclusion: A qualitative study. *Disability and Rehabilitation*, 45(3), 441-448.

<https://doi.org/10.1080/09638288.2022.2036826>

Deelen, I., Ettema, D., & Kamphuis, C. B. (2018). Sports participation in sport clubs, gyms or public spaces: How users of different sports settings differ in their motivations, goals, and sports frequency. *PloS one*, 13(10), e0205198.

<https://doi.org/10.1371/journal.pone.0205198>

Esposito, J., & Evans-Winters, V. (2021). *Introduction to intersectional qualitative research*. SAGE Publications, Incorporated.

Fletcher, G. F., Landolfo, C., Niebauer, J., Ozemek, C., Arena, R., & Lavie, C. J. (2018). Promoting physical activity and exercise: JACC health promotion series. *Journal of the American College of Cardiology*, 72(14), 1622-1639.

<https://doi.org/10.1016/j.jacc.2018.08.2141>

Gjestvang, C., Abrahamsen, F., Stensrud, T., & Haakstad, L. A. (2021). What makes individuals stick to their exercise regime? a one-year follow-up study among novice exercisers in a fitness club setting. *Frontiers in Psychology*, 1958.

<https://doi.org/10.3389/fpsyg.2021.638928>

Langley, E. R. (2013). *Comparing accessibility between two types of fitness centers for people with disabilities* (Doctoral dissertation, University of Illinois at Chicago).

- Lincoln, Y. S., & Guba, E. G. (1986). But is it rigorous? Trustworthiness and authenticity in naturalistic evaluation. *New directions for program evaluation*, 1986(30), 73-84.
<https://doi.org/10.1002/ev.1427>
- MacIntosh, E., & Law, B. (2015). Should I stay or should I go? Exploring the decision to join, maintain, or cancel a fitness membership. *Managing Sport and Leisure*, 20(3), 191-210.
<https://doi.org/10.1080/23750472.2015.1025093>
- McCorkel, J. A., & Myers, K. (2003). What difference does difference make? Position and privilege in the field. *Qualitative sociology*, 26(2), 199-231.
DOI:[10.1023/A:1022967012774](https://doi.org/10.1023/A:1022967012774)
- Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International journal of qualitative methods*, 16(1), 1609406917733847. <https://doi.org/10.1177/1609406917733847>
- Office of Disease Prevention and Health Promotion (ODPHP). (2023). *Physical Activity*.
<https://health.gov/healthypeople/objectives-and-data/browse-objectives/physical-activity>
- Richardson, E. V., & Motl, R. W. (2020). Promoting inclusion in a fitness center through non-impaired staff: creating a multi-narrative environment. *Qualitative Research in Sport, Exercise and Health*, 12(4), 494-512. <https://doi.org/10.1080/2159676X.2019.1637926>
- Richardson, E. V., Smith, B., & Papathomas, A. (2017). Disability and the gym: Experiences, barriers and facilitators of gym use for individuals with physical disabilities. *Disability and rehabilitation*, 39(19), 1950-1957. <https://doi.org/10.1080/09638288.2016.1213893>
- Rimmer, J. H., Riley, B., Wang, E., Rauworth, A., & Jurkowski, J. (2004). Physical activity participation among persons with disabilities: barriers and facilitators. *American journal of preventive medicine*, 26(5), 419-425.

- Rimmer, J. H., Padalabalanarayanan, S., Malone, L. A., & Mehta, T. (2017). Fitness facilities still lack accessibility for people with disabilities. *Disability and health journal*, 10(2), 214-221. <https://doi.org/10.1016/j.amepre.2004.02.002>
- Riseth, L., Nøst, T. H., Nilsen, T. I., & Steinsbekk, A. (2019). Long-term members' use of fitness centers: A qualitative study. *BMC sports science, medicine and rehabilitation*, 11, 1-9.
DOI: [10.1186/s13102-019-0114-z](https://doi.org/10.1186/s13102-019-0114-z)
- Rosenberg, D. E., Huang, D. L., Simonovich, S. D., & Belza, B. (2013). Outdoor built environment barriers and facilitators to activity among midlife and older adults with mobility disabilities. *The Gerontologist*, 53(2), 268-279.
<https://doi.org/10.1093/geront/gns119>
- Ross, C. (2023). Fitness v fatness? Bodies, boundaries and bias in the gym. *Qualitative Research in Sport, Exercise and Health*, 15(1), 104-122.
<https://doi.org/10.1080/2159676X.2022.2098808>
- Sætre, & Van de Ven, A. (2021). Generating Theory by Abduction. *The Academy of Management Review*, 46(4), 684–701. <https://doi.org/10.5465/amr.2019.0233>
- Sharon-David, H., Siekanska, M., & Tenenbaum, G. (2021). Are gyms fit for all? A scoping review of the barriers and facilitators to gym-based exercise participation experienced by people with physical disabilities. *Performance Enhancement & Health*, 9(1), 100170.
<https://doi.org/10.1016/j.peh.2020.100170>
- Slade, S. M. (2014). *Adult Women's Perceived Facilitators, Barriers, and Health Benefits of Sustaining a Membership in a Commercial Fitness Facility*. The University of Western Ontario (Canada).

- Smith, B., Kirby, N., Skinner, B., Wightman, L., Lucas, R., & Foster, C. (2018). Physical activity for general benefits in disabled adults: Summary of a rapid evidence review for the UK Chief Medical Officers' update of the physical activity guidelines. *Public Health England*. Retrieved November 22, 2023, from https://assets.publishing.service.gov.uk/media/5bc0abf9e5274a36388e6ed5/Physical_activity_for_general_health_benefits_in_disabled_adults.pdf
- Sperandei, S., Vieira, M. C., & Reis, A. C. (2016). Adherence to physical activity in an unsupervised setting: Explanatory variables for high attrition rates among fitness center members. *Journal of Science and Medicine in Sport*, 19(11), 916-920. <https://doi.org/10.1016/j.jsams.2015.12.522>
- Spraul, T. (2024a, January 6). Types of gyms: A guide for gym owners. <https://www.exercise.com/grow/types-of-gyms/>
- Spraul, T. (2023, July 14). *What is a commercial gym?* Exercise. <https://www.exercise.com/grow/what-is-a-commercial-gym/>
- Timmermans, S., & Tavory, I. (2012). Theory construction in qualitative research: From grounded theory to abductive analysis. *Sociological theory*, 30(3), 167-186. <https://doi.org/10.1177/0735275112457914>
- Valerio, R. (2019, May 03). *Fitness industry roundup: 'Gym intimidation is real.'* International Health, Racquet, and Sportsclub Association. <https://www.ihrsa.org/improve-your-club/industry-news/fitness-industry-roundup-gym-timidation-is-real/>
- World Health Organization (WHO). (2023, March 7b). *Disability*. <https://www.who.int/news-room/fact-sheets/detail/disability-and->

[health#:~:text=Risk%20factors%3A%20Persons%20with%20disabilities,out%20of%20p
ublic%20health%20interventions.](#)

Y. Teng, M., Brown, M. L., Jarus, T., & Yvonne Bulk, L. (2020). How does a sense of belonging develop in postsecondary? A conceptual Belonging in Academia Model (BAM) from sighted perspectives. *Research in Education*, 108(1), 80-103.
<https://doi.org/10.1177/00345237198824>

Appendix A Ch. 2 Focus Group Questions

1. Could you tell me a little about what made you want to start going to the gym?
2. Can you tell me about why you work out?
3. What kinds of workouts do/did you do (i.e., strength training, powerlifting, cardio, bodybuilding, calisthenics, etc.)?
4. Do you consider yourself a regular gym-goer? When do you normally go (i.e., days of the week and/or time of day)?
5. What gym do you currently belong to (or most recently belonged to)? What made you choose this gym?
6. How would you describe your gym's culture or atmosphere?
7. Can you describe your gym's layout? (i.e., is there a cardio area, weights area, are they mixed in one space?)
8. What areas or spaces in the gym do you feel uncomfortable or unwelcome in, or that you avoid?
9. How have other members of your gym affected your gym experience (i.e., interactions, sharing spaces, sharing equipment etc.)?
10. How has your gender or sexual orientation impacted your gym experience? If so, can you elaborate?
11. Can you describe any other experiences in the gym (positive or negative) that have affected how you use your gym? (i.e., accomplishments, positive vicarious experiences, trying unfamiliar exercises, trying out new equipment).
12. What changes would you make to create a better gym experience? (equipment set up, the people, the atmosphere, the trainers, etc.).

13. How would you describe the gender dynamics in your gym (i.e., how gender plays a role)?
14. Are there any gym barriers (i.e., anything that inhibits or affects your gym use, gym attendance, or gym performance) that are unique to men? Unique to women? Unique to other genders? Can you elaborate on this?
15. What might help encourage exercise participation for any gender?
16. How do you respond to the gender dynamics of your gym? Do you challenge them? Go along with them? Ignore them? Support them?
17. When thinking of the gym, it might conjure up stereotypes about men, women, and non-binary genders (i.e., gender fluid, femme, transfeminine, etc.). What stereotypes do you think of? What specifically have you noticed in your gym?
18. Have you ever felt like you kept yourself from doing something you wanted to do in the gym because of your gender? Please explain.
19. Do you ever compare yourself to others at the gym of the same or different gender? Do you ever feel uncomfortable around other individuals? Please explain.
20. Do you have any additional information or thoughts you would like to share that you have not shared yet?

Appendix B Ch. 2 Quotes and Themes Tables

Table 0-1 Ch. 2 Theme 1 Experiencing discrimination negatively affects gym satisfaction and attendance.

Facilitator/Barrier Category	Quote
Unconscious bias and stigma	I know what people think of women, especially in the gym. Whether they consciously believe it or not, many of us are perceived as less knowledgeable regarding exercise, and this automatically makes me feel inferior when I walk in the gym. It just makes me feel insecure, and that can be overwhelming, so I try to go in when it's not busy or work out alone. (woman) Sometimes, I feel uncomfortable around the women at the gym when I don't know them because I want to make sure I am not bothering them. I get nervous to accidentally make eye contact, and they think I am some creep. Their safety and comfort are more important to me than my own, so I will just leave the area and go someplace else. (man) Male privilege is a real thing in the gym, similar to white privilege. (woman) It's hard to focus on lifting as much as I would like when I know what others think of me since I am a man... and not that strong of one. So, I try to plan to go when no one is there so these thoughts don't
Social norms	There's a lot of expectations as a dude, especially if you aren't really big or really strong; it's like, get out of my way at [my gym] since the men are built like monsters. It makes you feel like you have to work your ass off, or they'll take your key away. (man)

	I try to watch how heavy I lift so I don't bulk up too much. I know everyone says I won't get big, but I get afraid to veer away from this preconceived notion of what a woman's body should look like. Cheer and gymnastics made me feel like I had to look small to look good. (woman) I can't lift heavy without being offered unsolicited advice from men. If it's not advice, its questioning what a lady like me is doing lifting heavy like that. Lifting heavy is not just for men, but for women, too. (woman)
Marginalization	There's been times where men have literally tried to take weights from me because they didn't think I would use them, so I must not need them. I had to fight with them over it to get them back; they didn't understand why I couldn't go to a different machine to grab weights for the machine they took the weights from. I get crap from men all the time like this by assuming I must be weak and can't lift like them. (woman) A heavy male presence is a barrier for many women. I would not want to continue to go to a gym without more female representation. The more males, the more their needs are prioritized than ours. (woman)
External responsibility	There are always a lot of men in the main weights area and it makes it intimidating to try out new equipment. The gym should supply gym attendants that stand by the machines to help women and others that feel intimidated. (woman) The gym should supply seminars or an introductory class on how to use the gym equipment to help their members feel more

	confident to use them. They have so many employees standing around, why not help educate us? (woman)
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Table 0-2 Ch. 2 Theme 2: Inclusive design facilitates gym satisfaction and attendance.

Facilitator/Barrier Category	Quote
Universal design	Now that I have started to use the equipment, I have noticed that the gym equipment has not been made for women or those of smaller frame, but for more manly bodies that are bigger and taller. We need universal equipment and layouts for all body types. I have always wished there were more open areas with mats and mirrors, so people could have the option to choose their own adventure there instead of getting in the way of or carving out space between machines. (woman) I have always wished there were more open areas with mats and mirrors so people could have the option to choose their own adventure there, instead of getting in the way of or carving out space between machines. (woman)
Strength-based approaches	I would like more instruction, but I don't necessarily need a personal trainer. More like example workout plans. I feel intimidated going into the gym without some sort of plan, so if the [gym name] had resources like sample workouts, this could be beneficial for at least women and could be for men, but it would make me and probably others feel more confident, too, for more than running or walking on a treadmill, or taking a dance class. The old gym I attended had workouts written on the wall you could follow along with, and even had paper copies of these workouts to take home and use. (man) With proper and greater amounts of instruction or education, this might reduce the gender divide in how men and women workout. It might make women feel more inclined to strength train if given proper

	education on this. I have noticed most men don't do cardio, so they could use some instruction too, in order to expand the variety of their workouts. (woman)
Value diversity	I would not want to continue to go to a gym without more female representation. Seeing other women getting up there on the equipment with the confidence that they belong there is helpful for me. The culture is changing from women on cardio machines and men on lifting machines to women getting into strength and conditioning and getting toned and stronger. Seeing more women in the gym, combined with making more friends whether they are girls or not, has really helped me. It's easier to go someplace made to feel comfortable with friends as opposed to going someplace else. The more women I see in my area, the more comfortable I feel there. (woman) I appreciate the multi-generational feel of [my gym] and how it has shaped the culture and atmosphere to de-emphasize the focus on 20-year-olds doing hard workouts, and in turn, helped make the space feel more comfortable for a wider range of demographics. This minimized pressure or an intimidation factor and has helped many of us feel we belong when we don't have to fight for a space here. (woman) I wish the gym would accommodate the needs of those with children more often, or just the needs of others in general. I often see them tailored to college students or young adults with no children. I want family access. I'm not from the US, so I don't like leaving my family behind without me. I want to see more people like me, more parents, different backgrounds, so I can feel my family, and I have a space there, too. (man) My partner is female but does not fully express female, more male. If we had private spaces in the gym, particularly if we could have some

	more privacy in the locker rooms, those who present non-binary could just go in and do their thing, be themselves, and get their experience. (woman)
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Table 0-3 Ch. 2 Theme 3: Alliances help and hinder gym satisfaction and attendance.

Facilitator/Barrier Category	Quote
Positive Alliance	I started out at the gym on a weight loss journey, but meeting the powerlifters at the gym is what really drew me into staying in the gym. I've enjoyed building alliances or like friendships with the regulars I see at [my gym]; it's where I have met some of my closest friends. (man) I fit in at gyms with more powerlifters and bodybuilders since I bounce between the two. I always feel looked at and like an outsider when I go to commercial gyms since I don't train the same as the people there. (man)
Negative Alliance	Getting involved with others in your gym environment is like a double-edged sword. Sure, you might be able to join a tight niche, but this also means you open the door to the drama of being involved with other gym people in that niche. I would rather keep to myself than get involved with that. (man) Sometimes, I see people using certain equipment in the gym, and all I can think is, 'Well, that's the <i>powerlifters</i> equipment, I can't use that!' (woman)

Appendix C Ch. 3 Individual Interview Questions

1. Please tell me about yourself, including your background as an adaptive athlete.
2. Next, if you are comfortable sharing, can you tell me about your injury or congenital deformity?
 - a) For example, how do you need to adapt movement in your day-to-day life?
3. What are your health and fitness goals?
4. Did these goals bring you into the gym or was it something else?
5. Do you usually exercise with someone else (i.e., group classes, PT, etc.), or do you exercise by yourself?
 - a) How has a trainer/coach/staff knowledge been a factor in your experience as an adaptive athlete? How have you handled and/or overcome this?
6. How do you usually adapt movement(s) when you exercise?
 - a) Are there specific training programs that have been helpful for you?
7. What barriers have you experienced in the gym (e.g., social barriers such as people being unkind, behavioral barriers such as lack of time and/or motivation, and/or environmental barriers such as specialized equipment needs or not being able to access certain equipment due to your mobility limitations)?
 - a) How has accessibility (i.e., doors, ramps, elevators, space/floor issues) been a factor in your experience as an adaptive athlete? How have you handled and/or overcome this?
8. How have you overcome those barriers?
 - a) What has helped you the most in navigating your new normal and/or moving with your adaptive need?

- b) [If they like their gym] What do you like so much about your gym? What helps you feel at home there?
9. Are there any barriers that were impossible to overcome? What could have remedied this?
10. Are there other things that could be done better at the gym to make exercise more accessible for you or others like you?
- a) Are there specific programs that gyms should offer for adaptive athletes, as well as any training programs for staff working with individuals who have disabilities?
11. If not currently exercising independently in a gym or with a trainer, please only share what you are comfortable with. What was your “pain point” that made you stop going to the gym (i.e., negative experience that made you stop)?
12. What could have been done to bring you back in?
13. Do you have any final thoughts/comments/concerns/suggestions and/or experiences you would like to share?
- a) How has transportation been a factor in your experience as an adaptive athlete? How have you handled and/or overcome this?
- b) How has time been a factor in your experience as an adaptive athlete? How have you handled and/or overcome this?

Appendix D Ch. 3 Quotes and Themes Tables

Table 0-4 Ch. 3 Theme 1: Barriers and facilitators to gym use by IWD extend beyond gym layout.

Category	Quote(s)
Costs	A lot of us, maybe 80% of people, are on disability, and so that's \$150 a month of savings. You're trying to work out, but you're paying \$150 to \$100 a month to try to go to a gym; it's not really accessible. (congenital) I will say that the organization [redacted name] when they offered the free membership to gyms for people with disabilities, that was a lifesaver for half of the people... They came up with a solution where there are a lot of disabled athletes that can't go to a gym that are on fixed incomes, so they came up with a plan to help you get a free membership. (congenital)
Gym and trainer accessibility and proximity	Because they're in Virginia Beach and I'm from Hampton, it's a good drive [to this gym]. So, I'm going to try going there starting tomorrow, but because they're in Virginia Beach... and it's, like, 4:30 in the afternoon, and traffic to go over there and come back... (congenital) It's very limited the people or places that exist to help us. Even if we find them, there is no telling how far we have to travel to access them. (congenital)
Class problems	For classes she [the gym owner] has about 15 adaptive athletes total, and only five seats per class, and she gets the same four people all the time everyday so really all the rest of us are fighting over one seat and so sometimes she has not helped me

	because she over booked her classes and like today, I got frustrated that I couldn't get into her class. (congenital) We don't want classes once a week. What does that do? We want classes more frequently. You offer that to everybody else, so why can't we have that? So yeah, you want to have it more frequently. (congenital)
Disability expression range	Disability has such a big range of what they can do. A lot of people can't do the same movements or even use the machine the same. You almost have to have a similar disability to do similar movements, but even then, that's not a guarantee. (acquired) I feel like people seeing me and seeing me work out would never think that I suffered a traumatic brain injury. (acquired) Another barrier our gym has is coaching those of differing abilities or intellect. (acquired)
Equipment modifications / adaptive equipment offerings	I love that equipment, but I can't get the bar [demonstrates how they cannot reach the bar on the lat pull-down machine]. Too short! I often times would either avoid it, or I would ask someone next to me, "Hey, do you mind," but then that poses a problem when that person leaves, and you don't want to, like, let go and slam it. (acquired) There is not a lot of adaptive equipment in the gym, so you just learn. When I was at Missouri State, they did have a few things that were adaptive, too. They had a lever that would slide the seat over, and then I could wheel into it, but I don't think I have seen that in more than a couple places. (acquired)

	That is where we need a lot of adaptation [in the gym] on some of the machines because we discovered that there were some grips I could put on and then I could use some of these machines. (acquired)
Exercise knowledge	I don't want to be doing the fitness or the weights wrong, you know, that's why I think I have a tendency of, if it gets too hard, I think well I'll do it this way, when it's, like, no you have to do it this way regardless of how hard it can be. So, I think having classes will be beneficial for me. (congenital) I would try to do workouts on my own, but I had no idea what I was doing. (acquired)

Table 0-5 Ch. 3 Theme 2: Experiences with other gym members are both positive and negative.

Category	Quote(s)
Social awareness around communicating and engaging IWD	I may go to a normal gym, and people will stare at you cuz I can't do normal stuff so, I'm trying when I got my service dog, and it just was uncomfortable to go to a normal gym cuz it's just... hard. (acquired) People, they always wanna ask how'd you get hurt. Like, dude, I don't want to talk about it. I talk to a counselor for it but when I go to the gym, I just want to get my workout in. (acquired)
Supportive gym goers	There's always people that were like, 'Hey, I'll do this, or I'll move this,' or you know, so you could get to where you need to go. (congenital) The thing with the rower is that I lose my balance very quickly once my arms are out here, so to be able to pull the rower back

	was very difficult without somebody holding my shoulders to help hold me back. It's nice when there's somebody around who can spot me without making it weird. (congenital)
Invisible disabilities not recognized	I'm this weird in-between clientele; I'm not a spinal cord injury patient; I don't require a high level of adaption. I'm not a fan of what's happening at [redacted gym name] because they don't help me like they do with those with more noticeable disabilities. (congenital) Many saw me before my accident and knew I did a lot of CrossFit. It seems like they still think I can do that since outwardly I don't look any different. (acquired)

Table 0-6 Ch. 3 Theme 3: Personal trainers need special training but should not apply special treatment when working with IWD.

Category	Quote(s)
Specialty training and certifications	I think that having someone on staff, at least one person on staff, who has some training to deal with people with different needs than the regular staff would be helpful. (acquired) I think they need to take more classes or whatever to help them. (congenital) To work with somebody that's disabled, most personal trainers if you go to a gym they only know how to work with the average person. Those in a wheelchair, they don't know how, they don't have you know the credentials or training to help them or the classes or the time to put in what it takes to train a disabled person. I wish people would just ask us more questions or get certified. (acquired)

Special treatment	I don't like being babied; you want to, like, push them in a really encouraging way. (congenital) Yeah, we definitely don't want to go into the gym and work with a trainer and feel like we're doing physical therapy. You want to feel like it is a workout. We need to come out of there sweating, we need to be out of breath, because I like to feel the burn, you don't want to feel, like, okay, you know I could have just done that at home. (congenital) I want to be treated like you would treat somebody who is able bodied, because I can raise my arms above my head you know and do some weights. I don't want to feel that way, like it's a charity case kind of thing and I found that they did at the time. (acquired)
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Appendix E Ch. 4 Individual Interview Questions

1. Tell me a little bit about yourself and your experience working at a gym and/or gyms?
 - What degrees do you have?
 - What training certifications or programs have you completed?
 - What training workshops have you completed?
 - How many years of experience do you have in the field?
 - What gyms have you worked for?
2. What do you know about those with disabilities?
3. What do you know about how many of those with disabilities we have in the US?
4. What do you want to know and/or learn about IWD?
5. Explain your level of comfort for working with IWD?
6. Explain what makes your gym welcoming (or not welcoming) for IWD?
7. What do you think your gym could do to better facilitate exercise for IWD?
8. Have you previously worked with any adaptive clients or IWD and if so, what did this work involve?
9. Have you ever adapted a movement for someone with a disability? If yes, can you provide an example of how you did this? How effective was the adaptation?
10. How could you better facilitate exercise for IWD?
11. Are there specific training programs that have been helpful for you for working with IWD (i.e., training regimens for IWD)?
12. Are there specific programs that gyms should offer for trainers to work IWD (i.e., training programs for trainers, staff, coaches)?

13. Do you believe there are any environmental gym barriers based on how they are set up that make things difficult for IWD?
14. Do you have any final thoughts/comments/concerns/suggestions and/or experiences you would like to share?

Appendix F Ch. 4 Quotes and Themes Tables

Table 0-7 Ch. 4 Theme 1: Specialized education and extended experience are needed for personal trainers working with IWD.

Category	Quote(s)
Specialized education	It doesn't matter what your personal training background is [e.g., general certification], but you want to get the specialty training for the adaptive population. We teach trainers how to work with all kinds of limitations and often will go through upper, lower, and seated [athletes] on day one so people are getting the physiological things that they need to understand about adaptive training... On day two, we talk about intellectual disability and neurological [disability] and shift our focus into more about cueing.
Extended experience	I would say a lot of my education with the adaptive community has been from in-person trial and error... I would say that's where I get most of my knowledge. [My adaptive knowledge] would be from, like, the day-to-day hands-on experience with these athletes... Being hands-on is the best way to learn. You can take a class, but you will still be nervous and uncomfortable until you get the hands-on experience. That's a lot of what [name omitted] did. Nothing really prepares us, each injury like a spinal cord injury is all different. My education helped a lot, but not everyone has that.

Table 0-8 Ch. 4 Theme 2: Experience working with a diverse range of disabilities and differing expressions of each is vital for personal trainers' success in working with IWD.

Quote(s)

I can think of three different people with a spinal cord injury that I work with. They are all so very different even at the same level of injury: the way they present, the way they're able to move, you know which muscles are working, everyone is so different, and that's just one disability.

One of the things we talked about in brain injury, for example, is that if you've met one person with a brain injury, you've met one person with a brain injury, right? That doesn't mean you know the population... There are some neat little categories [of disability] where you're upper, you're lower, you're seated, or you're neuro... Those are good generalizations into how we train them, but within neuro [disabilities] in particular, there's such a diverse population and such a diverse range of limitations.

I always find myself nervous to work with the person [IWD] in an exercise setting. It takes a little bit. I don't feel confident until I've learned the person, and I believe that's because you can have two people with spinal cord injuries, and their capabilities are vastly different from one another.

Every person is kind of an N of one.

Table 0-9 Ch. 4 Theme 3: An active network between personal trainers and allied healthcare providers is necessary to better support clients.

Quote(s)

Reaching out to your local physical therapy departments and saying, 'Hey, this is what I provide. This is what I'm looking to do. Please send me your patients once they get cleared from physical therapy or occupational therapy,' or whatever it is; I think that is a great place to start, too.

There are some physicians, health groups, and primary care groups that are massively driven and do a good job of connecting their patients [IWD] with those types of things [preventive measures for their disease management]. There are others [IWD] that are just left to freely find them and be on their own.

Even a healthcare provider, I mean they're so busy, right? With their normal life, and treating patients that guiding someone on what to do after they're done with their care is not a thing, but it should be.

Table 0-10 Ch. 4 Theme 4: Resource management is a must for personal trainers to improve accessibility to physical activity.

Facilitatory / Barrier Category	Quote(s)
External grant funding/non-profit support	Find a grant to pay for a class, to pay the coaches, right? After a few months of an athlete training, and I feel comfortable, I can integrate them, and maybe the cost is 50% off. I think if you can make it free to start, it helps, or really lowers the cost. There are organizations like [redacted name] that can supply funding for trainers to receive specialized training or to support purchasing adaptive equipment.
Internal [gym] financial support	We now have classes for these athletes Monday through Thursday from 4:30 p.m. to 5:30 p.m., and this is completely donation-based, completely free for these athletes. It's a great way for them to feel included in a gym, to feel part of something, and also to get the camaraderie of being in a group setting, learning how to be fit again from their new life. Buying your athlete's equipment for the gym comes off your taxes... It's for a lot of people that are maybe living on disability [income]. I also think some type of sliding scale [membership] system can also be implemented... Or you can offer scholarship opportunities or something, right? We have a founding member program that if you, as a member of the gym, want to pay for somebody else's [membership] in the gym, you can.

Table 0-11 Ch. 4 Theme 5: Personal trainers empower IWD to self-advocate for their physical activity needs.

Category	Quote(s)
Personal trainer empowerment / support	My goal is to make them [IWD] as independent as possible with these exercises so they can be doing them even after our training sessions and throughout the week... One of my [clients] is going to the gym multiple times a week now alone, whereas she never even left her house before the [training] program. The gym is really scary. You, as a [personal trainer], are probably really intimidating whether you realize it or not, right? So, I think making sure that they [IWD] know they don't have to be afraid that they're going to be judged or shamed if they tell me something [is important] ... It's having that safety component in the relationship.
Advocacy	Representation is huge, that's a big one impacting exercise facilitation. Are we having people with disabilities working in these [gym] spaces? Not just serving on a board to help with the establishment of this place in making sure it's successful, but also, are we seeking to employ people who have disabilities? I think that those people [IWD] can create the representation needed and reach out to those [IWD] that are maybe in a similar position.

	You must acknowledge that, yeah, there are going to be many places you [the IWD] go in that you're going to have to advocate for yourself big time, and you're still a whole person, and you're not your injury [or disability]. Sometimes, it takes a person being present in that space [the gym] who has the specific needs to advocate for themselves or to figure out what [the IWD] can do to make their space work.
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