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PHYSICAL THERAPISTS' ROLE IN PHYSICAL ACTIVITY PROMOTION

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ABSTRACT

Purpose: Physical therapists are often important figures in the lives of people with physical disabilities and therefore possess the ability to impact physical activity in this population. However, little is known about how physical therapists promote physical activity in their relationships with people with physical disabilities, and there is a particular gap regarding how they leverage community based sports and recreation programs when doing so. I used qualitative methods to explore physical therapy experiences for individuals with disabilities as well as physical therapists, with a focus on strategies used by physical therapists to foster motivation to be physically active and the extent that community-based resources were leveraged in this process.

Methods: Semi-structured interviews were completed with 8 physical therapists and 7 individuals with a physical disability. Applying a critical realist framework, I employed phone interviews and thematic narrative analysis to identify key themes within participant responses.

Results and Discussion: Therapist and patient participants reflected on the salience of physical activity promotion throughout physical therapy but, also, highlighted barriers in this context. Three themes explored idealized and problematic experiences with physical activity promotion in therapy, including: (1) individualized promotion of physical activity; (2) engagement within the community; and (3) options for physical activity in the community. A key observation across participants involved how community programs were not commonly integrated into therapy – or included in referral practices – because of perceived barriers such as a lack of programs in the community or lack of resources within therapy To facilitate physical therapists' engagement with community-based sport and recreation options, more research needs to be conducted on prospective interventions with community based programs (e.g. peer support groups).

Key Words: Physical therapists, physical disability, physical activity, community recreation program, community sport programs

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Chapter 1
INTRODUCTION

Whereas allied health professionals adopt many roles in the lives of their patients, they have a particular responsibility to promote physical activity as a critical lifestyle behavior. This is because of the physical benefits of achieving recommended physical activity, such as reducing relative risk of death by diseases up to 35%, and reducing the likelihood or severity of chronic non-communicable diseases such as heart disease, type 2 diabetes, osteoporosis, colon cancer, and breast cancer (Penedo & Dahn, 2005, Warburton, Nicol, & Bredin, 2006, Lee et al., 2012). There are also many corresponding psychological benefits of regular physical activity. For example, Babyak et al., (2000) found that individuals suffering from major depression partaking in an aerobic-exercise routine showed greater improvements in depressive symptoms than participants receiving psychotropic treatments. Regular physical activity is clearly a pathway toward enhanced quality of life for many individuals.

These outcomes are especially evident for people with physical disabilities or chronic conditions that influence mobility.[1] For instance, recent studies demonstrate that physical activity was especially critical for people with spinal cord injury to improved physical and mental health leading to an improved quality of life because they have increased likelihood of secondary diseases relative to individuals without a spinal cord injury (Galea, 2012; Miller & Herbert, 2016; Stevens, et al., 2008). As such, there is special value in considering associations between physical activity, physical health, and psychosocial health for people with disabilities. Unfortunately, there are many barriers to the quantity and quality of physical activity opportunities for people with physical disabilities compared to those without a disability. These barriers range from characteristics of the physical environment – such as inaccessible facilities – to

[1] While there are many definitions of physical disability we focused on individuals experiencing one or more impairments that limited activities of daily living due to physical, social and or environmental factors (e.g. spinal cord injury, cerebral palsy, Parkinson's disease, herniated/bulging disc, and orthopedic conditions such as arthritis)

economic, emotional, and physiological factors (Rimmer et al., 2004). Individuals with disabilities are in a unique position to experience unique benefits; just as the benefits are potentially so substantial, their involvement in physical activity can be an uphill battle.

Those in health professions have an important role in enabling participation in physical activity for those with disabilities. This role is especially evident because individuals with disabilities tend to experience more frequent interactions with health professionals such as physicians, occupational therapists, and physical therapists. As health care practitioners strive to promote physical activity in their role, community based physical activity programs are unique resources that are both sustainable and adaptable to the individual. Ma and Martin Ginis (2018) found that physical activity promotion interventions have the most success when health care practitioners incorporate behavior change theory. This thesis project will explore the experiences and expectations of physical therapists as well as individuals with disabilities regarding the promotion of physical activity, along with the strategies used to promote physical activity to patients with physical disabilities.

Disability and full participation in life

Researchers traditionally employ one or more of three models when considering approaches to understand the role of disability in one's health behaviors: the medical, social, and social- relational. These models range from seeing disability as a physical *barrier* to viewing disability as a social or personal *experience*, so the model selected by a researcher shapes how he or she defines disability and understands the interactions with others in society (Allan, Evans, & Latimer-Cheung, 2019). First, the medical model focuses on disability as a limiting factor to activities of daily living and quality of life. As a result, the medical model is focused upon resolving defects, wherein disability is something that should be fixed. In contrast, the social model turns the lens toward the society in which an individual lives (Martin, 2013). When we highlight how the social environment that defines and enforces disability, it opens the perspective of disability as a difference that does not have to negatively impact the individual.

In contrast with medical and social models, the social-relational model adopts a holistic view, taking into account physical, psychological, social and environmental barriers faced by individuals with a disability. This means that any effort to understand disability must extend beyond a focus on the physical or medical aspects of one's condition, considering as well their socioecological context and the meaning that an individual derives from their experiences with a disability (Allan, Evans, Latimer-Cheung, & Côté, 2019**)**. Social-relational approaches are increasingly evident in disability research and are evident in shifts regarding how we define *participation*. In contrast with traditional views focused on the quantity of opportunities to participate in society, Martin Ginis et al. (2016) integrated a focus on individuals' perception of the quality of that participation. Evans et al. (2018) adopted this perspective and highlighted the experience that people with disabilities have within physical activity, and the need to explore what comprises an 'optimal experience' to promote participation in sport and physical activity for individuals with disabilities.

Applying the social-relational framework, consider an example of a 25 year-old military veteran with above-the-knee amputations on both legs. The life of this individual could be considered through the medical model focused on the individual's ability to engage in certain physical activities. In this case, our focus might focused on regaining mobility, and identifying how the use of wheelchairs, prostheses, and access to assistive devices might be leveraged to achieve optimal function. This approach neglects other factors related to the individual such as how the individual views their disability as a part of their life. Taking a social-relational approach entails a broader lens incorporating the features that produce meaningful experiences—ranging from his self-efficacy, self-esteem, or social support – along with how the individual has constructed an identity as a military veteran with a disability.

Promoting physical activity: health provider roles

In response to physical activity disparities, researchers and clinicians are increasingly employing inclusive approaches that look to deliver a meaningful experience to the individual with and without a disability. These strategies to promote physical activity are increasingly leverage social or social

relational models of disability to not only to prevent secondary conditions, but also to increase social participation within the community for individuals with disabilities (Rimmer, 1999). Nevertheless, there are still few studies that report on physical therapists' strategies to promote physical activity to individuals with disabilities, and fewer still that incorporate the holistic social or social relational models. Existing studies also focus within the United Kingdom (Lowe, 2018a, 2018b; Williams, Smith, & Papathomas 2016). For instance, this research revealed that, physiotherapists struggled to identify how they promoted physical activity to patients in their practice, despite the fact that most of their participants recognized the importance physical activity.

Intuitively, the role of physical therapists seems to entail two elements, both of which can be influenced by the perception of the individual they are working with. On one hand, the role of the therapist is to emphasize the value of physical activity and develop supportive social cognitions, as evidenced by initiatives to increase the use of 'exercise prescriptions' (Shirley, Van Der Ploeg, & Bauman, 2010). On the other hand, physical therapists play a critical role in linking patients with programs that may deliver opportunities for physical activity in clinical or community contexts. Whereas the first role of promoting physical activity has received a large degree in buy-in from physical therapists, the latter role of referring or linking to programs is a challenging task – especially when facing limited community-based programs, a facility or program suited to work with individuals requiring adaptive equipment or added assistance because of disabilities or chronic conditions (e.g. challenger baseball and unified sports; Huijg, et al., 2015; Rimmer, 1999).

While physical therapists are in a unique position to address the global concerns of physical inactivity they all too often fall short citing barrier such as lack of knowledge and resources (Ma et. al., 2020). Due to the amount of patient contact and their role in exercise prescription, physical therapists can play an instrumental role in changing health behaviors of patients and increasing efficacy to be physically active (Rhodes & Fiala, 2009; Strecher, 1986; Taal et al, 1993; Verhager & Engbers, 2009). Physical therapists tend to use numerous approaches to promote physical activity and are successful at promoting

physical activity in the clinic; however, fall short in successfully promoting physical activity after therapy is finished, seeing patients regress back to their sedentary habits (Bezner, 2015; Bodner, 2013; Fleig et al., 2011; Ma, West, & Ginis, 2020).

Previous literature has identified differences in the ways physical activity has been promoted to individuals depending upon the nature of the disability. Mulligan et al. (2011), found that physical therapists feel that their role as promotors of physical activity is not properly supported by healthcare professionals and services. In their qualitative analysis on the physical therapist's role in physical activity promotion for individuals with a spinal cord injury, Williams, Smith, & Papathomas (2016) found that only a small percentage of the 18 therapists interviewed participated in promoting physical activity to the spinal cord injury patients they treated. This was due to preconceived perceptions about the individuals' abilities to be active, as well as barriers in the community. This showcases how situation-specific aspects such as the level of mobility impairment for the patient could stand in the way of ideal physical activity promotion experiences in therapy.

The current study.

Past research has demonstrated that physical therapists are perceived to be experts in physical activity promotion when compared to other health professionals, but we still know little about the link between physical therapy, physical activity promotion, and community-based contexts. Community-based programs differ considerably from general physical activity promotion, fostering a quality engagement and experience within the activity that can lead to more significant experiences such as peer mentorship or advocacy roles (Shirazipour, *In Press*). I sought to explore the specific collection of interpersonal and practical strategies used by physical therapists to foster motivation to be physically active, including factors such as attitudes in relation to the integration of community-based physical activity and sport programs to achieve therapy goals as compared to – or coinciding with –at-home exercises and clinical settings. I also explored the experiences of people with chronic physical disabilities in relation to physical

activity promotion through physical therapy. When combined with the experiences of physical therapists, I hoped to generate a richer picture that encompassed the experiences of both stakeholders.

Chapter 2

Methods

I sought to explore the research questions for this research by adopting a social-relational model that prioritizes the perspective of individuals with disabilities when defining their experiences with physical therapy. I also leveraged a critical realist philosophical lens. While being a form of empirical realism that accepts that there are certain stable factors contributing to reality, critical realists recognize that individuals' experiences shape how they interpret and respond to reality (Modell, 2009). In other words, I recognized that aspects of disability may entail predictable pressures on opportunities for physical activity – but that each individual will nevertheless interpret their physical therapy experience uniquely. One example of how I put these approaches into action was our use of triangulation to incorporate experiences of physical therapists as well as persons with disabilities. As opposed to using triangulation to confirm accounts of one stakeholder group compared to another, our analysis focused on heterogeneity in individuals' experiences with physical therapy and sought to explore areas of difference. For example, I designed interview questions to focus participants toward their personal stories (e.g., "Can you think back to a time during physical therapy when…"), and analyzed data in ways that focused on unique responses within themes when contrasting physical therapists and individuals with a chronic physical disability.

Participants and sampling.

I sought people with chronic physical disability along with physical therapists to describe experiences and perspectives regarding physical activity promotion. Our strategies to recruit participants included advertisements on an online portal for clinical research participation at an academic institution,

by connecting with leaders of physical therapy clinics, and through snowball sampling – encouraging participants to share information about the study with others who may be interested. In all cases, participants were provided with a brief description including the goals of the study, inclusion criteria, and contact information for the first author. Participants that were interested were then asked to contact the lead researcher to arrange a time to participate in the interview. Critically, I sought physical therapists who self-identified as having regularly worked alongside patients with chronic physical disabilities. I also sought participants with disabilities with physical therapy experiences currently, or within the previous year. I especially sought participants with experiences in differing types of clinical contexts as maximum variation sampling strategy (Smith & Sparkes, 2014).

Seven individuals with a chronic physical disability (57% Caucasian; 4 male, 3 female) were recruited to participate in the study by the lead researcher. Participants were between 21 and 65 years old (M = 48.1 years) . Two participants diagnosed chronic pain due to damaged vertebrae, and an additional two participants reported chronic pain and radiating neuropathy. Remaining participants reported endometriosis (n = 1), spinal cord injury (n = 1), and arthritis alongside chronic coronary heart disease (n = 1). All participants with a chronic physical disabilities were included based on participants' descriptions of the severity of their disability limiting their activities of daily living.

Physical therapist participants included eight individuals (5 female, 3 male; 87.5% Caucasian) who were between 36 and 57 years of age (M = 47.5 years). Therapist participants reported from 10 to 28 years of experience in the field (M = 20.1 years). To be eligible, physical therapists needed to be board certified, speak English fluently, and work with individuals with a chronic physical disability in an outpatient clinical setting.

Procedures

Before beginning interviews, the lead researcher meet with three independent physical therapists to develop the research goals of the project and construct the interview guides. Following this, the lead researcher conducted mock interviews with two additional physical therapists and two individuals with

disabilities. In these mock interviews the lead researcher sought feedback from participants regarding question and interview design. Recruitment emails where then sent to clinics and support groups for chronic physical disabilities. Interested participants needed to contact the lead researcher by email in response to set up a time to interview. Prior to starting the interview, the lead researcher reviewed the consent form and restated the nature of the project. Interviews were then recorded using an Olympus audio-recorder. Semi-structured interviews lasted a mean length of 33 minutes and 35 seconds.

Interview guides for both physical therapists and individuals with disabilities focused on experiences with promoting physical activity during therapy interactions. Questions prompted participants to describe their beliefs and attitudes toward physical activity in relation to physical therapy sessions, and personal experiences in that context. Participants were also directed to consider the extent to which community programming was discussed as a potential context for physical activity away from the clinical setting in their efforts to promote physical activity as a therapist, or their experiences attending therapy as a patient. Interview guides entailed nevertheless unique sets of questions for each stakeholder type. Interviews with therapists focused on the strategies employed when promoting physical activity (e.g., "Tell me about a time when you promoted physically activity to patients to keep them active after therapy." and "How would you promote physical activity to a more severely disabled patient when compared to an individual with a disability that is not as severe?"). Meanwhile, interview questions for those with a chronic physical disability were framed to understand their experiences in physical therapy, and the extent to which they felt their expectations and needs were met (e.g., "In what ways if any did your physical therapist educate you about how to be physically active in your daily life?").

Data analysis

Thematic narrative analysis was chosen because the research team was interested in identifying patterns and themes that emerged from the data (Braun & Clarke, 2006; 2014). I sought to identify patterns that were common across both groups (therapists and those with disabilities) related to experiences in therapy. Our thematic analysis was guided by Braun and Clarke's (2006) thematic analysis

framework, which includes steps to familiarize oneself with the data, generate initial codes, search for themes, reviewing and defining themes, as well as producing the final report. The first author led the analysis process, and integrated the remainder of the authorship team as critical friends throughout the analysis process.

The process of familiarizing ourselves with the data was important to manage tensions in unique concepts and themes expressed by physical therapist and patient participants, and also to enhance reflexivity within the research team throughout data collection. First, the lead author kept a journal of important statements made by individuals and themes that were emerging, after completing each interview (i.e., memoing; Birks, Chapman, & Francis, 2008). Second, the lead researcher also generated a list of preliminary themes on a white board to visualize the key similarities and differences between the experiences being reported by therapists and individuals with chronic physical disabilities, following Braun and Clarke (2006). Memoing and creating thematical maps informed the initial codes identified in thematic analysis.

When beginning analysis the lead researcher began by reviewing memos of each interview. Following this he separated the data into two groups (i.e. therapists and individual with a chronic physical disability). Following the identification of the initial codes the preliminary themes were then created for each individual group. Before defining the themes present across both groups, the initial thematical maps were reviewed with the other members of the research team. Succeeding this, the research team reviewed and defined the themes that were present across both groups based upon the thematical maps. Using these themes the research team constructed the final report which was then reviewed by an expert in physical therapy acting as a critical friend.

Rigor

Applying a critical realist framework the expectation would be that rigor of qualitative studies would be evaluated in terms of criteria that best align with the goals and the practical uses of the specific study. In the results I worked to depict the variability in perspectives across participants (e.g., physical therapists versus people with chronic physical disabilities). The research team selected criteria based off of Tracy's (2010). The topics chosen to analysis the rigor were; (1) is it a worthy topic, meaning does it add value to the field of physical therapy; (2) ensuring that our results were meaningful with a detailed explanation of how I reached these results called rich rigor; (3) does it offer a rich analysis that is plausible and trustworthy called credibility; (4) finally, does the research provide a significant contribution to the field of physical therapy? See Table 1 for examples of the criteria used to assess the rigor of this study.

To explore whether the questions I asked would resonate with physical therapists I consulted three independent physical therapists when developing the research goals and interview guides for this project. For individuals with a physical disability an interview guideline was produced without

Table 1. Criteria for Supporting Methodological Rigor

Criteria *(Adapted from: Tracy, 2010; Smith & Sparkes, 2014)*	**How the research team fulfilled the criteria**
Worthy topic	- In-depth literature review preceded the study - Consultation with physical therapists to construct interview guides - The research team utilized a group of experts in the field of therapy as "critical friends" to review themes (Sparks & Smith, 2014)
Rich Rigor	- Interviewed a wide range of physical therapists (e.g. specialties in pediatrics, neurological disorders, orthopedics) - Integrating responses from varying stakeholder groups
Credibility	- Research team spanned individuals with 10+ years in physical therapy practice and in physical activity research
Significant Contribution	- The current research extends upon previous studies conducted by Williams, Smith, & Papathomas (2016) and Ma, West, & Ginis, 2020

consultation at first. Then a series of mock interviews were conducted with individuals with physical disabilities who then gave feedback on the interview and made recommendations.

Chapter 3

Results

Participants in this research shared a spectrum of personal experiences that demonstrated ideal perspectives toward promotion of physical activity during therapy and how to support quality experiences with activity. Participants nevertheless also shared negative experiences and barriers that exist in the therapist-patient relationship. Participants with a chronic physical disability reported limited options for engaging in physical activity within the community they lived in. These individuals described limited physical activity involvement, with only three reporting any level of engagement with community programming. Physical therapists, meanwhile, included a wide breadth of the profession including orthopedic, neurology, geriatric, and pediatric specialists. These participants generally valued physical activity promotion but noted a lack suitable options to promote. Therapist participants described promoted physical activity throughout treatment, starting in the evaluation and ending on the last day of treatment with a goal of preparing the patient to be active after therapy.

Across both clusters of participants, I focus on themes to depict experiences related to promoting physical activity in physical therapy. Promotion of physical activity was defined as the physical therapists' efforts to explain the benefits of active lifestyles and/or encourage physical activities outside of the clinical context, or after the conclusion of therapy. I identified three themes: (1) individualized promotion of physical activity; (2) engagement within the community; and (3) options for physical activity in the community. The first theme emphasizes rich individual experiences in activities that therapists viewed as critical for adherence, and which individuals with disabilities saw as critical to meeting their personal needs and producing a quality experience. The second and third themes relate to

this goal of individualization, but highlight the challenges in actively engaging with their community, and identifying options within the community for physical activity and active transportation that patients could be referred toward. After exploring these themes, I contrasted patients' responses from physical therapists' responses.

Individualized promotion of physical activity

Therapists described individualization as the process of '*meeting the patient where they are at both physically and mentally*'. Physical therapists explained that the promotion of physical activity must be centered around each patient's interests. From this perspective, individualized promotion of physical activity was seen as more effective compared to promoting physical activity the same way to each patient. The value of individualization is captured by an outpatient physical therapist with 28 years of experience:

> "One of the most important questions to me is [saying to your patient] 'You have this problem that you're here for. But what is it interrupting in your life? What do you like to do that this is stopping you from doing?' […] Once I find that out, then I'm sort of looking at that as: 'Okay. this is something we want to incorporate into the program to get this person excited, and when I am trying to work physical activity into their routine I will use it as motivator.' I have bowlers at times or, you know, golfers. I've had chefs. And your rehab program and way you promote activity should be geared somehow toward whatever they're trying to get back to, as an individual."

In turn, he continued to explain how he leverages the patient's interest to increase the "buy in" to physical activity. Explaining that once he can show *rather then tell* the patient why physical activity is important, he finds that they are more likely to continue being active after they complete therapy. For these patients, physical activity is a means to continue the other lifestyle activities they enjoy and maintain quality of life.

Participants described many strategies employed by therapists to individualize their relationship with patients, including: listening to the patient, gaining their trust, learning what the patient enjoys and

incorporating it into treatment, treating the individual not the disease, educating patients about resources available to be physically active, focusing on the patients' goals, and being flexible. This was summarized sufficiently by a therapist with 29 years of experience:

> "You [know] as a patient, when the practitioner is actually listening and paying attention to what you're saying and taking that into consideration […]. So, my biggest advice is to really truly listen [to the patient] and take in all that they're telling you about their personal lives – their whole lives – and really factoring that into how you tailor their treatment plan, education and their discharge plan for continued physical activity."

This therapist applies his own personal experiences as a patient when he works with patients to provide care that he would want as a patient. Explaining that you need to be fully invested in each patient and what they want to get out of therapy to be successful when getting them to continue to be physically active after therapy. Highlighting the importance of individual interests that need to be utilized when promoting physical activity.

Individualization was also valued by patients, and was described as a critical contributor to positive or negative experiences with both physical activity promotion and the general experience in physical therapy. Several participants shared stories where they felt negative experiences were a result of a lack of options or a general disinterest in provided option(s). Out of the seven patients interviewed, five expressed only receiving a home-based exercise program with minimal encouragement to attend a local gym or pay a nominal fee to continue using resources at the clinic. One patient, with chronic pain and mobility issues due to a broken lumbar spine, felt so strongly about the lack of personalization in a clinic: " They [the therapist] treated you just like a piece of meat going through their conveyor belt or whatever, so I stopped going".

When considering individualization, patients valued autonomy and independence when shaping their physical activity experiences and goals in therapy – a concept that didn't emerge within the accounts of physical therapists. Patient autonomy relating to the goals of therapy was regularly discussed,

indicating its importance. In interviews, patients expressed that when personal goals aligned with the therapy goals, a better experience was achieved. A lack of alignment between therapist and patient goals led to patient frustration and reduced motivation to remain physically active. For example, one 21 year old patient with an incomplete spinal cord lesion acquired following a vehicular accident had aspirations of walking again. He felt that physical therapy was discouraging because therapists' long term goals were more conservative. He noted that he would enjoy going to therapy more if they pushed him harder to pursue his goal, even though it may be a more difficult to achieve. To address this issue, a neurological specialist working with stroke patients explained that:

> "[Therapists at my clinic] are not trained in motivational interviewing. But we use those techniques to try to help the patients come to reasonable goals themselves, and help them calibrate about you know, what reasonable goals are, identifying barriers, and facilitators to those goals. Then we help them come to their own conclusions about why being physically active is important to them. […]We're helping a patient come to those conclusions and decisions themselves; because, we believe that that type of technique helps them be more vested in the decisions and in the being physically active."

Engagement with the community

Despite therapists acknowledging their expertise regarding physical activity promotion and maintenance, only a few mentioned community engagement beyond their clinical role (i.e. advertisement of conditions treated, educational seminars to educate the community on prevention of chronic condition or physical activity, and follow up visits/calls with patients). The few therapists mentioned rare educational seminars about services provided, addressing biomechanics to avoid injury, or other general health and wellness discussions. The therapists who participated in these events described them as occurring infrequently at most – as evident in the response from a therapist specializing in orthopedic conditions:

Interviewer: How can physical therapists better promote physical activity to patients and the community they serve?

Therapist: I think it's probably a good idea for physical therapists to be proactive, you know, educational sessions. Open House type things where you can discuss to the general public, you know like, good body mechanics lifting mechanics to prevent low back injuries. And then also get into how physical activity. Exercise walking that kind of stuff can sort of keep you away from some of those more chronic issues because you're keeping yourself, flexible and stronger.

Interviewer: does your clinic have regular educational sessions?

Therapist: "We've had times when we've done that but not really consistently enough"

Several participants with a physical disability expressed being unaware of physical therapy as a potential treatment option. These individuals expressed dissatisfaction with the healthcare because they discovered physical therapy on their own, as opposed to from the primary care provider. According to the participants, earlier information about physical therapy would have been beneficial. For example, a 29 year old participant with endometriosis explained how she was unaware of physical therapy as an option for treatment:

"So I was actually going [to physical therapy] for my shoulder and the physical therapist he was like, I know you have endometriosis, we have a pelvic health physical therapist that you should go to. So he was the one who actually told me to go to her for my endometriosis which I wouldn't have necessarily known about as an option which I was kind of surprised because like my doctors didn't mention it to me and its helped me so much, like I've been struggling with it for a long time. "

Participants claimed that after sessions ended, there was no communication between them and their physical therapist. Most participants with physical disabilities thought this lack of communication post-treatment was common, but one was upset thinking that therapists should continue communication. Those participants that had heard from their therapists following discharged had a greater motivation to

stay active. One participant continued to be physically active in the gym connected to the clinic where he had completed therapy:

> "[At my clinic, there is]a level of concern and caring that's there, and that really means something.[…] Every one of them touched my life and convinced me that they were personally invested in my long term well-being, so I need to do my part"

Statements by patients about the lack of follow up were indeed supported when discussing the matter with physical therapists. Only a therapist specializing in neurological disorders confirmed that communication was continued following the end of treatment. Other therapists explained the lack of post-treatment communication as irregular and reported a lack of time. The therapist who continued communication post-treatment described the goals and benefits of ongoing connection with patients:

> "We look to see if there's any changes in their mobility, increases falls and increase in the difficulty of doing activities of daily living. [We look for] any red flags. We also get to see how the options we gave patients are working, what we need to do better or those check ins can be could be even simple things where it's just a matter of them needing to come in and you know, have to have a turn up on their exercise program"

Options for physical activity in community

Although physical therapists all identified the social benefits of engaging in community recreation programs, most failed to promote community-based activities to patients. They valued the potential role of physical activity in community programs outside of the clinical setting, but nevertheless did not actively refer or discuss these programs with their patients. One explanation for this was because their community lacked critical resources and recreation infrastructure. In other words the communities the patients worked in did not have adapted recreation programs suited to accommodate the needs of their patients. Many therapists cited local gyms as the only recreation program they knew of. Second, therapists were also leery of promoting community programs when they were aware that the patient faced transportation or financial barriers. For instance, one physical therapist explained that while there were a

few adaptive recreation program in his community he felt this was not an option that could be promoted to every patient because of high cost membership fees. Instead, most therapists stressed home exercise programs to focus on physical activity promotion. Though therapists noted that it is difficult to successfully promote physical activity outside of the clinic with the home exercise program alone.

Interviews with patients supported these claims, as they expressed disinterest in engaging in physical activity outside of therapy when only given the home exercises. Additionally, those patients that received more options to join groups within the community described them as therapeutic and meaningful experiences. Many described the positive impact that the peer mentorship they received had on their ability to be physically active, one even becoming an advocate for individuals with disabilities in his community. When describing an adaptive kayaking group for veterans, one 21-year-old with a spinal cord injury detailed how significant groups can be for added social and financial support:

> "It has really helped me even though I am not a veteran. It's kind of like a support group when we go. We tell our story, and help each other with issues and listen to each other. […] It also helped me learn of grants, people start talking and just tell us that we can get grants for certain things like they have for adaptive bicycle, for adaptive golf, and all terrain wheelchairs for outdoor activities."

In this case, the individual's therapist connected him with a local kayaking group for veterans with disabilities after hearing about what interested the participant. Even though he had never served in the military, the therapist put him in contact with the group because they were one of the only groups in his area working with individuals with disabilities. The participant explained that he was nervous about not being a veteran; but, was readily accepted into the group. He explained that the group donated a kayak to him, in addition to educating him about ways to get additional funding for equipment. Despite the positive impact that the support groups had on patients, very few participants discussed ways in their therapists promoted support groups discovering their support group on their own. Similarly, therapists recognized the benefits of support groups but few described strategies used to get their patients involved.

Another strategy to overcome the lack of community programs was to design out of clinic activity in a way that was guided by the therapist. Many therapists stressed the need to become more creative regarding the ways in which physical activity is prescribed to patients and how barriers are addressed, though very few suggested any solution. Some recommendations included the use of Fitbits to construct friendly competitions between patients, support from university students that could provide assistance at patient's homes or local gyms following therapy.

Finally, participants also described introducing patients to activities within the clinical setting that could be accessed in the community – activities that were already delivered by community programs, and that could be adapted even if there are no existing adapted programs in place (e.g. dance, yoga, and karate).One therapists explained that when needed he would go to a local gym to do an educational session about working with individuals with disabilities. While other physical therapists recommended that clinics should attempt to hold classes citing anecdotal evidence that patients were more likely to try these classes because of previously formed comfort within the clinic.

Further emphasizing how important a patient's experiences can be to their prolonged engagement of physical activity, a pediatric specialist with 22 years of experience indicated how a negative experience can influence an individual's likelihood of engaging in physical activity in the future. Explaining a time when one of her previous patients stopped participating in karate and Boy Scouts because his peers were bullying him for his disability.

Integrating themes and exploring tensions across participants.

Whereas the core themes were informed by responses from both therapists and patients, I also identified cases where stories diverged when comparing those told within each participant group. Notably, there were discrepancies when considering how each participant defined physical activity promotion. While several therapists cited home exercise programs as a way they promoted physical activity peri- and post-therapy, they contradict the core themes of individualization and engagement within the community. While therapists could customize a home program to achieve the individual's

goals they lack a more in-depth personalization and engagement in the community which caused patients to showcase a lack of interest to adhere. As an illustrative example, one participant claimed that a home exercise program had been prescribed to him – but that the therapist was using handouts given to every patient with his condition, which frustrated him. Other patients also explained the same flaws.

Another significant difference across groups was the perceived barriers to physical activity within the community. Therapists explained that they commonly did not promote community recreation and sports programs due to transportation and financial barriers they perceived their patients to have; however, patients expressed that they failed to be active due to a lack of interest in physical activity options provided. One significant barrier to patients' physical activity options did, however, include insurance. A 21 year old with a spinal cord injury explained this saying

> "I don't think insurance should have to be able to say 'you're done with therapy', [just] because you're not improving the way we think you should, because that has happened quite a few times. They told me I am done insurance won't cover me anymore, because I am not improving at the speed insurance thinks I should. Then they [the insurance company] give you a break and then I come back and start all over again."

This patient expressed how during his time attending therapy his biggest barrier to being physically active was his inability to continue therapy. In this case, he continued to explain that during the period of time his insurance would not cover his physical therapy he would see a regression in his physical abilities making it more difficult to continue his engagement in community recreation programs.

Chapter 4

Discussion

The purpose of this study was to explore the experiences within physical therapy, with a focus on strategies used by physical therapists to promote physical activity to patients with chronic physical

disabilities, while understanding how community-based recreation programs are integrated into therapy. To my knowledge, this is the first empirical study examining how community-based programs are integrated into treatment of patients. Participants from this study provided insights regarding the value of individualized programs with a variety of options to promote physical activity in physical therapy. This study also showcased the importance of patient autonomy within physical therapy, peer mentorship, and ensuring that physical activity experiences are meaningful-quality experiences. Finally, physical therapists inconsistent promotion of community based sport and recreation programs highlights a need for a more intuitive solutions to provide patients with meaningful options to engage in physical activity.

This research built from qualitative work of Williams, Smith, & Papathomas (2016), which identified that therapists treating spinal cord patients recognized the importance of physical activity promotion, but commonly did not actively promote physical activity to patients. Our study examined strategies to promote physical activity in therapy, taking a broader perspective to examine promotion to patients with any chronic physical disability with an interest in community based programs. Based upon the evaluation of the data, several factors were identified that influence physical activity promotion in physical therapy. Therapists and patients expressed that patient-centered physical activity promotion, while providing the widest range of options, will lead to the best success when getting patients to make long term changes to physical activity habits. Both groups also showcased that there is a need for physical therapists to have a larger presence within the community the serve to educate individuals about the services provided by therapy and how therapy can improve an individual quality of life. Similarly, therapists and patients explained that there was a limited amount of sport and recreation programs promoted during therapy, due in part to a perceived lack of options.

Therapist and patient stories differed regarding how they interpreted the outcomes of physical activity promotion strategies. Whereas therapists recognized home-based exercise programs as a way to promote physical activity, patient participants felt these activities tended to lack individualization and were unenjoyable. Similarly, there was a discrepancy between the barriers to physical activity cited by

therapists and patients. Terapists tailored physical activity promotion to a patient based on their socioeconomic status, many times providing limited community based options due to the perceived financial barriers. Meanwhile, patients instead cited a lack of program options within their community as one of the largest barriers to being active. Finally, while support groups were recognized by both groups as valuable opportunities to engage in peer mentorship and facilitate an individual's physical activity habits, few therapists had access to – or awareness of – such peer mentorship programs immediately available to patients.

Forkan et al. (2006) identified that the benefits gained in physical therapy are commonly lost after therapy is over; noting that it was likely due to a lack of adherence to physical activity recommendations by the therapist. This lack of adherence can due to the lack of autonomy patient's feel with the proposed physical activity options. Using community-based programs tailored to a patient's interests can foster a more meaningful experience thus promoting autonomy with the physical activity promoted, increasing the chances that they adhere to the program following therapy. Therapists explained that it was their responsibility to educate the patient about the importance of physical activity, build self-efficacy, and promote physical activity options to patients, yet few saw the need to follow up with patients. While it may not be the role of the physical therapist to follow up with patients post therapy, it is crucial that patients have continuing support from somewhere. Family members, when available, possess the ability to provide this continued support. Therapists explained that in certain parts of the treatment process it was beneficial to educate a caregiver or family members about assisting with the patient's physical activity post therapy. Another option presented was to train members of community based programs so that they may be equipped to rovide the continued support an individual needs to make a behavior change.

Support groups can positively impact an individual's physical activity patterns. Some of the most powerful stories from this study about experiences in community programs also described these settings as support groups, which aligns closely with contemporary research focused on the value of peer mentorship within rehabilitation. It is well established that the relationships formed in support group for

individuals with mobility-impairing conditions like spinal cord injury, stroke, and chronic pain can have positive effects on recovery time, emotional states, and functional motor skill development (Chemtob et al., 2018; Glass, et al., 1993; Subramaniam et al., 1999). In the current study, participants pursued support outside of therapy to be physically active while addressing psychosocial factors related to recovery – although this experience was not universal across participants in our study. Successful examples of integration into support groups indicate that therapists can promote support groups within the community. Especially in geographically-dispersed or resource-strapped regions, online groups may have particular promise and may deliver the similar benefits as in-person groups. By surveying participants in online support groups, Chung (2014) demonstrated that patients utilized these groups to meet their needs forming relationships that fostered emotional support or using the groups as a way to form one-on-one connections with other members.

Finally, this study showcases the importance of quality engagement within the activity promoted. In previous studies examining quality engagement in veterans with disabilities, Shirazipour et al. (2017) identified that participants valued having the choice to participate in a given activity, and enjoyed a challenging environment they could relate to. Similarly, participants interviewed in the current study expressed that negative experiences in therapy where related to limited autonomy with the goals set and a limited number of options to engage in physical activity outside of therapy. One participant from our study also noted the potential to use motivational interviewing to enhance the experience of the patient. One factor limiting the quality of the experiences patients' could have in therapy could have been related to perceived socioeconomic status with the expectation that patients' would be unable to afford certain options; commonly therapists only prescribing a home-based exercise program. Contrary to that, patients expressed an interest in more options to be physically active citing lack of options as one of the greatest barriers to being physically active showcasing a discrepancy that must be further investigated in the future.

A few limitations of the study are important to acknowledge. First, patients and therapists were not matched, meaning that I had not therapist participants for whom we also interviewed their patients. By capturing experiences from both individuals in a therapeutic relationships, we could have better leveraged the triangulation goals from this research and, perhaps, richer descriptions of experiences in therapy. Secondly, future qualitative research would benefit from a more descriptive evaluation of therapist and patient experiences at therapy by observing treatments. Finally, only a few patient participants from this research had been successfully integrated into community-based sport and recreation programs. Although this is perhaps a pattern that extends to therapy more generally for individuals with disabilities, this misses an opportunity to unpack individuals who 'mastered' the jump from therapy to lifelong physical activity. For instance, Shirazipour et al. (In press), sampled veterans with disabilities who had participated in sport programs and a major event (Invictus Games) – which provided an opportunity to unpack pathways into maintained sport involvement

Future research needs to balance the perspectives of the physical therapists and the patients from this study. Researchers need to design effective tools for therapists to use because they tend to value physical activity, but often lack the resources or time to individually advise participants – especially after completing therapy. Perhaps the two most promising avenues are to leverage social networks in the community (support group).

Appendix A

Physical therapist interview guideline

Thank you for the opportunity to introduce our project.

As a reminder, the goals of this first interview are to:

- Understand your knowledge, attitude and beliefs towards physical activity opportunities for those with a chronic physical disability.
- Explore the role of a physical therapist to promote physical activity within the physical therapy setting.
- Explore how a physical therapist's role changes depending on the type of disability.

Before we begin, I would like to remind you of the consent for that you completed earlier.

[Remind participant of consent form and review key points]

I also remind you that there are no right or wrong answers in this discussion and that you can choose to skip any questions – and feel free to ask for clarification. I also remind you that this interview will be recorded – do I have your consent for this to be recorded? Great.

Introductory questions.

Starting broadly, I would love to hear about your experiences.

1. I'd like to hear your 'story' related to Physical Therapy. To begin with, I was hoping you could describe your path to becoming a physical therapist, and the roles you hold, or have held as a physical therapist.
2. Can you tell me about the patients with whom you work in your PT role? [make sure to ask how the patients hear about physical therapy]

Now I would like to direct us toward discussion of physical activity.

3. To you, what does it mean to be physically active for you?
    a. How does that definition change for someone with a physical disability
4. How would you define a physical disability

Barriers Faced by Individuals with a Chronic Physical Disability

We are very interested in physical activity opportunities available to persons with a chronic physical disability- defined as individuals faced with chronic (a disability that will affect the individual for a life time) functional and motor impairments that can be acquired or congenital for example, SCI, limb loss, CP, Arthritis, endometriosis, and how physical therapist can impact their engagement in physical activity.

5. What do you see as the core benefits of physically active lifestyles for the types of patients who you work with.
6. Of the individuals you work with, do any have increased difficulty being physically active compared to others in their communities? If so, what are some of these difficulties?
7. What opportunities do you know of in your community available for persons with a physical disability to be physically active? [hone in on community recreation and sport]
8. Are there some people who really gravitate toward community sport and recreation programs? If so, why are some individuals more drawn to these programs than others?
9. How does the community you work in impact individual's opportunities to be physically active?

Physical Activity Promotion

Building from our discussion so far, we are especially interested in understanding how physical therapists promote individuals with a chronic physical disability to be more physically active.

10. Can you tell me about the role of physical therapists in promoting physical activity to patients?
11. Which patients are most difficult to support in terms of maintaining physical activity?
12. Please describe any strategies that you have used/seen in your own, or other, physical therapy clinics to promote physical activity.

    [Prompt the participant to examine: whether these strategies were informal or were formally promoted within the organization; who the strategies were directed toward; who the strategies were delivered by; what age-range was included]

13. Can you describe a positive experience in your practice when you or another physical therapist has successfully promoted physical activity amongst an individual with a chronic physical disability? What factors lead to this success?
14. Can you describe a negative experience in your practice when you or another PT you know has not successfully promoted physical activity amongst those with a chronic physical disability? What factors played into this experience being unsuccessful?
15. How would the way you promote physical activity change for an individual with a more sever disability versus a less sever disability. [add in individuals that they have talked with previously in the interview] Why?

16. [If they said they lack community based resources] In what ways do you or any other PTs you know advocate for persons with disability in your community?

Areas Needed for Improvement

I would now like to take the time to address any areas that you feel need improvement.

17. How can physical therapists better promote physical activity in the community they serve?
18. Focused on how we can improve how PTs promote PA, how do you think that our field as a whole should be redefined, especially regarding education, continuing education, mentorship – or even how we define our scope of practice?
19. If you could give advice to a young/inexperienced physical therapist on how to best approach working with individuals with various disabilities, what would it be?

Closing questions

20. Are there any elements of related to physical activity promotion within physical therapy that we have not yet covered in our interview? Is there anything touched upon that we should discuss more?
21. Do you have anything you would like to add or any questions that I can address?

To conclude, I would like to thank you for your time and patience today.

Appendix B

Individual with a physical disability interview guide

Thank you for the opportunity to introduce our project.

As a reminder, the goals of this first interview are to:

- Understand your knowledge, attitude and beliefs towards physical activity.
- Explore ways physical therapy has impacted your beliefs of physical activity.
- Explore the resources in the community that facilitate physical activity to those with a chronic disability.

Before we begin, I would like to remind you of the consent for that you completed earlier.

[Remind participant of consent form and review key points]

I also remind you that there are no right or wrong answers in this discussion and that you can choose to skip any questions – and feel free to ask for clarification. I also remind you that this interview will be recorded – do I have your consent for this to be recorded? Great.

Introductory questions.

Starting broadly, I would love to hear about your experiences.

22. I'd like to hear your 'story' related to your disability. [how long have you had the disability, how did/does it impact your view on the community you live in, do you view your disability as a factor that limits what you can do? Why?]
23. Tell me about your experience at physical therapy [the clinics, was it a positive experience or negative? how was physical activity promoted? How did PTs educate you about community resources to be physically active?]
24. Are you involved in any support groups for your disability? [If yes, what group and describe the role of the group in your life.]

Now I would like to direct us toward discussion about physical activity.

25. As I previously mentioned, I am interested in understanding how physical therapists play a role in the promotion of physical activity. Can you tell me what the term physical activity means to you?
    a. In what ways does physical activity relate to everyday life.
    b. What are some benefits of physical activity?
    c. Why do you pursue physical activity or why not?
    d. Can you tell me about any resources in your community that encourage physical activity?
    e. Do you know of any barriers that yourself or other people with a physical disability face that limit activity.

Physical Therapy

Building from our discussion so far, we are especially interested in understanding how physical therapists promote physical activity.

26. When you entered physical therapy did you have concerns about being physically active? [what were they, why? How did the physical therapist try to address these concerns?]
27. What was your goal of physical therapy? What did you feel like the goal of the PT was [did this enhance or limit the success of your goal?]? Do you feel like you achieved your goal?
28. In what ways if any did your physical therapist educate you about the benefits of physical activity, and how to be PA in your life.
29. Can you think of an experience at physical therapy when the physical therapist successfully helped you to be physically active? What about this experience made it a success?
30. Can you think of a time in physical therapy when the therapist did not successfully prompt you to be physically active? What made them unsuccessful?
31. Can you think of any areas of physical therapy that can be improved?

Closing questions

32. If you could give advice to a physical therapist on how to best work with individuals with a disability similar to your own what would that advice be?
33. Are there any elements related to physical activity promotion within physical therapy that we have not yet covered in our interview? Is there anything touched upon that we should discuss more?
34. Do you have anything you would like to add or any questions that I can address?

To conclude, I would like to thank you for your time and patience today.

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ACADEMIC VITA

JACOB COREY

EDUCATION

- Pennsylvania State University Schreyer's Honors College
- Major: Honors in Kinesiology—Movement Science Option
- Grants/Awards: Student Marshal for Kinesiology, Summer Undergraduate Research Fund, Schultz Endownment and the Patricia L.Best Superintendent's Fund for Instructional Innovation
- Skills: Microsoft (Excel, PowerPoint, and Word), data analysis, and statistical analysis

RESEARCH EXPERIENCE

Team lab **(2017-present)**

- Coordinate lab meetings, assist with analyzing and managing large data sets, conduct interviews and develop interview guidelines to examine group dynamics/individual experiences.
- Collected data for a study examining comorbidities in spinal cord patients using medical health records from Penn State Hershey medical center to look into risks of comorbidities based on diagnoses
- Leading a qualitative study examining the resources and experiences individuals with a chronic physical disability have related to community sport and recreation programs.

Motor Control Laboratory at Penn State **(2019-present)**

- Working on a project to examine the effects of vibration on proprioception, and variability of motor planning when given the same task repeatedly.
- Recruit participants and manage/analyze participant data

Publication

- Graupensburger, S., **Corey, J**., Turrisi, R., & Evans, M.B. (2019) "Individuals with spinal cord injury and substance abuse". *Journal of Drug and Alcohol Dependence,* 205.

Poster Presentations

- **Corey, J**., Graupensperger, S., & Evans, M.B. (February, 2019). *Outcome Expectations and Self-Efficacy as Predictors of Exercise Behavior Among College Students.* Poster presented at the Midwest Sport and Exercise Psychology Symposium, Lexington, KY.
- **Corey, J**. Graupensburger, S., Turrisi, R, & Evans, M.B. (April, 2019). *Identifying Substance Use Disorders Among Individuals with Spinal Cord Injury: Using Big Data Sources Via Electric Health Records.* Poser presented at the Penn State Undergraduate Research Symposium

Leadership Experience

Penn State Kinesiology Diversity, Equity, and Inclusion Committee **(2019-present)**

- I was responsible for developing a group exercise program for students with intellectual disabilities to increase campus wide inclusion of individuals with disabilities

Advanced Anatomy Learning Assistant (**2019-present**)

- Send weekly updates to class regarding schedule and topic of dissection with review videos
- Assist in dissection and explanation of complex anatomical concepts
- Give a lecture once a week to instruct students on important anatomical concepts
- Conduct review sessions with students and meet outside of class time to assist students with class material

Undergraduate Anatomy Learning Assistant **(2018-present)**

- Assist a Graduate Teaching Assistance teach a group of 35 undergraduate Kinesiology students Functional Human Anatomy.
- Manage the cadaver potion of the class holding weekly review sessions for Graduate Teaching Assistance and Undergraduate Learning Assistance to review structure the must be identified the following week long with clinical significances of structures
- Regularly meet with students outside of class to review lab material in preparation for practical examinations
- Professionally mentor students meeting with them outside of class to help them understand how to achieve their career goals

Lifelink PSU Mentor **(2016-present)**

- Recently I have organized a set of online classes taught via Zoom for students to remain connected during the COVID-19 pandemic
- Work with students to find jobs that interest them and to succeed at these jobs
- Have spent time during summer teaching courses on anatomy and physiology, basketball, and baseball
- Contribute significant amount of personal time towards improving opportunities the students have on campus by meeting with heads of departments to advocate for students to sit in on classes.
- Hold a weekly mobility class Wednesday morning focused on motor coordination, balance, and hand eye coordination
- Currently I am working with a student in the evenings to work towards improving his motor skills and assisting him complete his job as a manager of the Penn State baseball team

Student Mentor **(Fall 2019)**

- Worked with a group of transferring students to help acclimate them to life at university park
- Spent at least 1 hour each week meeting with students to help get them involved with things that interested them and provide mentorship

Clinical Experience

Pivot Care Physical Therapy **(2018)**

- Spent 200 hours working in an outpatient physical therapy clinic working with orthopedic conditions, neurological conditions, geriatrics and sport injury rehabilitation.
- My roles during this time was assisting patients with exercise routines, assisting with the use of modalities, and maintaining clinic equipment

Geisinger Medical Center **(2019)**

- Worked in an acute medical center in the intensive care unit treating pediatrics, geriatrics, orthopedic, cardiovasculature, and osteological conditions
- assisting with in bed exercises, patient ambulation, and use of modalities
- Shadowed for 60 hours

Rebecca School, New York City, NY **(2019)**

- Shadowed in a pediatric school for students with sever Autism
- Assisted with treatment of students in sensory gym and activity facilities
- Shadowed for 40 hours