"The healing power of that should never be underestimated": Implementing coordinated physical activity counselling among physiotherapists and spinal cord injury peer coaches

Marisa S. Lin,[1] Kathleen A. Martin Ginis,[2,3,4,5] Catherine Le Cornu Levett,[6] Christopher B. McBride,[7] Regina Colistro,[6] Tova Plashkes,[6] Andrea Bass,[6] Teri Thorson,[7] Ryan Clarkson,[7] Rod Bitz,[7] Kristen Walden,[8] and Jasmin K. Ma[1,3,9]

[1]University of British Columbia, Vancouver, Canada
[2]Department of Medicine, Faculty of Medicine, University of British Columbia, Vancouver, Canada
[3]International Collaboration on Repair Discoveries (ICORD), Blusson Spinal Cord Centre (BSCC) University of British Columbia, Vancouver, Canada
[4] School of Health and Exercise Sciences, University of British Columbia, Kelowna, Canada
[5]Centre for Chronic Disease Prevention and Management, University of British Columbia, Kelowna, Canada
[6]GF Strong Rehabilitation Centre, 4255 Laurel St, Vancouver, BC, Canada
[7]Spinal Cord Injury BC, 780 SW Marine Dr, Vancouver, BC, Canada
[8]Praxis Spinal Cord Institute, Vancouver, BC, Canada
[9]Arthritis Research Canada, Vancouver, Canada

Correspondence: Jasmin Ma
Present address:
The University of British Columbia
6108 Thunderbird Blvd, Vancouver BC, V6T 2A1
Canada
Jasmin.Ma@ubc.ca

This is an original manuscript of an article submitted to Disability and Rehabilitation for publication.

Abstract

Purpose: A large decrease in physical activity (PA) is typically observed among people with spinal cord injury (SCI) when discharged from inpatient rehabilitation. We aimed to identify implementation factors of coordinated PA counselling among physiotherapists and SCI peer coaches during the transition from inpatient rehabilitation to community.

Methods: Semi-structured interviews guided by the Theoretical Domains Framework (TDF) were conducted. Using the TDF, factors affecting PA counselling delivery were coded abductively. A critical friend and member checking were used throughout analysis.

Results: Participants included nine physiotherapists and two SCI peer coaches. The most salient TDF domains were social influences (34%), environmental context and resources (31%), and skills (15%). Specifically, participants identified challenges in addressing patient barriers and continual staff onboarding. Intervention delivery was supported by the ability to refer out to peer coaches with lived experience, having champion support, a time-efficient PA counselling form, and training sessions that included motivational interviewing skill development.

Conclusion: Successfully implementing coordinated PA counselling during the transition from rehabilitation to community may be strengthened by 1) providing resources/training that guide both content and delivery of PA counselling and 2) a referral system that leverages the strengths of both clinicians and people with lived experience of SCI.

Keywords: Spinal cord injury, Barriers, Facilitators, Peers, Physiotherapists, Physical activity counselling, Theoretical Domains Framework

Background

Physical activity (PA) promotes numerous health-related benefits (e.g., increased cardiorespiratory fitness, muscular strength, physical functioning; Hicks et al., 2011) and improved emotional well-being (e.g., lower levels of depression; Martin Ginis et al., 2010) for people with spinal cord injury (SCI). PA participation has also been reported to support individuals with SCI reconcile loss of 'able identity' and transition to a new sense of self (Levins et al., 2004). In-hospital, there is often support to be physically active (Vissers et al., 2008); however, there is a marked decline in PA participation during the transition from in-hospital to community settings (van den Berg-Emons et al., 2008). Following discharge, patients report experiencing emotional distress, challenges with mental health, and difficulties with self-care that affect their ability to participate in regular PA (Vissers et al., 2008). The transition from in-hospital to community is a critical, yet understudied, timepoint to support PA participation. Implementation of evidence-based interventions at this timepoint are needed.

The ProACTIVE SCI intervention provides guidance on PA education, strategies for linking or referring to appropriate peer coaches, programs, and organizations, and tailored exercise prescription methods to support an SCI-specific PA counselling conversation (Ma et al., 2020). The ProACTIVE SCI intervention has previously demonstrated very large-sized effects on PA behaviour and medium-sized effects on cardiorespiratory fitness in a controlled research setting (Ma et al., 2019). While not yet tested during the transition from in-hospital to community, it was co-developed with ~300 peers with SCI and clinicians, supporting its potential to be delivered by these two groups.

People with SCI report healthcare providers and peers to be preferred PA messengers (Letts et al., 2011). Physiotherapists believe it is within their role, knowledge, and abilities to

encourage a physically active lifestyle among patients (Shirley et al., 2010). SCI peer mentors have been shown to provide mentorship, emotional support, appropriate goal setting, and an ability to personally connect through shared lived experience (Hossain et al., 2021; Letts et al., 2011). The evidence for these two groups as preferred PA messengers underpins the value of implementing a coordinated PA counselling process between physiotherapists and SCI peer coaches during the transition from rehabilitation to community.

While there appears to be good rationale for a PA counselling intervention delivered by both physiotherapists and SCI peers, how to effectively implement such a coordinated practice change is unknown. Indeed, clinical interventions take 17-20 years to be incorporated into standard practice, with less than 50% implemented into general practice among healthcare professionals (Bauer & Kirchner, 2020). To support new practice changes, researchers must actively involve end-users (e.g., physiotherapists and SCI peers) to determine what strategies are needed to overcome barriers and enhance facilitators to implementation (Bauer & Kirchner, 2020).

In addition to end-user involvement, a theoretical underpinning to understanding factors that influence uptake of PA counselling behaviours may also promote intervention adoption and implementation. The Theoretical Domains Framework (TDF) has been used widely to identify barriers and facilitators experienced by practitioners implementing PA interventions in hospital settings (e.g., Glowacki et al., 2019; Moncion et al., 2020). A systematic review of TDF domains that influence PA counselling behaviours among primary care providers included characteristics of the innovation (PA educational materials, and intervention protocol), sociopolitical context (lack of resources to promote PA), organizational context (lack of time provided for healthcare professional to deliver the intervention), adopting person (characteristics of healthcare

professional delivering the intervention), and innovation strategies (reinforcement for healthcare (Graham et al., 2006) professionals, information on the PA intervention, and intervention reminders (Huijg et al., 2015). These studies suggest potential implementation intervention targets which may be useful for supporting a coordinated peer and physiotherapist PA counselling intervention; however, implementation is context and end-user specific (Graham et al., 2006).

To date, an examination of coordinated PA counselling implementation at discharge from SCI inpatient rehabilitation among healthcare providers and SCI peer coaches at discharge has yet to be examined. The objective of this study is to identify implementation factors that support physiotherapists and SCI peer coaches to deliver PA counselling during the patients' transition from inpatient rehabilitation to community.

Methods

Study Design

This study used cross-sectional, semi-structured interviews with physiotherapists and SCI peer coaches to identify factors (barriers and facilitators) influencing implementation of the ProACTIVE SCI intervention as part of a larger implementation-effectiveness trial (Ma et al., 2021). Briefly, the ProACTIVE SCI intervention consists of providing physiotherapists and SCI peer coaches with training on PA counselling, adapted exercise prescription, behaviour change techniques, SCI-specific PA guidelines, and referral to support resources (for greater detail see Ma et al., 2021). Semi-structured interviews were conducted 6-months post-training. Greater details on the implementation intervention used to support the adoption of the ProACTIVE SCI

intervention has been described previously (Ma et al., 2021). Ethics approval for the protocol was granted by the Behavioural Research Ethics Board at the University of British Columbia (H19-02694). This study was performed in accordance with the standards of ethics outlined in the Declaration of Helsinki. The consolidated criteria for reporting qualitative research (COREQ) was used to guide the reporting of this study (Tong et al., 2007).

Theoretical Framework

The TDF was used to identify barriers and facilitators experienced by physiotherapists and SCI peer coaches when delivering the ProACTIVE SCI intervention. The TDF is a comprehensive theoretical framework that synthesizes 128 theoretical constructs from 33 behaviour change theories. The TDF can be used to guide implementation of behaviour interventions and includes 14 domains or behavioural determinants: knowledge, skills, social/professional role and identity, beliefs about capabilities, optimism, beliefs about consequences, reinforcement, intentions, goals, memory, attention, and decision processes, environmental context and resources, social influences, emotions, and behavioural regulation (Cane et al., 2012).

Sample selection and recruitment

Convenience sampling was used to recruit participants whereby all participating interventionists (individual delivering physical activity counselling using the ProACTIVE SCI intervention) were invited to participate in the study. This consisted of physiotherapists from the spine unit at GF Strong Rehabilitation Hospital and SCI peer coaches from Spinal Cord Injury BC (SCI BC), a provincial community service organization supporting people with SCI.

Semi-structured interviews

The interview guide was informed by the TDF and co-developed with an expert panel who reviewed iterations of the guide and approved the final draft (Supplementary File 1). The expert panel included the executive director of the provincial SCI organization from which the SCI peer coaches delivering the intervention were hired from, the clinical practice lead of the rehabilitation centre where the physiotherapists were employed, two behavioural scientists, and a clinical liaison.

Researchers (ML and JM) conducted 45-minute individual interviews between August to October 2021 over telephone or Zoom video calling. Guided by the TDF, the interview guide included probes about experiences in delivering PA counselling using the ProACTIVE SCI intervention and a coordinated referral process between physiotherapists and SCI peer coaches (Supplementary File 1). Follow up questions were asked when further clarification or details were needed. Participants were financially reimbursed for time spent completing semi-structured interviews.

Data analysis

Interview recordings were transcribed using Zoom audio transcription software. Interview transcripts were checked for accuracy and coded by the interviewer (ML) using a coding software (NVivo, Version 12). The data analysis process followed an abductive two-phase approach (Lucci et al., 2022). Implementation factors (barriers and facilitators) were first deductively coded into the TDF domains (Atkins et al., 2017). Barriers were defined as limiting

external influences and ProACTIVE intervention components described as missing or impeding interventionists in delivering the intervention. Facilitators were factors that enhanced or supported interventionists' ability to deliver the PA counselling intervention. The frequency of each TDF domain (number of times coded within a domain/total number of codes), number of codes, and number of interview files referenced were calculated and represented in Table 2. The most relevant TDF domains were then identified (Figure 1) to create a content analysis framework for inductive coding to further interpret the meaning and context of the initial codes (Atkins et al., 2017; Hsieh & Shannon, 2005). Themes and sub-themes were created through inductive thematic content analysis within identified TDF domains. A coding manual (Supplementary File 2) with TDF definitions adopted from Cane et al. (2012) was iteratively developed and used to guide the decision-making process.

To support trustworthiness of data analysis, the coding process and identification of themes and sub-themes was discussed with a critical friend who is an experienced coder (JM). Member checking was used on three occasions whereby a summary of the findings was presented orally and summarized in written form to participants. Participants confirmed the results or elaborated on findings where necessary.

Results

In total, 11 semi-structured interviews were conducted. Two participants were SCI peer coaches hired by SCI BC (therefore were the only 2 eligible to participate) and nine participants were physiotherapists (69% of eligible physiotherapists). All participants were involved in delivering the PA counselling intervention. The demographics of participants are reported in Table 1.

196

Table 1. Participant demographics.

Characteristic	%
Sample size	11
Gender	
Female	73%
Male	27%
Age	
20-29 years	9%
30-39 years	36%
40-49 years	18%
50-59 years	18%
60+ years	18%
Inpatient physiotherapists	64%
Outpatient physiotherapists	18%
SCI BC peer coaches	18%
Years employed in position/practice	15.5 ± 12.70

197

198

Barriers and Facilitators

Of the 14 TDF domains, 8 were represented in the interview data, including environmental context and resources, skills, social influences, memory, attention, and decision processes, social/professional role and identity, beliefs about capabilities, reinforcement, and behavioural regulation (Figure 1). The most frequently coded TDF domains were environmental context and resources, skills, social influences, and memory, attention, and decision processes (Table 2). Knowledge, beliefs about consequences, emotion, optimism, intentions, and goals were not identified as influential domains for delivering the ProACTIVE SCI intervention. A summary of TDF domains, themes, sub-themes, and illustrative quotes from transcripts are represented in Table 3.

Figure 1. TDF Domains and Coded Subthemes

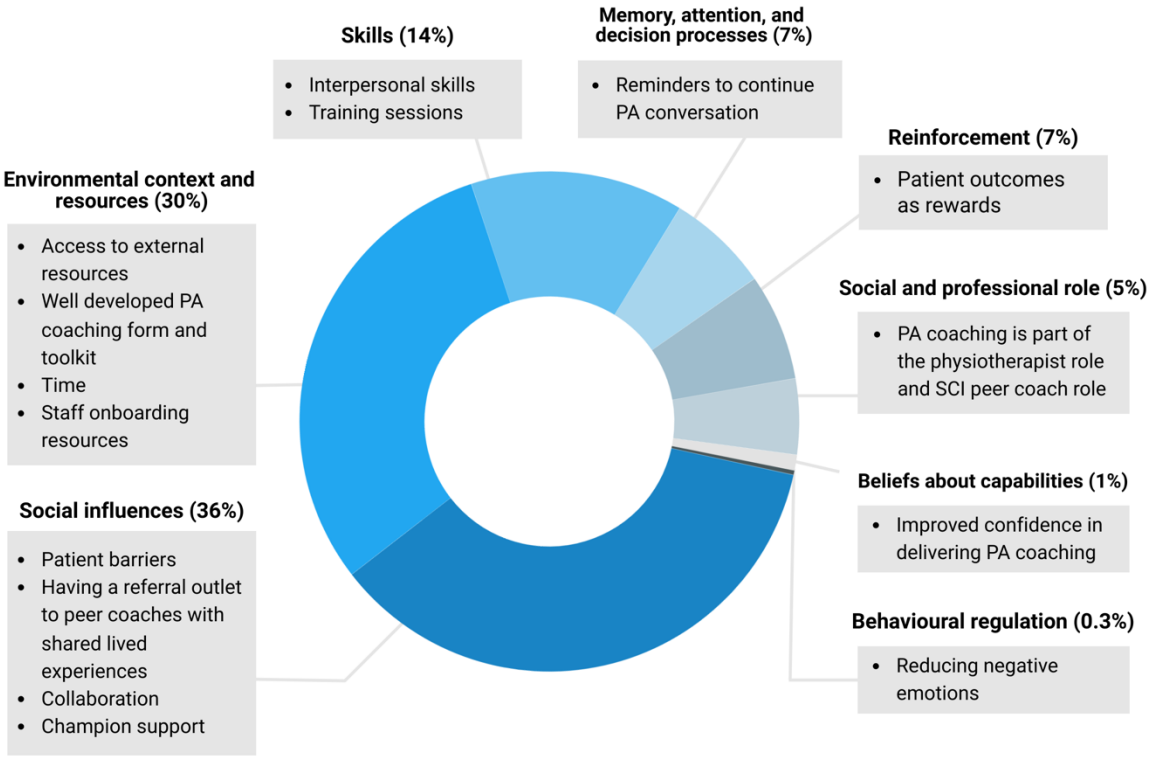

Table 2.									
TDF Domains	**Barriers**			**Facilitators**			**Total factors (Barriers and facilitators)**		
	Frequency of barrier codes (%)	N of codes	N of interview files (/11)	Frequency of facilitator codes (%)	N of codes	N of interview files	Frequency of total codes (%)	N of total codes	N of interview files (/11)
Social Influences	39%	54	11	35%	87	11	36%	141	11
Environmental context and resources	37%	52	11	27%	58	11	30%	110	11
Skills	9%	13	6	16%	44	11	14%	57	11
Memory, attention, and decision making	14%	15	6	2%	12	7	7%	27	9
Reinforcement	0%	0	0	11%	26	10	7%	26	10
Social and professional roles	0%	0	0	8%	19	10	5%	19	10
Beliefs about capabilities	0%	0	0	2%	4	4	1%	5	5
Behavioural regulation	1%	1	1	0%	0	0	0.3%	1	1

Table 3. Summary of TDF domains, themes/subthemes, and illustrative quotes		
TDF Domain	**Theme/Subtheme**	**Illustrative Quote**
Social Influences	**1.0 Theme: Identifying patient barriers and facilitators**	
	1.1 Subtheme: Competing priorities (B)	"... there are so many competing goals, and they are in the stage in their rehab where the sky has fallen on them and they're shell shocked ... there's a lot of change in their life and you have to reorganize so many things, and things like housing, finances like there's a lot of competitions". (Tessa)
	1.2 Subtheme: Inability to plan ahead (B)	"… it's hard to even create a schedule when [with] some of them it's like I barely even know where I'm going to be living in six months or, you know, we still haven't figured out my home care". (Casey)
	1.3 Subtheme: Comfort in the gym (B)	"I remember seeing one fellow who was actually ambulatory, and he wanted to do things in terms of working out, but he did not feel comfortable going to a regular standard gym that a lot of able-bodied people were going to, he just didn't feel comfortable there". (Rory)
	1.4 Subtheme: Mental health (B)	"I find it really difficult if they had underlying mental health issues or mood issues that are not addressed with medication or supports around that but usually, they're the type who reject those services too. So, it's like a double whammy because mentally, emotionally not doing well, then they won't exercise and then they physically won't do well too. So, I find that's like the most problematic". (Jessie)

	1.5 Subtheme: Financial barriers to purchasing equipment (B)	"... not everyone has the finances to buy a standing frame or a bike you know like FES bike … they won't have that at home, and they don't have the finances well you can get on it in while you are here [hospital setting] but then after that, what happens right? It cannot be sustained". (Tessa)
	1.6 Subtheme: Access to transportation (B)	" … I remember one person where again it was someone from [town], and there's lots of transportation issues. So, I feel sometimes clients are living in these constraints". (Rory)
	1.7 Subtheme: Level of motivation and readiness (B, F)	"I think some of their history of their engagement with exercise, so some people come in and they don't do exercise, they don't have many leisure interests. And so, they're quite sedentary before coming and before having a spinal cord injury … that can be more difficult I think people who maybe were elite athletes prior to their injury … that can be a big help to a person" (Riley)
	2.0 Theme: Having a referral outlet to peer coaches with shared lived experiences	
	2.1 Subtheme: Accountability (F)	"I think it's great … knowing there is going to be something else that's going to follow up afterwards always makes you feel a bit more accountable to make sure that you have the conversation with the client today … make sure that you do complete that part of the overall education on managing with spinal cord injury". (Paige)

	2.2 Subtheme: Peer services as a resource	"… rather than them [patients] having to seek out SCI BC themselves because that's where we see a lot of people getting lost through the cracks right … like model of care for people once they leave rehab is that they're patients for life … I'd love to see SCI BC… sort of be the people that connect them … because they know the right people to talk to and they have more experience than we do … they're sort of lifelong connection to the not only the community, but also like managing some of their health" (Casey)
	2.3 Subtheme: Value of lived experiences (F)	"… whether it's just ProACTIVE project or the whole thing around how people are finding their way, living with their injury … people fill different roles and so, the whole thing around talking to somebody who's been through that sort of and has come out the other side and it's like they're okay and they figured out something and participated in sport or you know that really healthy workout routine in life. I do think that it does give people a sense of what is possible because I think sometimes people have their injury, one of the things that's lost is sort of what is the vision for the future. And they need someone that sometimes that can help to point a way". (Rory)
	2.3 Subtheme: Peer services located on-site (F)	"We have a good relationship with the SCI BC peers. With fact that [SCI peer coach] is there … every day is a great thing so we all we have access to [SCI peer coach] so don't ever feel like I don't have access to [SCI peer coach]". (Kelly)

	3.0 Theme: Collaboration	
	3.1 Subtheme: Sharing experiences between physiotherapists and SCI peer coaches (F)	"I think it might not be a bad idea to have a sit-down conversation ... to find out from the SCI BC guys who are doing the coaching, what are their struggles? Not that we can necessarily help with their struggles, but maybe we can problem solve, ... it's also good for us to know what their struggles are with the coaching ... maybe there's something we can offer in terms of helping to solve the problem or whatever". (Kelly)
	3.2 Subtheme: Expand to other healthcare practitioners (F)	"I think recreation therapist and kinesiologists that have SCI specific knowledge could also fulfill the role, very effectively". (Rory)
	4.0 Theme: Champion support	
	4.1 Subtheme: Benefits of champion support (F)	" … like teamwork amongst colleagues and I have questions I asked them about it, and it's nice to have [physiotherapist champion] and [SCI BC peer coordinator] so accessible to us to answer our questions on how to do things if we had questions come up". (Jessie)
	4.2 Subtheme: Champion support needed on other units (B)	"I think it's hard because on [other hospital unit] ... because we're not on the SCI program we felt a little bit … not as much in the loop. And when our program gets busy, because we're not seeing all SCI patients, it's hard to remember to do this … so when you have that we had to kind of jog you needed to jog your memory whereas if you're actually on the program and [physiotherapist champion] work with you daily they can be cueing you so yeah, we felt a little bit out of the loop". (Jaime)

Environmental context and resources	**5.0 Theme: Access to external resources**	
	5.1 Subtheme: List of regional accessible gyms needed to support physiotherapist exercise prescription (F)	"I thought it would be really helpful if there was like a list of all accessible gyms in BC … Having to figure resources out takes a lot more time for us … because we just don't know". (Jessie)
	5.2 Subtheme: Contact list of local PA professionals needed to support SCI peer coaches for patient referral (F)	"It would be nice to have kind of regional contacts that I could pass along so if somebody were like 'oh yeah, my form is hurting me like I've been trying to lift weights' or 'I feel like I'm kind of hurt myself' it'd be nice to be like, 'oh yeah, these are the physios in your neighborhood or in your region'". (Erin)
	5.3 Subtheme: Patient resources (F)	"It'd be nice to have a software you click on to have all these exercises that'd be relevant to and pictures of a diagram that people would find … doing these exercises to give to clients that that would be, it can be handy". (Blake)
	6.0 Theme: Well-developed PA counselling form and toolkit	
	6.1 Subtheme: PA form and toolkit provides a concise and easy-to-follow framework (F)	"…verbalizing what their expectations are and intentions are and what they are planning I think it's a good conversation and so having the sheet or like a framework to go through is valuable … so you have what's in your mind and verbalize it and write it down … kinda really flush out of

		what someone's plan is afterwards, and they can get a better understanding of it. There is value in that". (Blake)
	6.2 Subtheme: Flexibility in using PA form and toolkit as a guide (F)	"I think it's a really good guide especially when you're new and you're learning. What I liked about this is ... I was not told that like you have to follow this religiously, I appreciate it being told 'okay, here's the guide but you can kind of put your own spin on it'... it's very helpful like hey if you get stuck, the guide's here but if you get comfortable you can kind of do your own thing within the realm of what the guide is right ... the guide's there for the bones and then I can add the meat to it". (Erin)
	6.3 Subtheme: Evidence-based, SCI-specific PA guidelines are useful (F)	"I actually quite like that, there is some clear set research as to what the minimum amount of physical activity that someone should do … to be able to provide that to the clients as a guide for what they should be doing as a minimum. I think it's great that it's on the form so that when we would give them a copy, they've got a reference back to what they should be doing". (Paige)
	6.4 Subtheme: Additional comment section for physiotherapists to include personal notes on patients for referral (F)	"I think it'd be good on this form just to have a note, … to know what somebody [patients] sort of mood or mental status … just maybe like a note … 'oh, very easy to work with, they're very excited about the program, chatty about it' or … 'yeah, they said yes but they seem slightly hesitant'". (Erin)
	6.5 Subtheme: Biased phrasing of questions (B)	"… phrasing of some of the questions was, it wasn't maybe so neutrally phrased ... so, if I'm asking a question I say, 'why do you or what do you

		like about or do you want to be active?' ... in the sense if you have chosen not to agree with this, why haven't you ... I just think with some clients, especially with this population, if your options for exercise are so limited and that's probably one of the major reasons that you don't see yourself being physically active, further, asking questions about why you don't want to be active is just kind of underlining a bit more of your understanding of your lack of ability, like I think it is a tough conversation". (Blake)
	6.6 Subtheme: User-friendly digital version needed (B)	"The form itself is just not great to use on a computer, I have tried it. It's not terrific, so I don't know if there's something else to be done with that". (Casey)
	6.7 Subtheme: Uncertainty about location (B)	"I'm looking through the bloody filing cabinet and I'm like where's the form? We can't find it, and when you can't find it, you're like, okay, forget it". (Rory)
	7.0 Theme: Staff onboarding resources (B, F)	"We have lots of turnover and staff in the inpatient group... I think it's really important to have the continuity of having … somebody like [ProACTIVE training instructor] come in and kind of explain and she makes it easy, right, she condenses it down ... It's pretty straightforward …". (Kelly)
	8.0 Theme: Time	
	8.1 Subtheme: Physiotherapists liked having the option to have the PA	"… sometimes not like the same session I would talk to them. I'll do a bit of it, then if something comes up and then I had completed it on

	conversation over multiple sessions (F)	another session or sometimes they're just too tired … It's a nice tool to have to if they're not ready to do physical stuff like they're too tired and I would talk about the guidelines too". (Jessie)
	8.2 Subtheme: Lack of time for the full PA conversation (B)	"...I mean one of my personal barriers, I would say is that sometimes I'll be doing these sessions with people, we're talking a bit about that how are we going to transition you to doing physical activity for both fitness and progression in community and then I basically I'm like, 'oh my god I'm already late for my next client', and I basically, I'm like, not even getting their chart note finished and racing off to basically see the next person". (Rory)
	8.3 Subtheme: Increase frequency of peer counselling sessions	"… once a month is a long time, a lot can happen in 30 days a lot cannot happen in 30 days … If you're want people meeting their goals, I think you should be meeting every two weeks, in my opinion. I think 30 days is far too long". (Emery)
Skills	**9.0 Theme: Interpersonal skills**	
	9.1 Subtheme: Assessing physical activity readiness (F)	"I would say the biggest strengths were seeing people's progression ... month to month. And sometimes it would be step back and wouldn't be the best month between checking so just seeing where people were at mentally over a specific period of time ... just kind of reading the tea leaves of having our conversations I can sort of tell like 'oh they're a little chipper this month I wonder what that's about' or 'no, it looks like they're kind of down' … so just sort of reading their expressions and our

		conversations and then seeing. Am I right about where I think they're at or am I wrong about where they're at and sort of where they're going to head?". (Erin)
	9.2 Subtheme: Problem solving (F)	"I think it's really important to highlight to the client or to ask them to sort of be honest with themselves as to what some of the barriers to being physically active and sort of being able to acknowledge them and kind of do a little bit of problem solving around at the beginning so that they're not overwhelmed when they go home". (Paige)
	9.3 Subtheme: Acknowledging physical activity is part of a bigger picture (F)	"I think sometimes just talking to someone. It might not determine the goals for the next four weeks or two weeks we might just talk about and a lot of times, some of our current conversations get off physical activity, and so I think that's an important aspect that has to be into consideration just don't pound it into them. You know relentlessly that 'exercise, exercise' so sometimes you might have to get off topic so and I've done that with a few participants". (Emery)
	9.4 Goal setting in alignment with personal motivators (F)	"I try to supplement with who they are ... I want them to try to see like oh for your grandchildren, being able to carry them or something like that. Some kind of personal goals. Not just my goals. I have to think about what their situation is like what do they enjoy doing like gardening, playing with children, whatever are their motivators. So, sometimes not internal motivators for them. I try to find what is externally motivating for them that they like to do". (Jessie)

	9.4 Providing emotional support for patients (F)	"Yeah, just empathy. Listening, letting them talk. And empathetic and supportive. It hasn't been extremely emotional, but there have been moments where there's been a little bit of our emotions have stirred from participants". (Emery)
	10.0 Theme: Training sessions	
	10.1 Subtheme: Broadening scope of exercise prescriptions to include physical activity (F)	"I want to say that it was good to have the training because it kind of brings more unison to that aspect ... we need to have that ... you could go in there a little bit more of a broader quantity ... like physical activity for leisure and … fun … it's something that broadens the angle … for as us physios we can be very like biomechanically oriented and like shoulder exercises, and these specific things. So, it's sort of nice to, to have had the training for that so I certainly found that useful". (Tessa)
	10.2 Subtheme: An opportunity to connect as a group (F)	"…it's really nice to sit down and talk about ... physical activity and ... the social being together in one room is great ..., those were hugely helpful from a way to support each other … to remember all the stuff we're supposed to be doing so I found them, particularly useful. Every time we do it it's I find it a refresher is always a good thing". (Kelly)
	10.3 Subtheme: Differing opinions on role-playing and practice time (B, F)	"… I feel like the training is a lot of what we do as physios anyway. You know what I mean like it felt like very now almost there was a little bit too much training … I feel like we didn't necessarily need to do the role playing and for our program to take a couple of hours out of our day. It

		just seemed. It wasn't the most efficient use of our time, right, because I feel like as physios, we are physical activity coaches anyway". (Jaime) "I think there's no harm and there's always value in practicing certain skills, stuff like that … a setting that lets you practice your skills and motivational interviewing". (Blake)
	10.4 Subtheme: More training on motivational interviewing (F)	"… I wouldn't mind doing some more motivational interviewing courses ... that would be something I would like to delve into more I think that that's a skill that is part of what this study was about, and something that I'd like to improve on … I think would be good to do more of that". (Riley)
	10.5 Subtheme: Need for clearly outlined referral procedures (B)	"…trainings didn't make it very clear for me like the actual 'here's what we do is we, implementing is what'. Okay, first have the conversation then give them that, then refer them to that. Like it was just very busy, there was a lot of practice things but for me it was more like I would have liked to have like, okay, here's an example of how we walked through patients through this, right? Like observing! This is my learning style". (Tessa)
	10.6 Subtheme: Training to deliver physical activity counselling online	"…I find the counselling part a little bit more difficult than the hands-on part because in a gym you've got the equipment there it's easier to communicate in person, one on one, oppose to zoom and when you meet an individual [in] the gym for a training session or orientation – they're committed, they're there, they're committed … I do a zoom session once

		a month I don't know how committed they really are after they leave the zoom session". (Emery)
Memory, attention, and decision making	**11.0 Theme: Reminders to continue PA conversation**	
	11.1 Subtheme: Frequent refresher training sessions (F)	"I think that just plain moving the idea, up to front and center helps to make sure that there's, it's more likely that you'll continue to have these conversations right so having done the training". (Rory)
	11.2 Subtheme: Providing updates on patient progress (F)	"… when you get feedback about something that you started ... and finding out if it's positive ... to find out that the person you referred in February, now it's like December and there's going great ... it's kind of like positive for us to go 'oh yeah right, we got to make sure that we don't forget' ... It's more like not forgetting to have that conversation because it's always going to be in addition to what we're doing with them ... people are saying oh we love it ... to have the feedback come back to us and then we're all on the same page and then we have the positive feedback that we're more likely not to forget anybody". (Kelly)
	11.3 Subtheme: Prompts to deliver PA counselling (B)	"… even like having just a little email reminder of like, 'okay use the form again, here's the procedure', I mean it's not a terribly complicated procedure. Just like little snippets like oh here's a quick example of how that can be used … it doesn't have to be every month, after the training

		maybe that could have been a little follow up like here is a reminder". (Tessa)
Reinforcement	**12.0 Theme: Patient outcomes as a reward (F)**	"I think it's knowing about what is best practice for people ... ultimately promotes the best opportunities for people to live with the best health outcomes … for me the incentive is to actually think about my clients, doing the absolute level best that they can't physically for a very long time. That's the incentive ... we should all be going after the same goal". (Rory)
Social and professional role and identity	**13.0 Theme: Physical activity counselling is a part of the physiotherapist role (F)**	"It's my job, you know being a physiotherapist. You know that's what I do. You know, so and I know that they benefit ... I know the benefits of exercise ... when we see people with more chronic illness ... and the problems with inactivity, and how much harder it is for someone who has a disability to stay active ... I see people, you know, with such a variety of conditions or chronic illnesses who have become progressively less active and more immobile, and I see all the complications of that". (Jaime)
	14.0 Theme: Physical activity counselling is a part of the SCI peer coach role (F)	"It fits in my role in the sense of overall well-being, like mental health and physical health ... yeah, I felt it definitely felt natural". (Erin)
Beliefs about capabilities	**15.0 Theme: Improved confidence in delivering PA counselling**	

	15.1 Subtheme: Practice (F)	"I'm a hands-on guy I have to, I kind of have just to immerse myself into it and just do some repetitions. I found, like I said, the first few I didn't feel comfortable, I felt like I stumbled, it wasn't smooth, but I think that's improved". (Emery)
	15.2 Subtheme: Evidence-based intervention (F)	"I feel more confident in my prescription, by having those guidelines to present to them [patients] because usually we will just be like do 30 minutes, oh I want you to do more just do more, that was very vague … it's nice to have more research-based guidelines. Because usually our guidelines are kind of based on normal folks. But not SCI folks. So, that helps build confidence in this is what you should be doing". (Jessie)
Behavioural Regulation	**16.0 Theme: Reducing negative emotions (F)**	"At first, I wasn't very comfortable on the Zoom because I know it's being recorded and will speak and watch and I can't look at myself ... I've got my section of the screen covered up with a book so I'm just looking at the participant, and I find you know what I find that's made me far more comfortable. I'm at ease I can communicate better". (Emery)

Note: B, barrier, F, facilitator

TDF Domains

Social Influences

The social influences domain outlines how interpersonal relations may influence the health providers' decision and thoughts related to intervention implementation. This includes implementation factors related to social support, inter/intrapersonal community, conflict (competing demands), feedback, leadership, champions, and team working (Cane et al., 2012; Atkins et al., 2017).

Nine physiotherapists emphasized referring patients to SCI peer coaches as a primary factor for supporting the implementation of the ProACTIVE intervention. Interventionists recognized the value of connecting patients with people with lived experience. Physiotherapists reported that knowing that SCI peers would follow-up with patients upon discharge, helped keep themselves accountable to have the PA conversation with patients prior to discharge. Having a referral outlet to SCI peer services also provided a way to connect patients with the provincial SCI organization. One physiotherapist explained how peer mentorship provides an often underestimated "healing power … and it's a different kind of resource that has different powers than the one that a therapist client relationship has. Very different but I would call them equal and important" (Rory).

Physiotherapists and peer coaches identified that patient barriers impacted their ability to deliver PA counselling. This included competing priorities (e.g., adapting to a new routine, managing secondary health complications), the inability to plan ahead (e.g., having a schedule that constantly changes due to medical appointments), comfort levels in going to a standard gym, struggles with their mental health, financial barriers to purchasing equipment, and limited access to transportation. Physiotherapists and peer coaches described patients who were previously

active prior to their injury expressed greater enthusiasm and motivation when discussing PA counselling.

Physiotherapists and SCI peer coaches noted that discussing any constructive feedback they have to share with one another would be a helpful strategy for sustaining the intervention. Physiotherapists also highlighted the role of champions in providing ongoing support and clarification to staff on the delivery of the ProACTIVE intervention. Participants described this champion support as easily accessible and helpful during implementation. This finding was further supported by one physiotherapist who worked in a separate unit and did not have access to a champion. Without that champion support and reminders, this individual identified that the ProACTIVE intervention was easily forgotten. Involving other healthcare practitioners (e.g., recreational therapists or kinesiologists) was also identified to be effective in expanding the use of the ProACTIVE intervention.

Environmental Context and Resources

The environmental context and resources domain can be defined as interventionists' knowledge of the task environment, as well as the availability, distribution, and management of resource materials (Cane et al., 2012; Atkins et al., 2017). Five physiotherapists reported the need for a list of accessible gyms outside the major city centre (e.g., rural, and remote towns). One SCI peer coach also recommended having a contact list of local health and exercise professionals for patients to ask questions related to exercise prescription, technique correction, and injury prevention. Exercise provision software programs or diagram handouts were also identified as patient resources needed to support the PA counselling conversation.

Interventionists described how the PA counselling form and toolkit guided their PA counselling conversation with patients. They valued the easy-to-follow framework, SCI-specific evidence, and flexibility that allowed them to tailor it to their patient and their own delivery style. Interventionists recommended adding a comment section to help SCI peers to better prepare for the client as they hand off care between one another (e.g., providing information on their mental health status, physical capabilities, and attitudes towards PA). One physiotherapist noted that the questions on the PA form could be phrased more neutrally. In other words, not to imply patients *should* be physically active and to provide acknowledgement that being physically active with a spinal cord injury is challenging. Physiotherapists also cited not knowing where the PA form was physically located and the need for a user-friendly digital version of the PA form.

Time was also noted as a significant resource impacting delivery of the PA conversation. Some physiotherapists reported not having a sufficient amount of time to deliver the full PA counselling conversation during discharge planning with patients. Whereas other physiotherapists noted being able to adapt the delivery of the PA conversation by discussing PA counselling over multiple sessions. With high staff turnover rates, substitute staff, and physiotherapists often switching between different hospital units, physiotherapists identified the need to provide frequent onboarding staff training sessions and resources to sustain the intervention.

Skills

The skills domain refers to how healthcare providers' skill proficiency may influence intervention implementation. This includes interpersonal skills, assessment abilities, practical skill development, and intervention practice time (Cane et al., 2012; Atkins et al., 2017).

Interventionists described the importance of assessing patient readiness when deciding the timing and extent of the PA counselling conversation. In the Canadian rehabilitation system, not every patient returns to hospital for outpatient therapy services. Some physiotherapists noted having the initial conversation during inpatient therapy is necessary to at least 'plant the seed' for being physically active, but not everyone is ready to have the full conversation. Participants also recognized the importance of problem-solving skills to address patients' barriers to PA participation. SCI peer coaches noted the skills in providing emotional support and viewing the patient as a 'whole person' (where PA is only one behaviour of many in a person's life) are essential components of effective PA counselling. Discussing topics unrelated to PA (e.g., challenges with bowel management or neuropathic pain) and setting PA goals that are personally meaningful (e.g., getting stronger to play with their grandchildren) were identified as key components of building rapport and seeing success with their conversations.

The ProACTIVE training sessions influenced physiotherapists to discuss leisure time physical activities (e.g., seated boxing, going for a wheel, playing wheelchair tennis); whereas, prior to the training sessions, physiotherapists primarily focused on prescribing rehabilitation-specific exercises. Training sessions were described as informative, easy-to-understand, and provided a social opportunity for interventionists to connect. There were differing opinions about using role-play and setting aside time to practice delivering the PA counselling conversation. Some physiotherapists already felt confident in their PA counselling skills and just observing a demonstration of a PA counselling session would have been sufficient. Other physiotherapists reported that they found the practice time helpful. Additional training noted to be important for implementation included motivational interviewing (MI), virtual PA counselling strategies, and a more detailed description of the step-by-step referral process to SCI peer coaches.

Memory, attention, and decision processes

The memory, attention, and decision processes domain can be defined as interventionists' ability to retain information regarding the content and delivery of the intervention. Specifically, this domain includes the environmental components that may influence memory, attention, or decision processes of the interventionists (Atkins et al., 2017). Physiotherapists and SCI peer coaches noted that they did not experience any difficulty in remembering how to deliver the PA counselling conversation. However, prompting strategies were needed as a reminder for physiotherapists to deliver the PA conversation during their discharge process with patients. These strategies identified included having frequent refresher training sessions, implementing prompts (e.g., email reminders, posted signs, conversation prompt on patient-oriented discharge summary, or placing the PA form in the patient discharge binder), and sharing the impacts of PA counselling for patients.

Reinforcement

The reinforcement domain can help explain the motivating reinforcement and consequences that increase the likelihood of intervention implementation (Cane et al., 2012; Atkins et al., 2017). Participants reported being motivated to implement PA counselling to help their patients reach their best health outcomes. Providing rehabilitation exercises to maintain and improve physical functioning, preventing secondary medical complications, and improving overall wellbeing for their patients was identified as the incentive for implementing the PA counselling. Physiotherapists and SCI peer coaches also noted wanting to know study results to better understand the effectiveness of implementing PA counselling for patients.

Social/professional role and identity

The social/professional role and identity domain outlines how well an intervention aligns with a healthcare provider's beliefs about their role and how this influences willingness to adopt interventions into standard practice (Cane et al., 2012; Atkins et al., 2017). Physiotherapists reported that PA counselling fit naturally within the scope of their practitioner role. They described how their role focuses on educating patients on the prevention of secondary health complications while providing rehabilitation exercises to help improve and maintain physical functioning. SCI peer coaches explained how their role involves developing a peer relationship with patients to support their overall wellbeing. For this reason, PA counselling felt natural as they already discuss support strategies for diverse physical, social, emotional, and mental health barriers that people with SCI experience when transitioning back into the community.

Beliefs about capabilities

The beliefs about capabilities domain includes describing intervention components impacting one's professional confidence and perceived competence (Cane et al., 2012; Atkins et al., 2017). Physiotherapists and SCI peer coaches gained confidence in their PA counselling abilities through hands on experience and practice. Participants also noted feeling more confident in prescribing PA using evidence-based SCI PA guidelines.

Behavioural regulation

The behaviour regulation domain consists of behaviour change techniques such as self-monitoring and action planning that impact one's ability to deliver the intervention (Cane et al., 2012; Atkins et al., 2017). One peer coach implemented the behaviour change technique,

'reducing negative emotions'. A coach who was struggling with feeling comfortable counselling on Zoom, covered up their section of the screen that displays their front-facing camera, to reduce discomfort and better imitate an in-person conversation.

Discussion

The study identified implementation factors affecting physiotherapists and SCI peer coaches of a coordinated PA counselling intervention during the transition from inpatient rehabilitation to community. The most commonly identified TDF domains were social influences, environmental context and resources, and skills. Participants identified acknowledging patient barriers, the value of referring out to peer coaches with lived experience, collaboration, and the need for champion support as prominent factors for PA counselling implementation within the social influences domain. Environmental context and resources were highlighted by access to external resources, a well-developed PA counselling form, time, and staff onboarding resources. The skills domain in PA counselling were supported by ongoing training sessions and interpersonal skill development.

Social Influences

Participants identified challenges in addressing patient barriers when delivering PA counselling. Specifically, patients experiencing competing priorities (e.g., secondary medical complications) and mental health struggles (e.g., managing depression or anxiety) made PA difficult to implement into their everyday lifestyle. Similar findings were reported in a systematic review assessing healthcare professionals' ability to deliver PA counselling among patients with

physical disabilities, where the most cited perceived challenge were patients having negative attitudes towards PA (Huijg et al., 2015).

Resultantly, physiotherapists valued the ability to refer out to peer coaches with lived experience. They often shared their experiences being involved in this coordinated referral process, expressing how impactful the referral component of the PA intervention has been in addressing both the physical and social-emotional needs of their patients post-discharge. SCI peer coaches were able to personally empathize with many of the challenges newly discharged patients with SCI often experience. SCI peer coaches were also able to connect patients with the community and network of resources (e.g., coffee groups, social events, subscription to an SCI resource magazine) available through the provincial SCI organization and provide the encouragement and accountability for participants with SCI to help maintain their PA goals. Peer mentorship has previously been shown to be effective in supporting patients by increasing self-efficacy, providing emotional support, and being flexible in their approach (Chemtob et al., 2018; Ljungberg et al., 2011). SCI peer mentorship programs have demonstrated increases in leisure-time PA levels (Salci et al., 2016) and health self-management (Houlihan et al., 2017; Ljungberg et al., 2011). Taken together, referral to peer coaches was highly valued by physiotherapists to address patient barriers through lived experience and the added benefit of increased access to community services.

The need for an increase in collaborative practice strategies, including providing opportunities for team discussion, feedback sessions, and including other healthcare professionals was identified. Building a collaborative team culture, sharing of knowledge, and coordinated patient care planning has been previously reported as critical to promoting effective interprofessional collaboration (Sinclair et al., 2009). It was also essential to ensure both

physiotherapists and peer coaches felt well-supported in delivering this coordinated intervention. In a similar study, advisory support from national coordinators was identified as a necessary implementation factor (Hoekstra et al., 2021). Similar to the ProACTIVE SCI champions, the national coordinators of this study were responsible for development of the PA program and creating a work culture that prioritized PA promotion (Hoekstra et al., 2021). In our study, one physiotherapist from a non-SCI hospital unit noted that lack of champion support presence actually left their healthcare team feeling "out of loop". Thus, developing team communication and having access to champion support appears to be critical to filling the knowledge gaps during implementation and facilitating a work environment that prioritizes PA counselling.

Environmental context and resources

The PA counselling form used in the intervention was deemed to be time-efficient, flexible, and suitable for sustained use. Adaptable PA intervention materials (e.g., handbooks, handouts, or guidelines) for patients and interventionists has previously been identified as an essential component for successful implementation of PA counselling interventions (Huijg et al., 2015). Lack of consultation time is a frequently reported barrier to implementing PA counselling (Huijg et al., 2015; Salci et al., 2016). Interestingly, in our study, many physiotherapists reported that time was not a barrier as a result of the flexible and concise structure of the PA form. Adapting the PA counselling to the patient's level of readiness, the ability to deliver the conversation over multiple sessions, and again referring to peer coaches also contributed to addressing the typically cited barrier of time. For example, in the rehabilitation setting physiotherapists may choose to only 'plant the seed' by introducing the health benefits of PA,

while peer coaches continue this conversation by focusing on goal setting and problem-solving as patients transition into the community.

Related to resources, staff turnover is an inevitable challenge faced by institutions that can decrease engagement in PA programs (Hoekstra et al., 2021). Interventionists in this study described high staff turnover as a potential barrier to long-term implementation. Therefore, frequent refresher training sessions and onboarding resources were identified as necessary components to sustaining coordinated PA counselling among all staff in both the rehabilitation and community setting.

Skills

Skills in PA counselling were supported by training sessions that targeted assessing PA readiness, goal setting, and problem solving. Previous studies have highlighted the importance of providing training opportunities for interventionists to practice learned skills (Gainforth et al., 2014, 2015; Huijg et al., 2015; Salci et al., 2016; Tomasone et al., 2018). Interestingly, participants in this study reported differing opinions on role-playing and practice time provided during training sessions. In a systematic scoping review assessing knowledge translation (KT) practices to improve physiotherapists' uptake of evidence-based practice, multi-faceted training programs were found to be more effective (Stander et al., 2018). Effective components of these training programs included didactic sessions, discussion and feedback, and role-play, similar strategies used in our implementation intervention (Stander et al., 2018).

In addition to the importance of integrating various interactive training strategies, there was an identified want for more MI training from interventionists, further supporting this type of training's importance in PA counselling. Recently developed best practices for PA counselling

among adults with SCI recommend MI as a key foundational approach to client-centred practice (Hoekstra et al., 2023). MI skill development may have been crucial to helping develop skills in emotional support and acknowledging that PA is part of a bigger picture. This was identified in the participant interviews as important components of PA counselling. MI requires an understanding of both the spirit and tools in exploring an individual's willingness to change a behaviour (Miller & Rollnick, 2013). The spirit of MI, including compassion, acceptance, partnership, and evocation, may be key ingredients to teaching how to provide the emotional support identified in these interviews. Both the spirit and the tools of MI (e.g., asking open-ended questions, using affirmations, reflections, and summaries) are important for taking a client-centred approach and understanding the complexity of transitioning from rehabilitation to community.

Strengths and limitations

Strengths of this study include a theory-based approach to implementation intervention evaluation that facilitated the identification of specific targets for future interventions. This study is also unique for its pragmatic implementation of a coordinated referral process between clinical and community interventionists. This coordinated referral process also acted as a valuable connection point for patients to become members of the provincial SCI community organization for ongoing support beyond physical activity. The coordination among these interventionist groups facilitates a continuum of care from rehabilitation to community that has potential for sustainability beyond the project lifecycle.

Limitations of this study should also be acknowledged. In many instances, barriers and facilitators could have been coded into multiple TDF domains. For example, deciding whether to code the emotional support provided by peer coaches into social influences as opposed to skills was not always clear. This challenge has been described previously by other studies that used the TDF (Weatherson et al., 2017). The frequency analysis of codes identified in the interview transcripts only accounts for occurrence and does not account for time spent or relative importance of the code. Lastly, the sample size is small and not necessarily representative of other sites (e.g., the SCI peers and physiotherapists were highly trained in SCI care) whom will each have unique considerations for PA counselling implementation. However, the relative proportion of physiotherapists and SCI peers who adopted the intervention within our target sites was high (Olsen et al., 2023).

Practical Implications

Locally, the findings of this study will further strengthen the relationship between physiotherapists and SCI peer coaches as well as inform the content of ongoing training. More broadly, these implementation intervention considerations may be targeted across other sites that wish to adapt the ProACTIVE intervention or other PA counselling interventions for their setting. Specifically, our findings suggest providing a flexible, time-efficient PA counselling structure, providing ongoing skills training in assessing PA readiness, goal setting, problem solving, and MI, and working with champions are integral to implementation success. Future research should consider involving other healthcare professionals beyond physiotherapists as part of the coordinated PA counselling and referral process to peer coaches. These healthcare and

community collaborations may also prove beneficial for other patient populations as well as for promoting health behaviours outside of physical activity.

Conclusion

Ensuring patients with SCI are supported to be physically active both in-hospital and in-community requires collaboration between deliverers in both contexts. This study identified key targets for successful implementation of coordinated PA counselling between physiotherapists and SCI peers. When implementing evidence-based PA counselling, interventionists require champion support and ongoing communication of successes and challenges between both groups, time-efficient resources to support the counselling conversation, and ongoing training for skill development and maintenance of the practice change as a priority. Importantly, building a referral system to SCI peers may alleviate commonly cited barriers to PA counselling in clinical settings such as time and patient barriers. Referring to peer coaches to continue the PA counseling conversation in the community not only offers the value of lived experience but the flexibility to provide PA support when it's the right time. These findings may form the basis for adapting implementation of peer supported PA counselling in other sites that seek to address the decline in PA observed post-discharge for patients with SCI.

Disclosure statement

The authors have no conflicts of interest to declare.

Funding: This work was supported a PRAXIS Grant (grant number G2020-21). Dr. Ma is supported by the Michael Smith Foundation for Health Research Trainee Award (#17936), the

Arthritis Society Post-Doctoral Fellowship (TPF-18-0209), and the Canadian Institute of Health Research Post-Doctoral Fellowship (201910MFE-430114-231890). The funding source did not play a role in study design; in the collection, analysis, and interpretation of data; in the writing of the report; or in the decision to submit the article for publication.

References

Atkins, L., Francis, J., Islam, R., O'Connor, D., Patey, A., Ivers, N., Foy, R., Duncan, E. M., Colquhoun, H., Grimshaw, J. M., Lawton, R., & Michie, S. (2017). A guide to using the Theoretical Domains Framework of behaviour change to investigate implementation problems. *Implementation Science*, *12*(1). https://doi.org/10.1186/s13012-017-0605-9

Bauer, M. S., & Kirchner, J. A. (2020). Implementation science: What is it and why should I care? *Psychiatry Research*, *283*. https://doi.org/10.1016/J.PSYCHRES.2019.04.025

Cane, J., O'Connor, D., & Michie, S. (2012). Validation of the theoretical domains framework for use in behaviour change and implementation research. *Implementation Science*, *7*(1), 1–17. https://doi.org/10.1186/1748-5908-7-37/TABLES/3

Chemtob, K., Caron, J. G., Fortier, M. S., Latimer-Cheung, A. E., Zelaya, W., & Sweet, S. N. (2018). Exploring the peer mentorship experiences of adults with spinal cord injury. *Rehabilitation Psychology*, *63*(4), 542–552. https://doi.org/10.1037/REP0000228

Gainforth, H. L., Latimer-Cheung, A. E., Davis, C., Casemore, S., & Martin Ginis, K. A. (2015). Testing the feasibility of training peers with a spinal cord injury to learn and implement brief action planning to promote physical activity to people with spinal cord injury. *The Journal of Spinal Cord Medicine*, *38*(4), 515. https://doi.org/10.1179/2045772314Y.0000000239

Ginis, K. M., Jetha, A., Mack, D. E., & Hetz, S. (2010). Physical activity and subjective well-being among people with spinal cord injury: a meta-analysis. *Spinal Cord*, *48*, 65–72. https://doi.org/10.1038/sc.2009.87

Glowacki, K., Weatherson, K., & Faulkner, G. (2019). Barriers and facilitators to health care providers' promotion of physical activity for individuals with mental illness: A scoping

review. *Mental Health and Physical Activity*, *16*, 152–168. https://doi.org/10.1016/J.MHPA.2018.10.006

Graham, I. D., Logan, J., Harrison, M. B., Straus, S. E., Tetroe, J., Caswell, W., & Robinson, N. (2006). Lost in knowledge translation: Time for a map? *Journal of Continuing Education in the Health Professions*, *26*(1), 13–24. https://doi.org/10.1002/CHP.47

Hicks, A. L., Ginis, K. M., Pelletier, C. A., Ditor, D. S., Foulon, B., & Wolfe, D. L. (2011). The effects of exercise training on physical capacity, strength, body composition and functional performance among adults with spinal cord injury: a systematic review. *Spinal Cord*, *49*, 1103–1127. https://doi.org/10.1038/sc.2011.62

Hoekstra, F., Gainforth, H. L., Broeksteeg, R., Corras, S., Collins, D., Gaudet, S., Giroux, E. E., Mccallum, S., Ma, J. K., Rakiecki, D., Rockall, S., Van Den Berg-Emons, R., Van Vilsteren, A., Wilroy, J., & Ginis, K. A. M. (2023). *Theory-and evidence-based best practices for physical activity counseling for adults with spinal cord injury*. https://doi.org/10.1080/10790268.2023.2169062

Hoekstra, F., Hoekstra, T., van der Schans, C. P., Hettinga, F. J., van der Woude, L. H. V., & Dekker, R. (2021). The implementation of a physical activity counseling program in rehabilitation care: findings from the ReSpAct study. *Disability and Rehabilitation*, *43*(12), 1710–1721. https://doi.org/10.1080/09638288.2019.1675188

Hossain, S. N., Jaglal, S. B., Shepherd, J., Perrier, L., Tomasone, J. R., Sweet, S. N., Luong, D., Allin, S., Nelson, M. L. A., Guilcher, S. J. T., & Munce, S. E. P. (2021). Web-based peer support interventions for adults living with chronic conditions: Scoping review. In *JMIR Rehabilitation and Assistive Technologies* (Vol. 8, Issue 2). JMIR Publications Inc. https://doi.org/10.2196/14321

Houlihan, B. V., Brody, M., Everhart-Skeels, S., Pernigotti, D., Burnett, S., Zazula, J., Green, C., Hasiotis, S., Belliveau, T., Seetharama, S., Rosenblum, D., & Jette, A. (2017). Randomized Trial of a Peer-Led, Telephone-Based Empowerment Intervention for Persons With Chronic Spinal Cord Injury Improves Health Self-Management. *Archives of Physical Medicine and Rehabilitation*, *98*(6), 1067-1076.e1. https://doi.org/10.1016/J.APMR.2017.02.005

Hsieh, H. F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research*, *15*(9), 1277–1288. https://doi.org/10.1177/1049732305276687

Huijg, J. M., Gebhardt, W. A., Verheijden, M. W., van der Zouwe, N., de Vries, J. D., Middelkoop, B. J. C., & Crone, M. R. (2015). Factors Influencing Primary Health Care Professionals' Physical Activity Promotion Behaviors: A Systematic Review. *International Journal of Behavioral Medicine*, *22*(1), 32–50. https://doi.org/10.1007/s12529-014-9398-2

Letts, L., Martin Ginis, K. A., Faulkner, G., Colquhoun, H., Levac, D., & Gorczynski, P. (2011). Preferred Methods and Messengers for Delivering Physical Activity Information to People With Spinal Cord Injury: A Focus Group Study. *Rehabilitation Psychology*, *56*(2), 128–137. https://doi.org/10.1037/a0023624

Levins, S. M., Redenbach, D. M., & Dyck, I. (2004). Individual and Societal Influences on Participation in Physical Activity Following Spinal Cord Injury: A Qualitative Study. *Physical Therapy*, *84*(6), 496–509. https://doi.org/10.1093/PTJ/84.6.496

Ljungberg, I., Kroll, T., Libin, A., & Gordon, S. (2011). Using peer mentoring for people with spinal cord injury to enhance self-efficacy beliefs and prevent medical complications. *Journal of Clinical Nursing*, *20*(3–4), 351–358. https://doi.org/10.1111/J.1365-2702.2010.03432.X

Lucci, V. E. M., McKay, R. C., McBride, C. B., McGrath, M. S., Willms, R., Gainforth, H. L., & Claydon, V. E. (2022). Barriers and facilitators to changing bowel care practices after spinal cord injury: a Theoretical Domains Framework approach. *Spinal Cord*. https://doi.org/10.1038/S41393-021-00743-0

Ma, J. K., Cheifetz, O., Todd, K. R., Chebaro, C., Phang, S. H., Shaw, R. B., Whaley, K. J., & Martin Ginis, K. A. (2020). Co-development of a physiotherapist-delivered physical activity intervention for adults with spinal cord injury. *Spinal Cord*, *58*(7), 778–786. https://doi.org/10.1038/s41393-020-0422-x

Ma, J. K., Walden, K., McBride, C. B., Le Cornu Levett, C., Colistro, R., Plashkes, T., Thorson, T., Shu, H., & Martin Ginis, K. A. (2021). Implementation of the spinal cord injury exercise guidelines in the hospital and community settings: Protocol for a type II hybrid trial. *Spinal Cord*, *60*(1), 53–57. https://doi.org/10.1038/s41393-021-00685-7

Ma, J. K., West, C. R., & Martin Ginis, K. A. (2019). The Effects of a Patient and Provider Co-Developed, Behavioral Physical Activity Intervention on Physical Activity, Psychosocial Predictors, and Fitness in Individuals with Spinal Cord Injury: A Randomized Controlled Trial. *Sports Medicine*, *49*(7), 1117–1131. https://doi.org/10.1007/s40279-019-01118-5

Miller, W. R., & Rollnick, S. (2013). Evoking the person's own motivation. In *Motivational Interviewing: Helping People Change*. Guilford Press.

Moncion, K., Biasin, L., Jagroop, D., Bayley, M., Danells, C., Mansfield, A., Salbach, N. M., Inness, E., & Tang, A. (2020). Barriers and Facilitators to Aerobic Exercise Implementation in Stroke Rehabilitation: A Scoping Review. *Journal of Neurologic Physical Therapy*, *44*(3), 179–187. https://doi.org/10.1097/NPT.0000000000000318

Olsen, K., Martin Ginis, K. A., Lawrason, S., McBride, C. B., Walden, K., Le Cornu Levett, C., Thorson, T., & Ma, J. K. (2023). Effectiveness of the ProACTIVE SCI Intervention on physical activity and psychosocial outcomes during the transition from rehabilitation to community among adults with spinal cord injuries.

Salci, L. E., Perrier, M. J., Ginis, S., & Ginis, K. M. (2016). Active Living Leaders Training Program for adults with spinal cord injury: a pilot study. *Spinal Cord*, *54*, 662–669. https://doi.org/10.1038/sc.2015.168

Shirley, D., Van Der Ploeg, H. P., & Bauman, A. E. (2010). Physical Activity Promotion in the Physical Therapy Setting: Perspectives From Practitioners and Students. *Physical Therapy*, *90*(9), 1311–1322. https://doi.org/10.2522/PTJ.20090383

Sinclair, L. B., Lingard, L. A., & Mohabeer, R. N. (2009). What's So Great About Rehabilitation Teams? An Ethnographic Study of Interprofessional Collaboration in a Rehabilitation Unit. *Archives of Physical Medicine and Rehabilitation*, *90*(7), 1196–1201. https://doi.org/10.1016/J.APMR.2009.01.021

Stander, J., Grimmer, K., & Brink, Y. (2018). Training programmes to improve evidence uptake and utilisation by physiotherapists: A systematic scoping review. *BMC Medical Education*, *18*(1), 1–12. https://doi.org/10.1186/S12909-018-1121-6/TABLES/7

Tomasone, J. R., Flood, S. M., Ma, J. K., Scime, N. V., Burke, S. M., Sleeth, L., & Marrocco, S. (2018). Physical activity self-management interventions for adults with spinal cord injury: Part 1–A systematic review of the use and effectiveness of behavior change techniques. *Psychology of Sport and Exercise*, *37*, 274–285. https://doi.org/10.1016/J.PSYCHSPORT.2018.01.012

Tong, A., Sainsbury, P., & Craig, J. (n.d.). *Hospital at Westmead, NSW 2145, Australia, and 3 Population Health*. https://doi.org/10.1093/intqhc/mzm042

van den Berg-Emons, R. J., Bussmann, J. B., Haisma, J. A., Sluis, T. A., van der Woude, L. H., Bergen, M. P., & Stam, H. J. (2008). A Prospective Study on Physical Activity Levels After Spinal Cord Injury During Inpatient Rehabilitation and the Year After Discharge. *Archives of Physical Medicine and Rehabilitation*, *89*(11), 2094–2101. https://doi.org/10.1016/j.apmr.2008.04.024

Vissers, M., van den Berg-Emons, R., Sluis, T., Bergen, M., Stam, H., & Bussmann, H. (2008). Barriers to and facilitators of everyday physical activity in persons with a spinal cord injury after discharge form the rehabilitation centre. *J Rehabil Med*. https://doi.org/10.2340/16501977-0191

Supplementary File 1.

Semi structured Interview Guide

1. **PTs: To start, I want to get to know a little bit more about yourself. Could you tell me a little bit about your practice?**

Probes:

- Do you work in in-patient or out-patient care, or other?
- Has your role changed (e.g., were you re-deployed) since receiving the ProACTIVE training in November 2020?
- How did that impact your ability to conduct the physical activity counselling conversation?
- How long have you been practicing for?
- What's your experience in advising people to be physically active before the study?

2. **SCI BC: To start, I want to get to know a little bit more about yourself. Could you tell me a little bit about your role with SCI BC?**

Probes:

- What's your title and what does your work (outside of the study usually entail)?
- How long have you been working for SCI BC?
- What's your experience in advising people to be physically active before the study?

3. **What are your thoughts on your experience in promoting physical activity to your clients using the ProACTIVE intervention?**

Probes:

- What were the aspects you liked?
- Didn't like?

- What was missing or would have made your experience better?
- Do you perceive that your clients are seeing benefits from physical activity counselling (using the Proactive toolkit)? In other words, is it being used or understood? Why or why not?
- Do you believe the clients have an understanding of what the physical activity guidelines means for them personally?
- If you had the resources (for PTs: such as champion support, clinical time, etc.; for SCI BC: such as feedback, time allocated) to continue sustaining the intervention, what do you feel are the key components that should be kept?
- Considering typical operations (without any additional resources), what components of PA counselling should and could be kept?
- What are your thoughts on the timing of using the toolkit with your clients? Is there a best time to have the physical activity counselling conversation? (PTs: before inpt. d/c or during OP PT, SCI BC: How much time after discharge)?

Physiotherapist Specific Questions:

- How feasible has it been to refer patients to SCI BC? Should there be a more formal referral process to SCI BC? What should that look like?
- Can you give me a sense of your referral process to SCI BC prior to the study? Since the study, how has it changed?
- How has the content of your discharge home exercise program changed, if at all, to include exercises to improve strength and endurance fitness (i.e. exercises outside of those done for rehabilitative purposes and to meet the SCI exercise guidelines to improve fitness and cardiometabolic health)?

- Has the use of the toolkit changed your discharge planning and how?
- Has the toolkit changed the flow or changed anything you do in the discharge process?
- Apart from Training sessions, were there any impacts on your time beyond your usual practice by implementing the ProACTIVE intervention (having the physical activity conversation)?
- Would you like to receive feedback from patients on how the physical activity counselling conversation is going?

4. **What are some of the things that helped or didn't help you to promote physical activity to your patients (focus these probes on results from survey)?**

Probes (only select those that apply to TDF results):

- What were the key motivations for promoting physical activity to your clients?
- How were the initial training sessions on how to deliver the ProACTIVE SCI intervention? How were they helpful or not helpful?
- What are some of the benefits or negative consequences of promoting exercise to your clients?
- **Did your clients seem interested in discussing physical activity?**
- How might others influence whether you promote exercises or not? E.g., colleagues, employer, regulatory body?
- Would incentives or other motivators have helped you deliver the program? What would those incentives be?
- What were some strategies that you used to ensure you delivered the ProACTIVE SCI intervention to the best of your ability?
- Was there any additional equipment that would have been helpful?

- Did physical activity counselling fit naturally within the scope of your role, or do you feel the service would be better provided by a role that was more dedicated to counselling
- Were there ever any issues in remembering how to deliver the program and if so, what were they?
- Do you foresee any issues with the uptake of this intervention in other rehab centers?

5. **Anything else you'd like to share with me?**

- Impact to your practice?
- Impact to your patients?
- Reminder: We will be feeding data back to the research team to further develop the physical activity conversation and support sustainability

Peer Coach Compensation Questions

- **Have the peer counselling session fees covered all your costs? Yes/No**
- Aside from your time, have there been any additional costs or fees that have been associated with your physical activity counselling? (If yes what are they?)
    - If No, please indicate what has not been covered *(Please select all that apply)*
- On average how much time are you spending on:
    1. Session preparation time
    2. In-session time
    3. Session follow up time

Other costs/time related to being a peer coach (please specify) _____

Supplementary File 2.

Coding Manual (Cane et al., 2012)

TDF Domain	Definition	Additional Notes
Knowledge	"An awareness of the existence of something"	
Skills	"An ability or proficiency acquired through practice"	Practicing PA counselling skills
Social/Professional Role and Identity	"A coherent set of behaviors and displayed personal qualities of an individual in a social or work setting"	Discussing job responsibilities as physiotherapist or SCI BC peer coach
Beliefs about capabilities	"Acceptance of the truth, reality, or validity about an ability, talent, or facility that a person can put to constructive us"	Confidence levels in themselves
Optimism	"The confidence that things will happen for the best or that desired goals will be attained"	
Beliefs about consequences	"Acceptance of the truth, reality, or validity about outcomes of a behavior in a given situation"	
Reinforcement	"Increasing the probability of a response by arranging a dependent relationship, or contingency, between the response and a given stimulus"	
Intentions	"A conscious decision to perform a behavior or a resolve to act in a certain way"	

Goals	"Mental representations of outcomes or end states that an individual wants to achieve"	
Memory, attention, and decision processes	"The ability to retain information, focus selectively on aspects of the environment and choose between two or more alternatives"	Discussing remembering to deliver PA counselling
Environmental context and resources	"Any circumstance of a person's situation or environment that discourages or encourages the development of skills and abilities, independence, social competence, and adaptive behavior"	PA form (e.g., structure, format, usability, etc.) Accessing external resources PA counselling training
Social Influences	"Those interpersonal processes that can cause individuals to change their thoughts, feelings, or behaviors"	Involving other practitioners Discussing patient barriers, patient interests, etc. Discussing feedback among interventionists to improve PA counselling delivery
Emotion	"A complex reaction pattern, involving experiential, behavioral, and physiological elements, by which the individual attempts to deal with a personally significant matter or event"	
Behavioural Regulation	"Anything aimed at managing or changing objectively observed or measured actions"	Discussing any strategy to manage behaviour that impacts PA counselling