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Returning to work after persistent concussion: A qualitative exploration of workers' experiences across work disability systems

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Abstract

Persistent concussion symptoms disrupt return to work (RTW), yet limited evidence describes how individuals experience RTW across personal, healthcare, workplace and compensation domains. Guided by the work disability prevention model (WDPM), which conceptualizes work disability as arising from interactions among these personal and system level factors, this national phenomenological qualitative study explored RTW among individuals with persistent concussion symptoms. Fourteen participants with concussion symptoms lasting four weeks or longer, completed semi-structured interviews, which were analyzed using a hybrid deductive-inductive thematic approach with findings organized deductively across WDPM domains and inductive subtheme generation. Within the personal domain, participants described challenges maintaining participation beyond work, inequities in material resources, and the importance of peer support. Healthcare experiences highlighted the crucial influence of early primary and emergency care interactions, functionally relevant treatment and gaps in functional capacity evaluations. Within the workplace, psychological safety and flexible accommodations shaped RTW. Compensation system experiences were influenced by administrative burden, fixed recovery expectations and relational elements. Across systems, fragmented communication and the invisible nature of persistent concussion complicated disability recognition. Findings support conceptualization of RTW as a longitudinal multidimensional process, with need for holistic assessment of functional capacity, flexible RTW plans, and improved coordination across systems.

Introduction

Concussions are a type of traumatic brain injury caused by biomechanical forces that transiently disrupt brain function producing physical, cognitive, psychological and sleep-related symptoms. An estimated 5%-58% experience persistent symptoms[1–5].which can affect the ability to return to work (RTW) and sustain employment[6–8]. Concussion diagnosis, prognosis and early management has been extensively studied in sports and pediatric populations. Return to sport (RTS) and return to learn (RTL) is informed by rigorously developed consensus statements, systematic reviews, and national strategies [9–11]. However, approaches to RTW remain comparatively underdeveloped, as RTS and RTL recommendations may not readily translate to diverse occupational settings. Historically, concussion RTW literature has focused on acute phases of recovery[12,13], potentially overlooking the fluctuating and variable nature of persistent cases. Research has also largely emphasized prognostic factors associated with poor RTW outcomes, including education, gender and compensation-seeking[14], informing risk factors and early mitigation strategies, however not adequately informing approaches to RTW. Existing qualitative accounts highlight disruptions to identity and emotional well-being, sense of loneliness, and feelings of pressure and guilt towards families [7,15]. These experiences align with work disability literature that emphasizes prolonged work absence is influenced by psychosocial and environmental factors beyond the original health condition[16–18]. Osmond et al. (2023) similarly identified management of persistent symptoms, the timing and approach to RTW, and impact of persistent symptoms on day-to-day life as key concussion research priorities[19].

The work disability prevention model (WDPM) formalizes this view by proposing that the RTW process is influenced by interactions between multiple stakeholders, including the personal, healthcare, workplace and compensation systems[20]. A comprehensive examination of barriers and facilitators, and what occurs at the interface of these systems, has not been completed with persistent concussion populations. This study therefore addresses the question: 1) How do individuals with persistent concussion symptoms experience the process of returning to work within and across the personal, healthcare, workplace and compensation systems as situated within the broader socio-environmental context?

Results

Participant Characteristics

Of 29 potential participants, 15 completed the interviews, and the remaining individuals did not respond to the invitation. One participant was subsequently excluded from analysis as the persistent concussion eligibility criterion was not met, leaving a final sample of 14 participants. Anticipated sample size was informed by previous qualitative studies, which suggested thematic saturation between 5–20 interviews [21–24]. Participant characteristics are presented in Table 1.

Table 1
Participant Characteristics

Characteristic	**Sample n = 13**
Age, years, mean ± SD (range)	45.0 ± 9.9 (25–60)
Gender, n (%)	
Female	8 (57.1)
Male	5 (35.7)
Gender variant	1 (7.1)
Province, n (%)	
Ontario	11 (78.6)
British Columbia	2 (14.3)
Newfoundland and Labrador	1 (7.1)
Occupational sector, n (%)	
Education	6 (42.9)
Retail/customer service/sales	4 (28.6)
Film and media	1 (7.1)
Municipal	1 (7.1)
Healthcare	1 (7.1)
Technology	1 (7.1)
Employment status at interview, n (%)	
Returned to work in any capacity	13 (92.9)
Own occupation, modified hours and duties	7 (50.0)
Own occupation, pre-injury hours and duties	2 (14.3)
Alternate occupation, modified hours and duties	2 (14.3)
Other	2 (14.3)
Had not returned to work	1 (7.1)
Time since injury, months, median (range)	18.6 (2.2–77.1)
Cause of injury, n (%)	
Work-related	6 (46.2)
Age and cause of injury data missing for one participant.	

Characteristic	Sample n = 13
Motor vehicle accident	3 (23.1)
Sports	2 (15.4)
Personal	1 (7.7)
Other	1 (7.7)
Compensation involvement, n (%)	
Yes	7 (50.0)
No	6 (42.9)
Other	1 (7.1)
Type of claim, n	
Workers' compensation	4
Long-term disability	2
Long-term disability and motor vehicle accident	1
Age and cause of injury data missing for one participant.	

Overview of Findings

The overarching themes were organized into five themes, including: Personal, Healthcare, Workplace and Compensation, and Multi-System theme [20]. Findings are presented in Table 2.

Table 2
Themes and Subthemes

Theme	Subtheme
Personal System	A. Maintaining participation beyond work
Personal System	B. Material determinants of recovery
Personal System	C. Self-directed and social supports
Healthcare System	A. Early healthcare encounters shaped the recovery pathway
Healthcare System	B. Treatment valued based on relevance to function
Healthcare System	C. RTW assessments did not always reflect individual capacity
Workplace System	A. Psychological safety
Workplace System	B. Flexibility and fit of accommodations
Workplace System	C. Organizational-level considerations
Compensation System	A. Administrative, policy, and procedural challenges
Compensation System	B. Expectations and interpretations of recovery
Compensation System	C. Relational experiences with compensation systems
Multi-System	A. Coordination across systems
Multi-System	B. Invisible and heterogenous symptoms

Theme 1: Personal System

The personal system captured individual capacity, values, meaning, social relationships, and material factors that shaped RTW. Three subthemes were identified: (a) Maintaining participation beyond work, (b) Material determinants of recovery, (c) Self-directed and social supports.

A. Maintaining participation beyond work

Participants' accounts showed the importance of maintaining participation in daily activities, socialization, hobbies, and family life. Many participants described RTW as straining, with work consuming so much of their limited capacity that only basic survival tasks remained manageable outside work. Consequences extended to family life, including reduced engagement in shared activities such as family dinners. Although RTW marks community participation, increased work participation did not necessarily translate into greater overall participation. For some, sustaining employment came at the expense of other domains of participation.

“I was just floundering. I was working limited hours, 2 or 3 hours a day. I couldn’t function at night, I couldn’t eat dinner with my family. Because noise, the clinking of the glasses or cutlery were way too much. ” (R29)

“Basically, my day is working, resting, eating, sleeping. So when I was going back to work in September, I knew it would be a rough adjustment. Basically, I would go to work, come home, and go to bed 4:30 – 5 and stay in bed until bedtime and fall asleep.” (R23)

Other participants emphasized the importance of preserving hobbies and interests, noting this as an important part of the recovery process. They also discussed the value of gradually participating in meaningful but challenging activities rather than avoiding them because they feared symptom provocation.

“And I did definitely keep swimming which is really interesting.... I read Sarah Polley’s run towards the danger. Because I believe in that, I believe in the exposure. I would go swimming in the pool and I would do lengths...It felt so good and cool and good and so I sort of swam through that” (R16)

B. Material determinants of recovery

Participants described availability of material resources shaped their RTW journey. For example, access to legal counsel, compensation or insurer involvement and financial resources such as savings, household income, and access to credit. Participants did not navigate RTW under equivalent material conditions, which contributed to variations in RTW motivation, timing, urgency and the supports available. One participant described how access to credit gave them the financial flexibility to pursue treatment earlier rather than waiting for insurer approval.

“The benefit is not a great amount that they give you, I was already living below the poverty line, I’m putting everything on my credit card cause I’m like I need to get better. I don’t know how long this will take and I don’t want to wait for them” (R07)

Other participants described financial obligations as contributing to the pressure to resume work.

“The internal pressure of hearing like oh man, how am I going to make my mortgage payments, feed my kids.” (R13)

Other participants recognized that financial support within the household gave them greater flexibility in timing of their RTW decisions, acting as a facilitator.

“Financial privilege. Just having a spouse that has a strong income.” (R17)

Participants discussed important positive functions of compensation involvement, such as availability of structured supports including income replacement and treatment.

“Like I have good insurance. I have good insurance through work. Because I was in a motor vehicle accident I get that insurance. Like the lady that got knocked out in her backyard by her dog, she doesn’t have anything. Theres no insurance for that. And her accident happened around the same time as me and she’s just seeing a neurologist and I’m thinking holy. I’m miles ahead of you in my rehab and what I have access to.” (R13)

C. Self-directed and social supports

Participants drew on formal and informal support from family, friends, peers, and online communities, which played an important role in managing everyday demands and navigating recovery. Family and friends helped manage practical daily demands, including grocery shopping, cleaning, cooking, transportation, and other household responsibilities, allowing capacity to focus on RTW. Participants also highlighted the benefits of explicitly communicating their changing needs and limitations to their friends and family. Although initiating these conversations were challenging, openly discussing limitations helped others understand and respond to needs.

“It has been a learning process of like how do I be vulnerable let people know what’s changed for me... Just in the last year I had sent out a message to the family group chats, of like hey, here’s what’s happened to me and what that means for how I engage in the family. Things like, it would be really helpful if someone wants to give me a ride.” (R17)

A few also described benefits of a support person to help them navigate the cognitive tasks involved in the RTW process, such as RTW meetings, specialist appointments, and phone calls (e.g., with case managers). They discussed limitations with processing information and decision making which made stakeholder interactions difficult to navigate alone.

“And all of the big meetings involving WSIB, human resources, and all that. My brain gets too much anxiety, and I just need help understanding. I need someone on my side, so I had someone come with me to all of my meetings” (R02)

Lastly, many participants discussed the value of peer support throughout their recovery. Connections with others who had experienced concussion occurred through a variety of formal and informal avenues, including brain injury support groups through hospitals or clinics, online communities (e.g., social media), personal relationships, and informal interactions such as in waiting rooms. These interactions validated participants' experiences, provided opportunities to exchange RTW strategies and resources, and fostered a sense of connection.

“ Joining social media platforms with people that have same condition as me. Do you know Reddit? I found a subreddit. I could share my views there and we could interact with people there. I think the connection for me helped also” (R21)

Theme 2: Healthcare System

The healthcare theme encompassed experiences across the continuum of care with the following themes identified: (a) early healthcare encounters shaped the recovery pathway; (b) treatment was valued based on relevance to function; (c) RTW assessments did not always reflect individual capacity.

A. Early healthcare encounters shaped the recovery pathway

Participant transcripts revealed that their encounters with first-contact healthcare providers, including primary care providers, and emergency department clinicians, impacted the trajectory of their recovery. They noted that when multiple injuries were sustained, physical injuries at times took clinical precedence, resulting in concussion-related symptoms receiving less immediate attention. Participants also identified the benefits of early education that was nuanced, detailed and validating. Participants valued education that encouraged a gradual, safe reintroduction of activities, including RTW by approaching, but not exceeding, symptom thresholds. Generic or outdated recommendations, such as prolonged rest, were unhelpful.

“You get this generic package for some it might totally apply to them, and for me, it might not have applied to me whatsoever but it’s protocol that they have these leaflets, booklets, that every patient that’s sustained a concussion gets whether or not it’s from 1972 and in black and white and totally unrelated to what I had” (R05)

B. Treatment valued based on relevance to function

The right treatment to address the right limitation was discussed, recognizing the heterogeneous and multifaceted presentation of persistent concussion. Interdisciplinary care was generally valued; however, it was also indicated that more treatment was not always better, and service availability alone did not constitute meaningful support. Benefit from function-focused treatment that related to daily life including work-related tasks was described.

“The reason you are feeling nauseous is because you are doing this motion and you need to put your head up faster and look at a still object. It was the functional things that I really appreciated.” (R01)

“And there was another OT that I worked with that I actually really appreciated. They went through so much helpful information there for anyone if they’re injured. How to manage your energy, capacity and break tasks down and recognize when you need rest.” (R17)

C. RTW assessments did not always reflect individual capacity

Participants acknowledged that RTW functional capacity evaluations captured necessary information regarding their abilities; however, they also identified gaps. They described assessments often relied on single-point performance measurements that did not reflect participants’ capacity to sustain these abilities over time or across environments. One participant illustrated this distinction:

“Cause I can still do a lot of things, I can do a squat, I can lift 200 lbs, I can walk for an hour, but when I do them it brings on pain, it brings on symptoms and those boxes don’t say that. Hey can you do a squat, well yeah, I can do a squat, but I can’t do them all day… It (symptoms) build over hours, days weeks. A busy week is probably going to mean a sore week next week.” (R13)

Participants described frustration with normative testing benchmarks, emphasizing that scores within expected ranges did not reflect a return to pre-injury functioning.

"I feel a lot slower and again they said, you’re within your numbers, and I’m like this is not where I was at. My brain is not at the level where my level was before I was injured. I don’t care what your papers say." (R02)

Participants also discussed the importance of capturing retained abilities and skills beyond limitations.

" So I found that like in a large system if you have someone who sees the value of what you can do, instead of seeing you for what you can’t do, there can be success." (R17)

Theme 3: Workplace System

The workplace system theme captured interpersonal relationships, accommodations, and organizational-level factors. Three subthemes were identified: (a) psychological safety, (b) flexibility and accommodations and (c) organizational-level considerations.

A. Psychological Safety

Participants' accounts highlight the need for psychological safety in the workplace, described as their perceived comfort in disclosing their needs and receiving support. Many described the positive role of supportive work environments, supervisors and colleagues in their recovery. For example, being able to ask for help, a flexible and understanding employer attitude and encouragement for recovery. Some participants reported that small, informal and responsive actions facilitated their RTW.

“And then after a while they found an office with a desk that was free. There was another person in the office, but they were very lovely and kind of worked their days around the days that I was there.” (R29)

Communication of concussion-related needs did not always feel psychologically safe, with some participants discussing the perceived risks associated with disclosure of their condition. One participant described concerns that the risks could extend beyond current workplace relationships to jeopardize future employment opportunities.

“But at the same time, I don't like saying how bad it is sometimes because it might affect me for future work. Like I want them to know yes, I have a concussion. But every time I tell someone and my family, friends, how bad it really is, they get worried. So I don't want an employer to think negatively.” (R03)

B. Flexibility and fit of accommodations

Participants described a wide range of formal and self-implemented accommodations and strategies, many of which aligned with approaches described in existing literature. These included modified duties, environments and equipment such as reduced lighting, remote work, reduced public interaction, avoiding night shifts when sleep was affected and noise-filtering earplugs. Participants also benefited from task scaffolding (e.g., observing a task, completing it with supervision, and progressing to independent performance), shadowing, and volunteer work as opportunities to gradually acclimate to the environment. Some participants described failed or interrupted RTW attempts in which they resumed work but could not sustain participation, often when plans were too rigid, highlighting the need for flexibility across participants' accounts. It was also reported that prescribed accommodations could not always be practically implemented in the day-to-day realities of many jobs, particularly when actual job demands differed from those "on paper."

" I was in the program and for me the biggest thing is they never understood my job and how demanding it is… I was trying to explain, my job yeah is 40 hours on paper but its 50 or more. And they were like no, that can't be right." (R29)

C. Organizational level considerations

Participants perceived those organizational stakeholders, including human resources, disability management, health and safety personnel, and senior leadership, lacked familiarity with day-to-day job demands, creating a disconnect between decisionmakers and workers' realities.

"And they're not looking at what work I do, like the people making the decisions in this case don't know what I do for work. They don't know my impact." (R17)

Participants described organizational RTW processes as rigid and insufficiently responsive to individual needs. One participant highlighted how their manager advocated for an individualized approach that supported recovery but deviated from the organization's prescribed process, which discouraged such flexibility.

"But the normal process for return to work where I work is, you start with 4 hours and then you increase to 4 hours full duties then you increase to 6 hours but its 6 hours full duties. So its none of this, get exposed to the environment, do increase your time and exposure without going to full duties. Like that is not something that…it is not something that the organization really looks. They frowned upon it quite honestly. And they restrict return to works like that" (R17)

Theme 4: Compensation System

The majority of participants (n = 11) had concussions that were associated with a compensation body, which included workers' compensation boards, motor vehicle insurance, and short- and long-term disability benefits with three subthemes emerging: (a) administrative, policy and procedural challenges (b) expectations and interpretations of recovery (c) relational experiences with compensation systems.

A. Administrative, policy and procedural challenges

Many participants discussed challenges in managing the administrative, policy, and procedural requirements associated with workers' compensation, motor vehicle insurance, and disability benefit claims. Participants described difficulty completing documentation, understanding processes (e.g., obtaining approval for treatment), navigating resources such as the website, and frequent changes in compensation representatives. They noted this was particularly overwhelming due to cognitive limitations with one participant describing insurers as "beast of a system" (R17).

Multiple participants described challenges expanding existing claims to include symptoms or injuries not documented initially, noting that cognitive and memory difficulties, delayed symptom onset, or musculoskeletal symptoms overshadowing concussion symptoms could affect initial reporting.

"When you get injured you don't know like, that if you don't include all of this information in your first explanation that they're going to say no you didn't include that in the beginning it's not actually happening. But you have a brain injury, you can't remember all of the things…When I say like I'm experiencing this, they're saying like no it's not in your claim. It's not a compensable thing." (R17)

Some participants noted delays in communication, treatment and other supports.

"I didn't get into like at least rehab the first time until October. I didn't talk to my case manager until October. I got injured in July. So that made me very angry that I wasn't even getting the help." (R03)

B. Expectations and interpretations of recovery

Participants described injury-related symptoms being attributed to pre-existing conditions, emphasizing the importance of considering pre-injury functioning, particularly the ability to sustain work, rather than diagnosis alone.

"They'd known that I had headaches from the beginning, but to say it was just pre-existing when you're not really looking at...but what did the pre-existing look like?" (R01).

Participants described reduced understanding and validation of persistent symptoms beyond expected concussion recovery timelines (four weeks to three months), alongside increased pressure to RTW. Some reported premature RTW attempts that failed due to insufficient readiness.

"After you pass that three month mark, it becomes, I felt, really combative. So it was like, why aren't you better yet? Explain why you still need care. Why do you still need to go to this practitioner and this practitioner." (R12)

C. Relational experiences with compensation systems

Beyond administrative and procedural processes, participants emphasized the human and relational aspects, seeking recognition of their broader circumstances, including family, livelihood, and security, rather than being treated as a file.

“And their next move was, we’re not going to make sure you’re employed as a purchasing agent somewhere, we’re just going to pay you as a purchasing agent...I was like okay, so you want me to do this and I miss out on my next years of pension contributions with my employer ... And he said what do you want me to do? And I’m like you’re making decisions, yeah, it’s a name and a file but those decisions have a significant impact on my future and security, my family’s future and security.” (R29)

Interestingly, one participant with two separate insurers contrasted their roles in recovery, highlighting how each insurer’s interpersonal style shaped their experience.

“[Insurer 1 Name] I felt like, hey want to try and like they want me back at work, they don’t want to pay disability for my whole life, but they felt like they treated me like a human being. Hey we want [name] to recover, and feel better, and get back to work and get back to normal life, how can we help you do that. Whereas [Insurer 2 Name] felt like no we’re not handing you anything, you’re going to have to fight for all of it”(R13)

Theme 5: Multi System

The multisystem theme was intended to capture data that was applicable to more than one of the four WDMP domains. Two consistent cross-cutting patterns emerged across participant transcripts which formed two subthemes: (a) coordination across systems and (b) invisible and heterogeneous symptoms.

A. Coordination across systems

Participants described gaps in communication and coordination between person, healthcare, workplace, and compensation systems. Some participants felt responsible for carrying information between systems; for example, one participant described having to provide their supervisor updates directly as they were not receiving them:

It felt like they (supervisor) were pretty in the dark about anything unless I told them. That was, that was one complaint my direct supervisor had. I thought he would be getting updates from my disability HR person, so once I knew that I started checking in with him personally. So I don’t know it’s a bit weird.

Others described having to assemble their own healthcare teams and independently request extensions for treatment rather than having healthcare providers and compensation representatives coordinate these processes. Participants also described disconnects between healthcare and workplace systems, noting that healthcare providers did not always understand their job duties or have access to sufficient information about their work demands.

B. Invisible and heterogenous symptoms

Participants described persistent concussion as difficult to navigate, as symptoms were not readily observable or objectively measurable. One participant distinguished concussion from other invisible

disabilities that may be demonstrated through laboratory findings and other diagnostic tests, describing that the absence of a clear marker made it difficult to establish credibility.

“Think that because my other disabilities are also invisible, but my blood labs are all wonky, I can go in and be like, here is the proof. So, I am used to being believed...Anyone who knows me, knows how resilient I am, and how much I like my job, so to be put in this position where I really felt questioned, did a number on me.” (R01)

Concussions were also contrasted with physical injuries, which participants perceived as more readily recognizable and understood.

“It's not like a broken arm or a broken leg where someone goes oh yeah, you got a broken arm and broken leg and it's going to hurt for you to walk and you’re going to have to rebuild your strength. People seem to understand that. They don’t understand this as well.” (R20)

Finally, participants described a broader lack of knowledge about persistent symptoms and the heterogeneity of presentation. Participants described social judgement when using symptom-management strategies in public.

“And just feeling a little judged even by the other people, that are like what is she doing, why is she in the hall, why is she wearing sunglasses and a hat, earphones, earplugs. ” (R01)

Discussion

Our study explored RTW experiences among persistent concussion populations across personal, healthcare, workplace and compensation systems. Four implications were particularly salient: conceptualizing RTW as a longitudinal, multidimensional process; emphasizing sustainable capacity; flexible RTW plans; and reducing the burden on individuals navigating fragmented systems.

First, participants’ accounts challenge RTW as a binary, endpoint indicator of recovery, as this approach may overlook work sustainability, partial work participation, and other intermediate states. Some participants had resumed work while continuing to experience substantial limitations in other domains of life, whereas others described one or more unsuccessful RTW attempts. These findings support conceptualizing work resumption as a longitudinal process that is expected to include progress, setbacks, and fluctuating participation over time, particularly given the chronic and variable nature of persistent concussion. This aligns with Conradsen et al. (2024), who highlighted the need for long-term RTW supports for individuals with persistent concussion.

Planned review points throughout and after work resumption may help ensure that RTW is sustained. Relatedly, the study indicates that existing functional capacity evaluations (FCE) used in occupational rehabilitation may not capture the full picture for chronic, fluctuating or non-visible conditions. Participants distinguished between the ability to perform a task during a single-point assessment and the ability to sustain and repeat that performance in everyday work demands over time. This raises

questions about the ecological validity of conventional assessment approaches for persistent conditions. In a systematic review of evidence on FCE methods by de Baets et al (2018), variable validity across FCE methods was found with authors cautioning that psychometric properties should be evaluated within specific clinical populations rather than generalized from other groups[20]. Persistent concussion RTW assessment may therefore benefit from integrating multiple data sources, such as task repetition, environmental conditions, cumulative effects, symptom response, and recovery cost following testing, alongside contextual indicators. These approaches require future empirical investigation.

Participant accounts identified several accommodations that supported RTW [25], while highlighting that the quality of accommodation lay not simply in its provision, but in its alignment with individual needs and workplace demands. Participants also described discrepancies between documented job demands and the demands they encountered in reality, with perceptions that healthcare providers, compensation, and employers did not always fully understand the realities of their role. Conradsen et al. (2026) identified similar concerns, with managers reporting a lack of understanding of how to modify hours and tasks for persistent concussion populations[25]. These findings emphasize the importance of grounding accommodation planning in actual job demands and strengthening workplace concussion knowledge. Finally, participants described the demands of navigating disability systems while managing persistent concussion symptoms Simplifying administrative processes, providing plain-language information, improving stakeholder communication, and involving trusted support persons may help reduce this burden.

A key strength of this study was its national scope and use of the WDMP to examine RTW across interconnected systems. Findings should be interpreted considering the sample composition, including the representation of participants across different compensation contexts, which may influence the transferability of findings across settings. Overall, these findings highlight the importance of assessing sustainable capacity, monitoring RTW longitudinally, providing flexible accommodations, reducing system navigation demands, and strengthening cross-system coordination. Future qualitative and quantitative research should examine longitudinal RTW trajectories, factors associated with sustainable work participation, how functional capacity assessments can capture fluctuating symptoms and real-world job demands, and approaches to improved cross-system coordination.

Materials and Methods

Study Design

This study represented the qualitative strand of a larger mixed-methods project examining the RTW experiences of individuals with persistent concussion. A phenomenological orientation informed the qualitative approach, guiding the exploration of participants lived experience returning to work with persistent concussion symptoms. Semi-structured interviews explored participants' experiences, perceived barriers and facilitators, and their interactions with symptoms related to work reintegration

and disability. The Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist was utilized to support comprehensive reporting [26].

Theoretical Framework

The study was grounded in the WDPM, also referred to as the Sherbrooke model. WDPM is a biopsychosocial framework that conceptualizes work disability as the interaction between multiple systems, including the workplace, compensation, healthcare, and personal domains. These elements are situated within the broader socio-environmental context including culture, policy, and legal frameworks. The WDPM was selected as it provides a framework for understanding RTW as shaped by individual and contextual factors for individuals with persistent concussion whose work participation may be influenced by fluctuating symptoms and the coordination of multiple stakeholders and system. The personal system encompasses individual level beliefs, characteristics, functioning health and circumstances. The healthcare system includes clinicians, interdisciplinary and multidisciplinary teams, and the broader setting. The workplace system encompasses job-specific characteristics, and the social, psychological and physical elements of the work environment. Finally, the compensation system refers to insurers, compensation boards, and jurisdictional, provincial and federal resources. The WDPM was used as an organizing framework for the qualitative analysis.

Sample

Participants were eligible if they: 1) were 18 years of age or older; (2) reported sustaining a concussion with symptoms persisting for four weeks or longer following the injury; (3) had experience with the RTW process, including considering RTW as a goal, participating in a graduated RTW plan, or completing a RTW and, (4) residing in Canada at the time of participation. Eligibility was assessed using study-specific screening questions adapted from the Ohio State University Traumatic Brain Injury Identification Method (OSU TBI-ID). The screening interview was used to identify self-reported concussion and traumatic brain injury history, confirm that participants' experiences were relevant to the study aims, and verify the presence of a concussion consistent with established OSU TBI-ID criteria[27].

The screening tool was not used to establish a clinical diagnosis of concussion or traumatic brain injury, nor were OSU TBI-ID summary scores calculated. Qualitative strand participants were recruited using a nested sampling approach, in that they were invited to participate after completing the quantitative strand. Participants for the quantitative strand were recruited using a convenience sampling strategy in collaboration with community organizations and clinical sites across Canada, including national rehabilitation clinics, the Ontario Brain Injury Association, and closed social media groups, using flyers and clinician referrals, and, where applicable, were subsequently contacted via email with an invitation to participate. The University of Toronto Research Ethics Board (REB) approved the study, and all research procedures were performed in accordance with relevant guidelines and regulations. Each participant provided informed written consent before participating in the study. Participants completed virtual interviews on a secure platform with a trained research staff member.

Data Collection

Participants completed confidential semi-structured interviews via secure Zoom video calls between August 2025 and May 2026. The interview guide explored injury-related details including mechanism and symptoms, and work-related information including role and employment sector. Interviews then explored RTW experiences, workplace responses and accommodations, healthcare experiences, compensation- or insurance-based interactions, family and peer supports, and factors perceived as facilitators or barriers to return to work. The interview guide was developed by MS as part of her doctoral research and reviewed with BNK. MS conducted the interviews, which lasted 30–60 minutes, and audio-recorded them with permission. MS had prior experience conducting semi-structured qualitative interviews within phenomenology and received qualitative interviewing training and mentorship from the BNK and senior research members. The interviewer had no prior relationship with participants. Before participation, participants were informed that MS was a PhD student conducting research in this area and an occupational therapist. Interviews were conducted individually, with no non-participants present. No repeat interviews were conducted, and field notes were not collected. MS created verbatim transcripts and de-identified them. Transcripts were not returned to participants for comment or correction.

Data Analysis

Transcripts were managed and analyzed using NVivo 15 for Windows[28]. A hybrid deductive-inductive thematic analysis approach was used following Braun and Clarke's approach[29]. The analysis used a theoretically informed coding approach while remaining grounded in participants' accounts. The WDPM provided an a priori organizing structure, with data organized deductively across themes of personal life, workplace, healthcare, and compensation. Subthemes were developed inductively from participants' accounts to capture the patterns of shared meaning within the broader central theme. We categorized experiences that could fall under more than one WDPM system as multi-system processes to capture cross-cutting experiences or interactions between systems. We developed an initial codebook, using WDPM as the organizing structure. A subset of three transcripts was coded inductively to develop subcodes within each WDPM domain based on participant experiences.

The final codebook, with a full list of definitions and include/exclude details, was subsequently applied to all 14 transcripts. MS coded all transcripts. Coding remained iterative, with codes developed, refined, condensed, or separated as conceptually appropriate, and earlier transcripts revisited. MS documented changes to the codebook or coding process in a separate section of the codebook to maintain a record of the analytic process. Candidate subthemes emerged from visual clustering of subcodes to identify conceptual relationships, patterns and shared meaning using affinity mapping in Excel and Miro, a digital whiteboard used to visually cluster codes. Candidate subthemes were reviewed against the transcript extracts (e.g., references in NVivo) and iteratively revised as appropriate. Participant member checking was not completed. Quotations are presented verbatim and identified using a code assigned by the research team to maintain confidentiality.

Reflexivity

The primary interviewer and analyst was a female PhD student and occupational therapist with clinical experience in concussion and work disability. This background provided relevant contextual knowledge but also created the potential for clinical knowledge to influence interpretation. To support reflexivity during coding, the primary analyst maintained an analytic-notes column to document emerging interpretations, questions, and instances where participant accounts differed from or conflicted with clinical knowledge or expectations. The analyst coded participant perspectives based on their reported experiences, even when they differed from the analyst's clinical understanding or the available evidence. Participants were informed of the study's purpose before participating. Because this was a nested sample, participants completed a survey before participating in the qualitative study. Rigour was supported through documentation of analytic decisions, reflexive consideration of the researcher's positionality, and grounding interpretation in participant accounts.

Declarations

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Author contributions

MS collaborated on conceptualization of the project, completed data collection, analyses and led the writing of the manuscript. BNK collaborated on conceptualization of the projectand, alongside co-investigators EN, NR, and AD oversaw all aspects of its design and execution. All authors read and approved the final manuscript.

Data availability statement

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Additional Information

The authors have no conflict of interest to declare, including financial, consultant, institutional, and other relationships that may lead to bias.

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