

Perceived changes of Mindfulness Based Cognitive Therapy, tailored for people with a spinal cord injury: a qualitative study

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Article

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Abstract

Study design: A qualitative study.

Objectives: Individuals with spinal cord injury (SCI) frequently experience substantial physical and psychological challenges. Mindfulness-based cognitive therapy (MBCT) has demonstrated beneficial effects across various medical and psychiatric populations. However, evidence in individuals with SCI remains limited. To our knowledge, this is the first qualitative study exploring perceived psychological and physical changes following participation in a tailored 8-session in-person MBCT group program.

Setting: Outpatient rehabilitation, Nijmegen, the Netherlands.

Methods: This study was conducted using in-depth semi-structured interviews with fifteen individuals with SCI, who followed the tailored MBCT program. Data were analysed using thematic analysis.

Results: The analysis of the qualitative data identified five key themes: Awareness, Insight, Recognition of automatic patterns, Change in behaviour, and Effects of changed behaviour comprising eleven subthemes. Participants reported increased acceptance of SCI-related consequences, greater emotional calm, and enhanced management of pain and fatigue. A unique theme, *Connection with affected body parts*, emerged, reflecting the specific relevance of mindfulness practices for individuals living with sensory and motor impairments.

Conclusions: A tailored MBCT training for people with SCI, appears to support psychological well-being and aspects of physical functioning. Awareness of emotions, thoughts and automatic patterns results in letting go of control and respecting one's own boundaries, leading to more acceptance of the SCI, enhancing inner calm and experiencing more control over bodily sensations, especially pain. These findings highlight the potential value of tailored mindfulness interventions in SCI rehabilitation. Larger, controlled studies are needed to confirm the durability and generalizability of these outcomes.

Introduction

Spinal cord injury (SCI) results from damage to the spinal cord, leading to partial or complete loss of motor, sensory and autonomic functions below the level of injury.¹ Physical consequences include impairment in strength, function and mobility, as well as altered sensation, spasticity, pain, fatigue, and changes in bladder, bowel and sexual functioning.¹ These consequences frequently contribute to reduced quality of life (QoL).²

Beyond these physical sequelae, a person with SCI (PSCI) often experiences psychological symptoms such as depressive mood, anxiety, and post-traumatic stress symptoms.³ These psychological difficulties can further diminish the QoL. Physical and psychological symptoms may interact bidirectionally, with each exacerbating the other.³ Thus, psychological treatments may play an important role in supporting individuals as they adapt to life after SCI.⁴ Qualitative research has shown that PSCI would like improved access to psychological interventions, including Mindfulness-Based Cognitive Therapy (MBCT).⁵

Mindfulness is defined as non-judgmental awareness of the present moment.⁶ The standard MBCT program integrates elements of cognitive-behavioural therapy with mindfulness practices into an 8-session group program. Initially developed to prevent depressive relapse, MBCT has since been adapted for a range of psychiatric and somatic conditions. Through mindfulness practices such as body scans, sitting meditations and mindful movements, participants are encouraged to adopt a new non-judgmental state of being and relating to their thoughts, emotions and bodily sensations.^{4,7}

The efficacy of mindfulness-based intervention has also been demonstrated in populations with neurological damage, such as multiple sclerosis and Parkinson's, showing reductions in depressive symptoms, improvements in mental and physical QoL, and decreases in fatigue.^{8–10} Reviews of mindfulness-based interventions for PSCI suggest potential reductions in depression and anxiety, although effects on pain remain inconsistent.^{4,12}

Additional concerns relate to accessibility and inclusivity. A qualitative study among PSCI identified barriers related to the language used during mindfulness practices.¹⁶ Recently, Finlay et al proposed ten recommendations for adapting mindfulness programs to individuals with neurological impairments to accommodate sensory loss.¹⁷ To our knowledge, there are no previous studies investigating the effect of an in-person group MBCT for people with SCI where these recommendations are used.

Therefore, this study aims to evaluate the self-perceived psychological and physical changes of in-person group MBCT intervention adapted for PSCI. Using a qualitative approach, semi-structured interviews were used to explore participants' in-depth experiences of MBCT-related change.

Methods

A qualitative design was used to explore the experienced changes by PSCI after participating in an in-person group MBCT.

Participants

People who were treated for SCI at the Sint Maartenskliniek in the Netherlands, were invited to take part in the in-person group MBCT. Eligibility criteria included: age ≥18 years, completion of inpatient rehabilitation, and sufficient proficiency in the Dutch language. Exclusion criteria were severe cognitive or psychiatric impairments that could interfere with group participation. All individuals who enrolled in the MBCT program were invited to participate in the study.

Procedure

Eligible participants were approached by their attending psychologist or rehabilitation physician and received written and verbal information about the study. Written informed consent was obtained from all participants. The study adhered to the Declaration of Helsinki (6th edition, 2008).

Three MBCT groups were conducted between March 2022 and May 2023. Three weeks after completion of the training semi-structured interviews were conducted, either at participants' homes or at the clinic according to preference of the participant. An experienced male (>20 years) healthcare psychologist (TvD), specialized in SCI care and present during the first MBCT group, conducted the interviews. Each session lasted approximately 45 minutes and followed a semi-structured topic guide while allowing exploration of emergent themes. When no new information emerged in the last two interviews, saturation was assumed.

Intervention

The MBCT program for PSCI, is an in-person group intervention held at the site of the Sint Maartenskliniek. Group sizes aimed to include six participants with SCI. It consisted of eight weekly sessions of 2.5 hours each and a four-hours silent day. The first MBCT group was led by a medical specialist and mindfulness teacher from the Radboudumc Expertise Centre for Mindfulness, who met the advanced criteria of good practice guidelines of the UK Network for Mindfulness-Based Teachers,¹⁸ together with two local teachers. The second and third group were led by two local teachers (one psychomotor therapist and one health care psychologist), one of whom also was a qualified mindfulness teacher.

The program was based on the original MBCT protocol for recurrent depression¹⁹ and included formal and informal meditation practices (Table 1).⁷ Based on the ten recommendation of Finlay et al, several exercises were adapted to address needs specific for PSCI.¹⁷ For example, the body scan began at the head rather than the feet. Movement-based practices were modified by offering alternative seated or imagined movements (e.g., mindful rolling instead of mindful walking). Language was adjusted to acknowledge altered physical capabilities and potential absence of sensation. Participants received a folder with supporting materials and were encouraged to complete daily homework practices.

Insert table 1

Semi-structured interview

Semi-structured interviews were conducted to gather detailed information about participants' experiences, opinions, and attitudes. They consisted of several open-ended questions on different topics, starting with: "What did you think of the mindfulness training in general?". Additionally, participants were queried about both the mental and physical changes that they experienced related to SCI during or after the training. The complete list of questions and prompts is included in Appendix A. The interviews were recorded using an audio recorder and transcribed verbatim.

Thematic analysis

The qualitative data were analysed using an inductive thematic approach. The coding and analysis consisted of three phases: open coding, axial coding, and selective coding.²⁷ The process started with the familiarization of the data, while transcribing the interviews. The open coding included reading two interviews by two independent researchers (TvD and EK) while generating initial codes. These codes were then compared and in case of a difference discussed until consensus was reached. Subsequently, axial coding was conducted, involving the consolidation of codes into broader themes. This process was performed independently by two researchers (TvD and EK), who then collaborated to merge these into a unified code list through consultation. Using this list, a single researcher continued coding all interviews, with new codes being generated whenever existing codes failed to adequately capture the data. The last step was selective coding, in which the core themes and subthemes were identified, linked together, or further developed and refined if they needed more clarification. This last step was done by two researchers (TvD and EK) and discussed with another author (AS). The software ATLAS.ti 9 was utilized in the analysis and categorization of the data.

Ethics

The Medical Ethics Committee of the University Medical Centre Radboud declared that this study (qualitative study with anonymized data) did not need formal ethical approval under Dutch law regulating medical research in human beings (reference number: 2021-13027). The study has been registered in the Dutch Trial Register (NL-OMON27940) on 12-8-2021. In accordance with local requirements, the Medical Ethics Committee of the Sint Maartenskliniek approved the conduct of this study in their centre.

Results

Study population:

A total of 17 participants agreed to take part in the MBCT program, and all agreed to participate in this study. The first group of 5 participants started the training in March 2022, the second group of 6 participants in September 2022, and the third group of 6 participants in February 2023. The characteristics of the participants are shown in table 2. One participant dropped out before the first meeting with the intention to participate in a later group and another dropped out early in the training because it did not meet his expectations, and left the study. Consequently, the data of 15 participants was analysed to explore the perceived changes after MBCT.

Insert table 2

Thematic analysis:

While most of the subthemes found in the qualitative analysis align with the general objectives of mindfulness therapy, specific perceived changes related to SCI were also noted. An overview of the (sub)themes is provided in table 3.

Insert table 3

Awareness

Two subthemes were assigned to the first category: 'Being aware of the here and now'; and 'Connection with affected body parts'.

Being aware of the here and now

Participants described living more consciously and being more observant of their surroundings as a result of the MBCT. This is also known as present moment awareness:

"Then we all actually noticed that we paid much better attention to our surroundings by not talking. Yes, because when your mouth isn't working, another sense works better." [P1]

Particularly relevant to SCI, another participant shared that by applying mindfulness, something ordinary as her wheelchair suddenly led to new insights, "it is always there". [P6]

Connection with affected body parts

Several participants reported an increased awareness of their SCI within the context of MBCT, which manifested as a renewed connection with the affected body parts. One participant effectively expressed that mindfulness enhanced her awareness of areas of numbness in her body:

"Because you really do become aware again ... I feel that I don't feel certain things. Yes, that sounds very contradictory. Technically, it is contradictory, but it's still what you feel when you have a 'dead' leg." [P15]

Insight

There were also two subthemes assigned to this category: 'Reflecting on your own feelings'; and 'Disengaging from thoughts'.

Reflecting on your own feelings

Many participants reported that they found themselves better able to pause and reflect on their feelings, leading to more thoughtful considerations of their choices. Furthermore, they expressed that by repeatedly dwelling on their emotions, it appears to become less intimidating, resulting in less internal struggle.

One participant highlighted how emotional states impact on physical functioning related to the SCI:

"There was another moment of realisation for me, I can control the tension in my body, which I need for functioning ... But, when I'm very emotional I can't walk ... Emotions affects my physical functioning." [P8]

Disengaging from thoughts

Several participants stated that during the training it became clear to them that they were very strict to themselves, had thoughts of what they must or must not do. After realising this part of themselves, they were better able to disengage their thoughts.

"Well, for example, I can wake up with a very full and busy mind, with thoughts ping-ponging everywhere. But now, I can bring my thoughts back and centre myself. I find peace, to start the day differently than I used to." [P7]

Recognition of automatic patterns

Recognizing patterns in your own actions

Many participants reported that they better recognized their own behavioural patterns as a result of the MBCT. Some participants began to recognize their tendency to go on with activities as they were used to do before their SCI. By recognizing this behaviour pattern, participants learned what their individual needs were in order to function well with a SCI; as one person found relaxation helpful, another needed body tension to operate effectively. Similarly, another participant made realizations about her own pattern:

[Talking about problems in the family]: "Okay, then it's just there, or I can put it aside, or I don't have to be busy with it all the time. My tendency is to keep picking it up and doing something with it every second, but I can't do that." [P7]

Overall, this theme contributes to a broader perspective for PSCI, enabling them to view their actions more as a choice rather than an automatic response as can be read in the next theme.

Change in behaviour

Two subthemes were assigned to the category 'Change in behaviour': 'Respecting your own boundaries'; and 'Letting go of control'.

Respecting your own boundaries

Participants experienced an improved respect for their own boundaries as a result of the MBCT. Once participants are aware of their feelings and have gained insight about their limitations, they are more likely to choose to prevent crossing these boundaries. This change is often experienced in the work field; participants started to work less, working shorter hours or fewer days, but also in self-management:

"And then I think you can better sense your limits, which means you are less likely to exceed them, and therefore, you encounter your spinal cord injury less often. But I also think it has to do with a bit of acceptance, wanting to feel it all." [P6]

Letting go of control.

Participants state that they wanted to be in control of their life often by striving to perform tasks as they did before their SCI. Recognizing this pattern helped them to diminish their fight to control all aspects in their lives.

"And once I could accept things as they were, through the breathing exercises and with peace, my physical condition improved a lot.... It wasn't that I had all sort of things in my head, but it was mainly the pressure I put on myself, thinking I could do everything again [as before the SCI], which just wasn't the case." [P16]

Another aspect that was mentioned by a lot of participants which had to do with 'Letting go of control' was talking to other PSCI about their process of dealing with their SCI. Some individuals said that this contact promoted realistic expectation about their possibilities.

Effects of changed behaviour

Four subthemes were assigned to this last category: 'Acceptance'; 'Finding peace'; 'Pain control'; and 'Reduced fatigue'.

Acceptance

Participants often described experiencing improved 'Acceptance', which involved an increase in the recognition and allowance of emotions, thoughts, and sensations related to the limitations associated with the SCI. They demonstrated an increased willingness to refrain from judgments toward these experiences. One participant expressed this as follows:

"Well, I think that even up to four years after the accident, I have still made progress... But at some point, you just know that this is what life is now, and there is much less sadness about what you miss. ... And I found this [MBCT] really a treat, a cherry on top of years of acceptance, showing that there was still room for improvement." [P1]

Participants recognize the relationship between 'Acceptance' and some changes they made in their daily life. According to many participants, 'Acceptance' leads to peace of mind.

Finding peace

Several participants stated that they found more peace after attending the MBCT. The achievement of inner calm is predominantly linked to the capacity of disengage from thoughts. Because of 'Finding peace' participants noted a reduction in frustration, an increase in patience, and a decrease in overstimulation. Additionally, participants indicate that 'Finding peace' facilitated improved emotional control when faced with setbacks or challenging personal circumstance.

"[Participant is talking about situations where she does not know how to react in the past] How do I bluff my way out of this? And that, that is something this [MBCT] has helped me with as well. Now you just have to approach it with a kind of inner calm and then deal with it." [P7]

Pain control

Some of the participants stated they related differently to their pain, which made them feel more in control over their pain. It was mentioned by different participants that it was new for them to go with their attention towards the pain. Their natural reaction was to go away from the pain with their attention.

"The pain just changes, often it simply becomes calmer. Well, it's also when you sit, you yourself also become calm, right? Your body also calms down. You relax, and that gives a different feeling. And the challenging thing with mindfulness is that you actually go looking for your pains, and in itself, that's a very peculiar experience." [P5]

By allowing pain to be present participants experienced the pain differently. Some experienced less specific pain, cramps or reduced spasms or the pain faded, which made it more bearable. For others, it is not pain that decreases, but rather that the pain no longer being predominantly present as it was before.

Reduced fatigue

Some participants stated that they were less tired after the training. Some of them mentioned that this is due to more relaxation. Essentially, it involves accepting fatigue and adjusting their energy utilization:

"But I have decided for myself that I will soon give in to the fatigue I am feeling right now and I will lie down under the heat lamp. My muscles can relax. I already know that I will fall asleep and then I will just have a nice evening because I will be less tired." [P6]

Other participants reported that MBCT helps them sleep better at night, resulting in 'Reduced fatigue'.

Summary

The eleven subthemes were often mentioned in conjunction with each other, as if, for the participants, these subthemes influenced each other. In Figure 1 these connections are depicted.

Insert Figure 1

Discussion

This qualitative study examined the perceived psychological and physical changes after following a tailored in-person group MBCT intervention for PSCI. Qualitative analysis identified five overarching themes encompassing eleven interrelated subthemes.

The primary relation between the subthemes mentioned by the participants was the increase in 'Acceptance' and 'Finding peace' by 'Disengaging from thoughts'. For participants, acceptance meant an increased recognition and allowing of their limitations. These were physical limitations, like pain and fatigue, but also thoughts and emotions associated with these limitations. By accepting all of those and permitting these experiences to be part of their lives, they were less judgmental about them. As a result, the participants generally experienced a calmer mental state, reduced levels of frustration, and enhanced patience, which collectively contributed to a decrease in mental and physical burden. 'Acceptance' and 'Finding peace' were linked to experiencing more control over bodily sensations, especially over pain. Participants reported altered relationships with pain, suggesting shifts in pain perception rather than intensity. Participants reported that they were less preoccupied with their pain, or that it was no longer as prevalent. This allowed them to shift their attention and create a sense of calm around pain. Previous studies of mindfulness in PSCI also demonstrated a reduction in pain intensity and unpleasantness.^{13,16,28}

The overarching theme of 'Acceptance' corresponds closely with a core principle of mindfulness.⁶ A recent meta-synthesis examining the impact of mindfulness-based interventions on the experiences of cancer patients identified 'Acceptance' as a significant theme across the included studies.²⁹ In an intervention study for PSCI that integrated mindfulness and motivational interviewing 'Acceptance' emerged as a central theme associated with changes in mental well-being, which was described as a peaceful state and a release from negative emotion.¹³

Through the MBCT participants were more aware of the here and now which made them more conscious of their own feelings. This was often mentioned as the basis for 'Respecting your own boundaries'. Participants reflected on themselves to understand how they were feeling which helped them to make other choices, e.g. to set and respect boundaries. Next, 'Respecting your own boundaries' helps to reduce perceived fatigue. To our knowledge, the reduction in fatigue has not been mentioned in the limited literature of mindfulness in PSCI. However, this effect was observed in a quantitative study of mindfulness-based intervention for people with multiple sclerosis.²⁸

The theme 'Connection with affected body parts', is specifically relevant for PSCI, as they may experience reduced or absent sensations in affected body parts. To our best knowledge this theme was never described in studies with participants of mindfulness based interventions, but was found in a study with mindfulness trainers who themselves have neurological impairments leading to sensory loss.³⁰

Participants reported that interacting with other PSCI offered valuable insights into their personal growth and acceptance, serving as a reference for progress made and future goals. These insights were facilitated by peer conversations not only during but also outside MBCT sessions. This suggests that group-based mindfulness may offer added value over individual MBCT for this population. Similarly, a meta-synthesis study on cancer patients identified peer connection as a recurring theme across studies.²⁹ In contrast to former research, the participants did not mention any barriers by content or language of this tailored MBCT program.¹⁶ The inclusivity of language and adaptations made seem to work well for this group of participants.

Limitations

The interviews for this study were conducted three weeks after completing the training. As a result, no conclusions can be drawn about the sustainability of the found results. Most participants were between 40 and 65 years old and had a motor incomplete lesion. This makes the results less generalizable to the entire population of PSCI. Future research is needed to collect information about a broader range SCI and the perceived long-term changes, preferably in a randomized controlled trial. This study could not obtain information about the one person that dropped out early in the training, who, might have a different experience leading to different insights.

Conclusion

This qualitative study explored self-perceived changes in PSCI following MBCT. Qualitative analysis identified eleven subthemes across five themes. A tailored MBCT program for SCI appears to support PSCI in recognizing their feelings and thoughts and respecting their limitations by fostering acceptance and to experiencing more control and connection over bodily sensations, especially over pain. Future research should examine the long-term sustainability of these effects.

Abbreviations

Mindfulness

Based Cognitive Therapy (MBCT)

Declarations

Acknowledgement

This study did not receive any funding.

Declaration of interest

The authors report there are no competing interests to declare.

Data availability

The qualitative data cannot be provided as it contains private information and cannot be anonymized.

Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work the author(s) used Copilot in order to translate and optimize the Dutch quotes in common English. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the publication.

Author contribution

The conceptualization of this study: TvD, CvL and AS; Data curation: TvD; Formal analysis: EK and TvD; Methodology: TvD, EK, CvL and IvN; Resources: IvN; Supervision: IvN and AS; Writing original draft: TvD; Writing -review and editing EK, CvL AS and IvN.

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Tables

Table 1: Overview of MBCT sessions		
Theme of session	Mindfulness exercises	Home practice
1. Awareness and automatic pilot	Raisin exercise	Body scan
	Body scan (adapted version)	Mindfulness
		Mindfulness
		Compassion
2. Clear observation; thoughts are not facts	Awareness of surroundings	Body scan
	Body scan	Sitting meditation
	Interpretation of a situation	Mindfulness
	Sitting meditation - focus on breath	Pleasant event
3. From doing to being	Sitting meditation - focus on breath and body	Sitting meditation
	Floor yoga (adapted)	Three-minute breathing space
	Reflection on pleasant event	Mindfulness
	Three-minute breathing space	Unpleasant event
4. Staying in the moment and allowing what is	Sitting meditation - focus on breath, body, sounds, and thoughts	Sitting meditation
	Reflection on unpleasant event	Three-minute breathing space
	Mindful walking / rolling	Three-minute breathing space
	Three-minute breathing space (coping)	Stress management
5. Finding space to make choices	Sitting meditation - focus on breath, body, sounds, and thoughts	Sitting meditation
	Three-minute breathing space	Three-minute breathing space
	Reflection on stressful event	Three-minute breathing space
	Standing/sitting yoga	Compassion
6. Mindful communication	Sitting meditation - focus on breath, body, sounds, and thoughts	Sitting meditation
	Communication exercise	Three-minute breathing space
	Standing/sitting yoga	Reflection
	Three-minute breathing space	Compassion
Silent day - 4 hours	Sitting meditation - focus on breath, body, sounds, thoughts, emotions, and choiceless awareness	
	Floor yoga (adapted)	
	Body scan	
	Mindful walking / rolling	
	Mountain meditation	
7. How can I best take care of myself?	Shortened body scan	Exercise
	Sitting meditation - focus on breath, body, sounds, thoughts, emotions, and choiceless awareness	Three-minute breathing space
	Reflection on action plan	Compassion
	Three-minute breathing space	Self-reflection
8. The eighth week lasts the rest of your life	Body scan	
	Sitting meditation	
	Reflection on action plan	
	Three-minute breathing space	

Table 2: Participant characteristics								
Participant	Gender	Age category	SCI level	Motor complete	Traumatic	Years since SCI	Total MBCT sessions ^a	Dropout
Group 1								
1	Female	60-64	C6	Yes	Yes	6Y	9	No
2	Female	55-59	T12	No	No	3Y	8	No
3	Male	65-69	T4	Yes	Yes	11Y	8	No
4	Female	50-54	T10	Yes	Yes	29Y	9	No
5	Male	55-59	T12	No	No	16Y	9	No
Group 2								
6	Female	40-44	T12	Yes	Yes	21Y	8	No
7	Male	55-59	C7	No	No	16Y	9	No
8	Male	55-59	T12	No	No	13Y	9	No
9	Male	45-49	C7	No	Yes	2Y	2	Yes
10	Male	60-64	T4	Yes	Yes	29Y	9	No
11	Female	35-39	T11	No	Yes	2Y	9	No
Group 3								
12	Female	45-49	L5	No	No	12Y	9	No
13	Female	60-64	T10	No	No	5Y	0	Yes
14	Male	50-54	C5	No	Yes	38Y	5	No
15	Female	65-69	T5	No	Yes	2Y	9	No
16	Female	55-59	L2	No	No	<1Y	7	No
17	Male	60-64	L2	No	No	<1Y	8	No

^a Including silent day, maximum total sessions 9

Table 3: Comprehensive categories and themes
Awareness
Being aware of the here and now
Connection with affected body parts
Insight
Reflecting on your own feelings
Disengaging from thoughts
Recognition of automatic patterns
Recognizing patterns in your own actions
Change in behaviour
Respecting your own boundaries
Letting go of control
Effects of changed behaviour
Acceptance
Finding peace
Pain control
Reduced fatigue

Figures

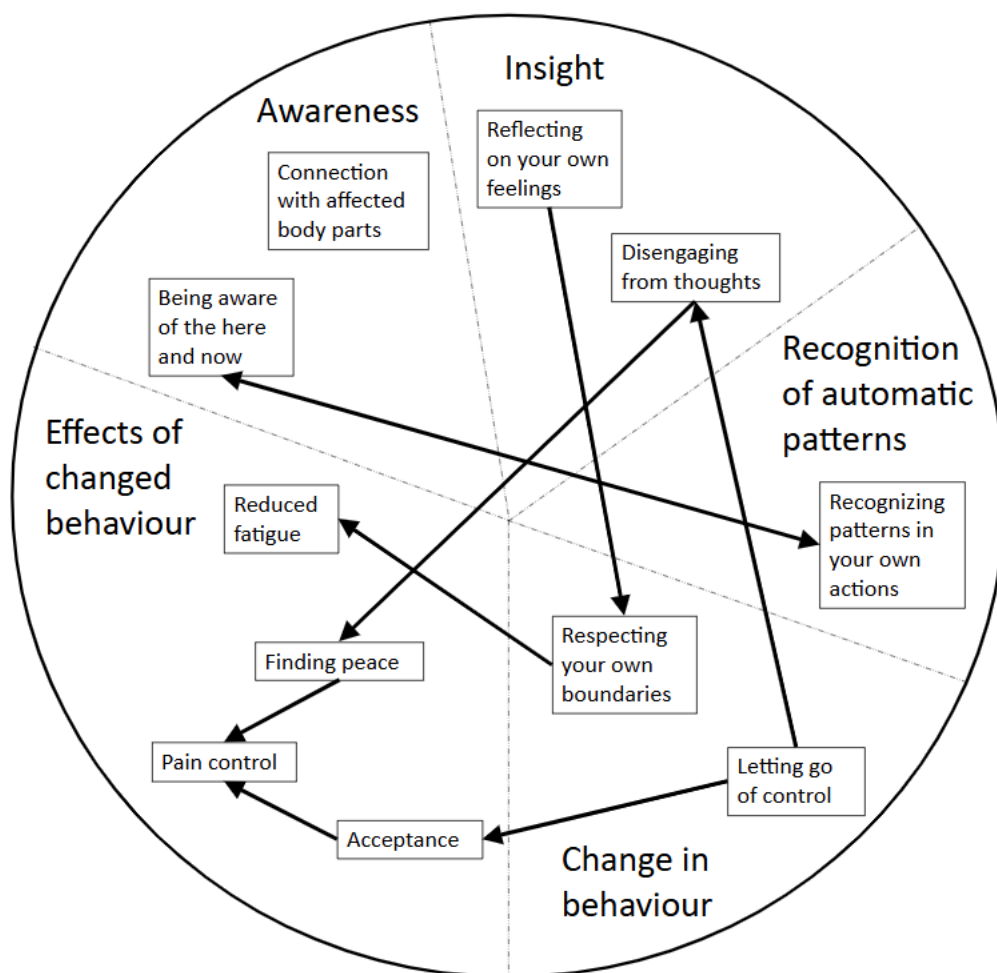


Figure 1

Figure legend not provided with this version

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [AppendixA.docx](#)
- [COREQChecklistMindfulness.pdf](#)