

# Embodying cognition: working with self-control in cerebral palsy

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**Abstract.** During the last decades, research on cognition has undergone a reformation, which is necessary to take into account when evaluating the cognitive and behavioural aspects of therapy. This reformation is due to the research programme called Embodied Cognition (EC). Although EC may have become the theoretical authority in current cognitive science, there are only sporadic examples of EC-based therapy, and no established framework. We aim to build such a framework on the aims, methods and techniques of the current third-wave of CBT. There appears to be a possibility for cross-fertilization between EC and CBT that could contribute to the development of theory and practice for both of them. We present a case-study of an EC-based model of intervention for working with self-control in cerebral palsy. We centre the results of the study and its discussion on how we should understand and work with self-control in a more general sense from both an EC and a CBT perspective. We end by elaborating the five learning objectives and present suggestions for follow-up reading.

**Key words:** Bodily sensations, cognition, Cognitive Behavioural Therapy, control

## Introduction

During the last decades, research on cognition has undergone a reformation, which is necessary to consider when evaluating the cognitive and behavioural aspects of therapy. This reformation is due to the research programme called ‘Embodied, Embedded, Enacted and Extended Cognition’ (EC).†

EC provides a critique of, and is an alternative to, traditional cognitive science. The latter goes by different names, but is often called cognitivism, and is criticized for reading cognition

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†We will use the term Embodied Cognition (EC) as a broad term that encompasses the other E-aspects. We acknowledge that grouping the embodied, embedded, enacted and extended approaches together overlooks many of the internal disagreements between the different approaches.

in mental terms and situating it within the skull. In contrast, EC holds different fundamental claims, which stress that cognition is *embodied* – it depends on the cognizer’s embodiment (Clark, 1997; Wilson, 2002; Gallagher, 2005; Chemero, 2009), it is *enactive* – it depends on the cognizing organism’s activity (Varela *et al.* 1991; Hurley, 1998; Noë, 2004; Thompson, 2007, 2014), it is *embedded* – it depends on the cognizer’s relationship to the natural and social environment (Haugland, 1998; Clark, 1997; Hurley, 1998), and it can be *extended* – it depends on vehicles beyond the cognizing organism (Clark & Chalmers, 1998; Clark, 2008).

This embodied reformation of cognitive science illustrates a close relationship between cognition and behaviour, but is not therefore a return to behaviourism. The relationship should be understood in neither physically reductive nor mentalistic terms, as Merleau-Ponty, one of the fathers of EC, argues: ‘behaviour is not a thing, but neither is it an idea’ (Merleau-Ponty, 1967, p. 127, see also Merleau-Ponty, 1962, pp. 126–27). Instead, cognition and behaviour are related through our embodiment, which should be understood as the (en)active and situated nature of our bodily experiences.

However, the aim of the present paper is not to go deeper into a theoretical description and discussion of EC in relation to behaviourism and cognitivism. Nor is it our aim to clarify the internal disagreements that arises when grouping the embodied, embedded, enacted and extended approaches together into a new science of the mind (Rowlands, 2010) or a new paradigm of cognitive science (Stewart *et al.* 2010). Our focus is on developing the practice of cognitive and behavioural therapy: although EC may have become the theoretical authority in current cognitive science, there are only sporadic examples of EC-based therapy, and no established framework. The overall aim is therefore to further develop such an EC-based framework of therapy.

This will build on the aims, methods and techniques of the current third wave of Cognitive Behaviour Therapy (CBT), also called contextual methods of CBT (Hayes *et al.* 2011), which is not to rule out that fruitful development can occur when combining EC and the two other waves. At the outset, however, there appears to be a stronger possibility for cross-fertilization between EC and the third wave that could contribute to the development of theory and practice for both. Like EC, the third wave emphasizes the contextual, experiential and active aspects of cognition and behaviour<sup>†</sup>.

To further establish this, we will look at the case of cerebral palsy (CP), in which one fundamental issue is that of *self-control*. The notion of ‘(self-)control’ is one of the most important and at the same time most used notions in the psychological literature. Therefore, we will not go into a lengthy theoretical discussion of the notion, since this is outside the aim of the paper. Instead we will present a pilot study of an EC-based model of intervention for working with self-control in CP and take our point of departure in the experiences of self-control (or lack thereof) that the persons with CP describe<sup>‡</sup>. We centre the results of the study

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<sup>†</sup>The philosophical movement of phenomenology is a fundament part of EC, and Škodlar *et al.* (2013) emphasize that the third-wave approaches are closer to phenomenological perspectives than the two other waves.

<sup>‡</sup>Thanks to one reviewer for making us clarify our understanding of the notion of ‘control’ and for suggesting the Perceptual Control Theory (PCT) to do so. PCT is the theoretical basis for the therapy called the Method of Levels (MoL) and it has been argued that the principles of PCT are consistent with an EC framework (Carey *et al.* 2014; Mansell & Marken, 2015). However, PCT gives an operational definition and explanation of the mechanisms of control of control and its aim is therefore different from the experiential description of control that we aim to give

and the discussion on how we should understand and work with self-control in a more general sense from both an EC and a CBT perspective.

### How to develop therapy for CP?

As an umbrella term, CP is defined as a group of disorders affecting the development of postural and motor control, occurring as a result of a non-progressive lesion in the developing central nervous system, causing activity limitation (Bax *et al.* 2005). In 90% of cases, the lesion occurs during pregnancy (Ellenberg & Nelson, 2013), making CP the most common type of disorder associated with lifelong motor impairment (Aisen *et al.* 2011). At the same time, CP is a heterogeneous condition that varies according to the particular brain lesion and individual in question. As a result, CP is typically classified according to its different types of motor symptoms (spastic, dyskinetic, ataxic) and to the bodily location of the motor impairment (mono-, hemi-, para-, tetraplegia).

Spasticity is seen in most cases of CP, where the lesion affects the upper motor neurons, damaging the motor neurons' ability to regulate descending motor pathways, which results in muscular overactivity (e.g. exaggerated tendon reflexes and hypertonia) (Dietz & Sinkjaer, 2007; Sheean & McGuire, 2009). Thus, the current research and clinical focus for CP is invested in developing and optimizing anti-spasticity treatment protocols (Pandyan *et al.* 2005). These protocols work on the assumption that there is an implicit, yet unproven, causal relationship between the neurophysiological disorder (spasticity) and behaviour, i.e. activity limitations, participation restrictions and reduced personal independence (Barnes, 2001). Despite extensive work on these neuro-physiological aspects, the clinical impact on such behaviour is still limited (Sheean, 2001; Pandyan *et al.* 2005).

Only a few studies have discussed the cognitive, emotional and social implications of living with CP, such as increased barriers and problems in social participation and peer relationships for children with CP (Imms, 2008; Bottcher, 2010), or struggles in coping with a negative body image for adolescents with CP (Hammar *et al.* 2009). Research that focuses on the experiential as well as the cognitive and social aspects of living with CP as an adult is more or less non-existent (for exceptions see Peckitt *et al.* 2013; Martiny, 2015a, b).

Recently, Martiny (2015b) presented first-person descriptions from adults with CP (ages 22–58 years) that highlight the feeling of uncertainty they experience in performing many of their daily actions. The experience of uncertainty may lead to the disbelief in one's own abilities, self-doubt, and the use of maladaptive control strategies such as extensive planning, worrying, and bodily monitoring. These strategies typically lead to mental exhaustion and limited physical activity and social participation.

We suggest that, to work with the behavioural aspects of CP, such as activity, participation and independence, we need to focus on its cognitive, experiential and social implications. Together with the Elsass Institute (EI), a centre working with the habilitation of persons with CP, we developed an EC-based model of intervention by means of which to do so. This EC-based model of intervention consisted in a 5-day winter camp in Beitostølen, Norway that the EI arranged in the spring of 2014 (5-9 March). There were 11 participants, four girls and seven

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in this paper. Since both accounts are consistent with EC they might supplement each other on different levels in defining the notion of 'control', which would be an interesting topic for further investigation.

boys, aged between 14 and 18 years, who were all diagnosed with spastic CP and whose motor function is at Level I–II of the gross motor function classification system (GMFCS) developed for children with CP (Palisano *et al.* 1997). While the criteria for selection did not require that the participants already were able to ski (five of them had tried it before), they were expected to have independent gait function and to be able to manage their own personal care.

The overall question of the pilot study is: ‘*Will a model of intervention working with embodied aspects effect behavioural changes?*’

### **Design and method†**

The camp was structured as a group activity in which the participants would be confronted with challenging and physical activities. This is an attempt to work with the participants’ experience of uncertainty, disbelief in their own abilities, self-doubt, and their use of maladaptive control strategies such as extensive planning, worrying, and bodily monitoring. The aim with the camp was to modify and correct the way in which thoughts and metacognitions are experienced by the participants, and to do so by embodying and situating their thoughts in actual bodily and social experiences.

The primary activity was centered on skiing, a physical activity that is experienced as very uncertain and challenging for people with CP. Skiing requires specific motor skills and balance, which is problematic for persons with CP. In addition to skiing, there were also other activities such as snow-rafting, dog sledding and indoor social activities, which had the same purpose of challenging the participants. The overall aim of these activities was not to learn to ski, snow-raft or dog-sleigh *per se*, but rather to create an embodied experience of overcoming challenges. In this way, as we will argue in the Discussion, the EC-based model of intervention we present here is different from more traditional skills-based learning and sports-training programmes for persons with disabilities, since the aim is not to learn a skill or to improve motor functions as such, but in an embodied and experience-based way to work with self-control when facing challenges.

### ***Structuring the challenging activities***

The difficulty was to structure a social environment so that the participants would be encouraged to take up the challenges. This was done by a professional team of two ski instructors and four staff members from EI, one of whom has CP. All of the staff members have professional experience working with CP, and their knowledge basis spreads across different disciplines such as physiotherapy, psychology, occupational therapy, sports physiology, pedagogy and educational sociology.

The team worked with a number of different physical, cognitive and social strategies to encourage the participants to take up the challenges:

- (1) The team designed a 3-week pre-defined physical training programme that participants were supposed to follow before the camp in order to strengthen their muscles and balance.

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†The winter camp and study are also the basis for a forthcoming publication, Aggerholm & Martiny ‘Yes we can! A phenomenological study of skiing with cerebral palsy on a sports camp’. *Adapted Physical Activity Quarterly*.

- (2) Throughout the time at the camp, the team continuously structured the challenges together with the individual participants and according to their particular preconditions, expectations, goals and level of function.
- (3) The winter camp included meetings where the team and all the participants met. These meetings were designed to promote a social structure among the participants that would strengthen the group, and were scheduled to happen (a) once before the trip, (b) at the airport before departure, (c) every morning and evening at the actual camp and (d) at the airport upon returning from the camp.
- (4) The purpose of the large meetings was also to give the participants individual coping strategies they could use to deal with challenging situations. For example:
  - (4a) The participants were told to verbalize their experience if they felt uncertain, out of control, or stressed. For instance, the participants could talk to their own bodies in order to gain control, e.g. 'stop that, I'm in charge', or they could describe the experience of an uncertain situation, e.g. 'I'm OK, only 20 metres more, and then I can stop'.
  - (4b) The participants were also given a colour narrative with which to describe their experience of undergoing a challenging activity. If the activity was not challenging enough, they described their experience as being in the 'green zone'. If the activity was challenging, but they experienced the possibility of overcoming the challenge, they described it as being in the 'yellow zone'. If the challenge was too extreme or overwhelming, and the participants were panicking, they described their experience as being in the 'red zone'.
  - (4c) The participants were also asked to describe their expectations and evaluate their own performance in positive terms. This meant shifting their attention from many of the failures that they expected to, and did experience, to the experiences they hoped to, and actually did, succeed in doing. This was done in the group meetings, where, every morning, they described a positive expectation for the day and, every evening, positively evaluated their experience of the day.

### ***Phenomenological interview***

We used qualitative interviews to assess the experiences and behavioural changes of the winter camp. Acquiring clear and accurate descriptions of a person's experiences is a science in and of itself. Within EC, the *Explicitation Interview*, a second-person semi-structured interview method with its own specific questioning and analysis techniques, is an example of the attempt to develop such a science of experience (Vermersch, 1999, 2009; Petitmengin, 1999, 2006; Petitmengin & Bitbol, 2009; Bitbol & Petitmengin, 2013).

This interview method uses open 'how' questions and specific questioning strategies to draw the attention of interviewees to detailed aspects of their experience, thereby making them able to give detailed first-person descriptions of their lived experiences. In our case, the focus was on how the participants experienced themselves and their own bodies while going through challenging activities during and after the winter camp. The interview methodology won't be further described here, but a full account of the methodological considerations and how they relate to EC can be found in Høffding & Martiny (2015).

We used the interview method to understand the participants' experiences at three different times: (1) a week before the winter camp, (2) a week after the winter camp, and (3) 2 months after the winter camp. The 11 participants were divided into three groups, one with three

persons and two with four persons. This was done primarily for pragmatic reasons, since the group with three persons lived in Jutland, and was thus easier to meet. Two participants were unable to make it to the third and last interview round, and the names of all the participants have been anonymized in the following results.

The specific interviews (3×3, total  $n=9$ ) took around 1–1½ hours, and the descriptions elicited from the nine interviews were structured and analysed in accordance with phenomenological methods of descriptive analysis (see Gallagher & Zahavi, 2008, chapter 2). We used the strategy of ‘phenomenological consistency’ in order to validate the descriptions and evaluate them in relation to the behavioural changes of the intervention (see Høffding & Martiny, 2015).

Phenomenological consistency involves both internal and external aspects of analysis, where internal phenomenological consistency refers to the ability to make comprehensible all the participants’ different descriptions found in the interview. The more descriptions a certain phenomenological interpretation can make comprehensible, the deeper the internal phenomenological consistency. External phenomenological consistency refers to the ability of the overall account produced to work with and against already established theories of the phenomena in question. External phenomenological consistency is related to the methodological step of ‘intersubjective validation’ (Varela & Shear, 1999, p. 10) or ‘intersubjective corroboration’ (Gallagher & Zahavi, 2008, pp. 29–31).

In order to validate the descriptions and evaluate them in relation to the behavioural changes, we will in the discussion create internal phenomenological consistency by dividing the specific descriptions into different themes of self-control. These themes will be corroborated by work done in EC and CBT on the issue of self-control to establish the external phenomenological consistency of the descriptions. Since we only interviewed the participants 2 months after the winter camp, our aim is not to discuss whether these behavioural changes are going to be long-term. Rather, our aim is to understand what initiated the immediate behavioural changes in order to understand the conditions under which such changes can happen and, thereby, to develop a therapy that is able to further strengthen them.

## **Results: experiences of control**

This section will present the results of the interview by focusing on the experience of control as a way of understanding the participants’ development during the winter camp and what this meant for their daily life after the camp.

### ***From executive to embodied control***

Being asked about the upcoming winter camp in the first interview round produced great excitement for all the participants, but also experiences of nervousness and uncertainty: ‘What if I cannot walk in the ski boots?’, ‘What if I fall and hurt myself?’, ‘What if it’s too challenging?’, ‘What will the other participants think of me?’, etc. Such worrying and questioning were characteristic for both those participants who had skied before and those that had not.

In order to deal with such experiences of uncertainty and worrying, the team had, as mentioned, given the participants different physical and cognitive strategies to work with prior to the winter camp. However, when the participants got on the skis, it was necessary

for them to learn to keep their balance and be able to perform some basic movements such as those required in breaking or stopping, both of which beginners primarily accomplish by so-called ploughing. Being able to plough gave the participants an experience of control over the current situation, so they could take on new challenges. Søren describes it as follows:

It was great to learn to plough, since then you could accelerate, but before that, you could only take the small hills where you didn't get much speed. When you could plough, then you could take the big ones . . . It was liberating. [I: *Were you sometimes uncertain?*] Sometimes I was, but not very often. Then I just sat down and gained control. It was great when you got down to the bottom of the hill and then looked up: 'I've just run down that'. †

Søren's description is one example of how to acquire control in an uncertain situation by either ploughing or sitting down. This requires that the participants are attentively aware of and control their bodily movements in such a way that is very cognitively demanding. Another example of this type of control is how the participants talk to their bodies in order to gain control over them. Signe gives the following description:

Many times I also spoke to my legs, because my legs don't really want to do what I want. So, there were times where I told them 'now you will stop, now it's me who decides' and then we went down the piste again . . . I think it's a way to gain control. Often I said 'right, right, right, right' or 'plough, plough, plough, plough, plough'. Many times, I said that to myself, and I think that when you say it out loud, it helps your body to obey.

Signe's description is characteristic for all the participants and illustrates the tension in CP between the cognitive and bodily aspects of action. The participants want and intend to perform a particular action but, due to their motor control disorder, they are not always able to do so.

After having skied for a couple of days and learned many of the basic movements, the participants describe a different kind of control than that experienced in having to acquire control. Ditte describes it as follows:

One thing is to ski down a hill, but it's something else not to feel insanely scared when going down the hill, [to feel] that you are able to enjoy it when skiing down the hill, so that one's thoughts are not only focused on 'how do I stop, how do I stop, how do I stop', but that there is also time to see where I'm skiing, who I'm skiing with, what they are doing, or how it looks where I'm skiing. I think it's also great that you can concentrate on the fact that you can have this surplus . . . that you feel that it doesn't constantly turn into: 'oh no, oh no, oh no, oh no, how should I do this?' . . . It's nice to be able to do something, but it's also nice to feel that you can really do it and that it's not just skiing down the hill and then sitting down in order to stop. But it's skiing down the hill, trying something new, looking around . . . the feeling that I can easily ski and then at the same time, without being worried, keep an eye on Jeppe [another participant], that too was nice. The freedom that I can look at him and that I don't always have to focus on my ski, focus on not falling or on loose snow, or something like that.

Ditte's description highlights that there is a different way of experiencing being in control, where the participants don't need to be aware of their bodies or the skis in order to be able to

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†In this and the following quotes, 'I' refers to the interviewer.



plough or stop. Instead, this is an experience where the participants feel that they are able to perform what they intend to perform, where they have the capacity to experience the environment and people surrounding them, and where they are not afraid, but feel free and enjoy the experience of skiing.

In this experience of being in control, the participants focus on their surroundings, let their movements and actions depend on what's going on around them, and are relaxed and calm in their actions, despite unexpected things happening. This gives the participants the motivation and courage to make decisions and to act in ways that might be uncertain and unpredictable. Jeppe provides a description of skiing off-piste with another participant Benjamin in the forest:

Sometimes, you couldn't stop. I drove right past [Benjamin] at one time and that wasn't on purpose, but there was just a place where you got a lot of speed and I couldn't stop, so I fell ... [I: *Do you like losing control?*] No, no, it wasn't to lose control as such. It was just fun and it was to be challenged.

This experience of being in control, without having to acquire control, gave the participants a belief in their own abilities and motivated them to take on more and more challenging activities. Rasmus describes his development in the following way:

The last day of skiing was the strongest experience, one might say ... We tried and we just threw ourselves into it. I hadn't tried to ski on the red piste at that time, but I stood there and looked down at it, and then I just did it. You just do it fearlessly ... It doesn't matter if you fall ... It was like we were able to ski more all-round ... You had control of everything.

### ***Sharing control***

The participants describe that one of the main reasons why their experience of control developed during the winter-camp was the social structure of the camp. The professional team and the participants themselves provided the necessary guidance and collaboration for the individual participant to overcome the challenging activities. Ditte describes how both the team and the other participants helped and motivated her to ski down a challenging hill:

It was her, [the] coach I had, she was also really cool ... She cheered on our behalf, and it was just great that there was such cheering ... In the group I was skiing with, whenever a person did something the person really wanted to, everyone was there and there was cheering among everyone ... You did it together. We were all in this together.

Ditte highlights that it's the sharing of the challenging activity together with others that makes a fundamental difference. They are cheering each other on and, when they fall, they don't experience it as a failure or as being ridiculed by the others. They are all part of a group where everyone falls and they laugh about it together.

Sharing an uncertain situation with someone from the professional team makes the participants more relaxed, which gives them control over the situation. Signe describes how she is guided through a 'red zone' experience as follows:

We had to go all the way down from the top, but [someone from the staff] was there just for me, and to make sure that I was calm, because I was in the red zone. There was really a long way down ... I don't know how I would have come down by myself. So, it was good that I had [the staff member] to help me and support me.



Many of the participants describe that this guidance and support from the team was not that of a parent, teacher, or therapist, who removed the challenges so that they could easily overcome them. Instead, the team supported the participants, expressed belief in them, and gave them strategies, techniques and focal points to concentrate on in order for the participants to engage with and overcome the challenges on their own.

The participants themselves also became sources of inspiration and role models for one another: while it is one thing to share an experience with someone from the team, it is quite another to do so with someone who has CP and who has gone through many of the same personal experiences you have. Jeppe describes this difference as follows:

The difference is probably that many of those who don't have CP ... don't have the ... disadvantage to struggle with that I have ... I just think it has given me a lot to be with someone without CP. But it's also good to be with someone who has CP; then you just see that there is someone who goes through the same things as you do and you can talk to them about how they manage and things like that ... You get a certain unity with one another. I don't know about the others, if they, like me, have this fighter-will, but I don't think I would have this without them. It's about mirroring oneself in others.

The participants describe in different ways how the specific experience of being part of a social group and community of 'peers' with CP makes them feel in control when they are skiing. They describe, for instance, that this experience is felt in their body, that it calms them so that they can focus on skiing instead of thinking, that it makes them experience their presence, that it expands their 'green zone', and that it's a comfort zone, where they can forget their uncertainty and focus on the experience of skiing. Ultimately, the social aspect of sharing an experience helps them overcome challenges that they never thought they would be able to meet. They were not afraid to fail when taking on such challenges, since they were together with others that directly share in their experience.

### ***I can control: extending the field of possible actions***

When asked to describe the experiential difference of having been part of the winter camp, the participants generally related how the experience of dealing with challenges has become a point of departure for managing all the other challenges they face daily.

The participants described how the winter camp was a situation in which they concretely experienced how to overcome challenges. On the hill, participants could not just take off the skis and give up, since that would only make the situation worse – it takes a lot more energy and time to walk down than to ski down the hill. They were in a situation where they had to try again when they fell. In the end, the experiences they went through were not only challenging, but a majority of the participants also felt them to be painful and exhausting, a description that also resonates with how they typically described their daily experiences.

This didn't keep the participants from continuously facing their challenges, or taking on new and more difficult ones after mastering fundamental skills, such as ploughing, turning and taking the lift. It was not learning the actual skill itself but rather the process of engaging with something that challenges them, that they are not able to do, and the experience and value of then finally being able to control and overcome the challenge that motivated the participants. Rikke describes this in terms of gaining trust in oneself:

You tried something new and got more confidence. [I: *How?*] By saying that you did it, when you finally did it and, when you didn't do it, saying: 'I must try until I do'.

Rikke further describes that she came to believe in herself during the winter camp so, when she in her daily life doubts whether she can perform a certain action, she now continuously tries until she succeeds.

Descriptions like Rikke's are characteristic of the way in which the participants recount how the winter camp has influenced their daily life after coming home. Signe describes that, during the camp, she experienced being able to do things she did not believe were possible, and she could do them despite her constant bodily pain. For Signe, this experience has meant a lot in her daily life after the winter camp, and she gives an example of going on a fieldtrip with her school:

I say to myself, if we are doing something with the school, you know, where I'm tired: 'okay if you could ski, being really tired and having a lot of pain in your knees ... then you can also do this'. So, it's about having this constantly in mind, which I think will help me in many years to come. To have this thought in the back of my mind that, no matter how painful it is, and no matter how tired I am, I can still ski. This means I can also do this, it's nothing in comparison.

Rasmus gives another example of how the winter camp has helped him in dealing with stressed and anxious situations in his daily life.

When I was doing exams in elementary school, I just sat there sweating all the time ... and it just got worse, worse, worse and that's the way it was ... I've had a really good experience with this trip and just took it as it came. We go up, and then we ski down, and we see if we fall or not ... So, it's something about your having to trust yourself. Just take it nice and slow, because then you can go much further than you actually think.

This camp has additionally given Rasmus the experience and belief that he is in fact able to learn the things he wants to learn, despite his disability. This is also the case for Frederik, who, before the camp, described that he has a three-wheel bike, which he loves to ride. Two weeks after the camp, Frederik's parents sent a video to the team in which Frederik was riding a two-wheel bike. The parents described this as one of Frederik's greatest wishes in life. Frederik is a person of few words and with a severe speech impediment, but Ditte gave a clear description of her experience of Frederik when she was shown the video of him riding the two-wheel bike:

It was so fun to watch and so lovely to see, because ... I don't know if he learned to believe in himself, but there was just something that had changed and it was so great ... This was something that really sunk in and showed me that our disability shouldn't stop us from pursuing the things we want ... One can easily say 'I think, I'll just pass', because we have, after all, this apology, we have our disability. We can always, especially with strangers, use it as an excuse if there is something we don't dare to do ... and that's probably because people don't fully understand what it entails. Then almost always, if there's something you really feel uncertain about, you can use it as an excuse and say 'I have this disability that makes it difficult, so I probably can't do what you are asking me to do' and I just think that it may well be, that you can't do it quite like the others from perhaps school, but ... it could well be that you could in fact do it. To learn how to do it is the way I think about it now.

## Discussion: self-control in CP

The question of the pilot study was: will a model of intervention working with embodied aspects effect behavioural changes? When we interviewed the participants 2 months after the camp, they described examples of how the experience of being able to control and overcome challenges in the winter camp had given them a boost in self-confidence and the motivation to take on daily, painful, stressful and anxiety-provoking challenges. Overall, the participants described that they tried to participate more actively in school, they were able to acquire control over stressful and anxiety-provoking situations, and some of them learned new skills, such as riding a bike, which they did not think were possible before the camp.

As mentioned, our aim is to understand what initiated these immediate behavioural changes in order to understand the conditions under which such changes can happen and, thereby, able to further strengthen them. We will frame the discussion of the changes in relation to the issue of self-control so as to further develop in a more general sense the therapeutic aspects of EC and the third wave of CBT.

### *A holistic view of control: pre-reflective and reflective aspects*

One crucial notion for EC based therapy is ‘self-experience’, which is vital in understanding self-control. Röhrich *et al.* (2014) stress that a holistic view of self-experience should be an overall defining feature of EC based therapy where cognitive, emotional, perceptual and physical aspects should be understood as inseparable elements of such experience and situated within a psychosocial context. The aim of holistically working with these aspects of self-experience is to influence the individual’s ‘creativity and personal resources/skills/capabilities for effective affect- and self-regulation’ (Röhrich *et al.* 2014, p. 12).

In many of the participants’ descriptions after the winter camp, we see examples that relate their experiences of control in their daily life to the term, ‘self-regulation’. They are able to self-regulate their experiences of uncertainty, stress, pain, anxiety and doubt in their daily life in order to, for example, partake in social events. They are also able to self-regulate their learning processes and keep engaging with challenging activities until they succeed in doing them.

The term ‘self-regulation’ is an integral part of CBT’s conceptual and therapeutic framework, but it’s typically understood at the reflective level. It concerns self-regulating learning processes, which require controlling and monitoring one’s own actions in order to meet goals of self-improvement (Paris & Paris, 2001, p. 89), as well as emotional self-regulation, namely the monitoring, evaluating, and modifying of one’s emotional reactions in order to achieve such goals (Thompson, 1994, pp. 27–28). This means that self-regulation here refers to higher cognitive abilities and executive functions of control, monitoring and evaluation.

Other terms within CBT that are relevant for understanding self-control in the participants’ descriptions, terms such as ‘self-efficacy’, ‘self-confidence’, ‘motivation’ and ‘resilience’, also operate on such a reflective level. For instance, Bandura’s definition of ‘self-efficacy’ broadly refers to the agent’s personal belief in her ability to exercise some measure of control over her own functioning and environmental events (Bandura, 1997). For Bandura, there would be no motivational factors for acting if agents did not understand and believe in their own abilities to exercise control in the case of surprise or difficulty (Bandura, 2006, p. 170).

However, if we look at the winter camp, the shift in the participants' experience of control in, and cognitive response to, uncertain and challenging activities is related to a shift in their bodily self-experience. The participants described a difference between an experience of having to attend to and acquire control over their bodies and an experience of being in control, where they were relaxed and focused on their surroundings, letting their movements and actions depend on what happened around them. This shift in the experience of control gives the participants the motivation and courage to, despite their motor control disorder, make decisions and act in ways that might be uncertain.

To understand these descriptions, we need to operate with an expanded definition of control that does not rely solely on reflective abilities. This is found in EC, where control is experientially understood and where one can distinguish between two different ways of experiencing control: (1) one *feels in control* and (2) one has the *sense of exerting control* (Pacherie, 2007, p. 18). The former refers to the experience of control wherein one feels that an action happens exactly as expected and that one is fully in control. This feeling of control can be described as pre-reflective, non-observational, and non-conceptual, and relates to motor and situational control. The sense of exerting control is experienced as demanding, since the agent must exert control in order to maintain an appropriate action plan or thought. Experience can here be described as reflective, or observational, and relates to rational executive control.

Thus, it is crucial to point out that, in addition to the reflective level, there is a pre-reflective level of self-experience that is fundamental to EC's understanding of control (Gallagher, 2000, 2012, 2013). It should in fact be a defining feature of an EC-based therapy to include and to work with this pre-reflective level of experience, since it plays a crucial role for understanding the embodied relationship between cognition and behaviour in an EC theoretical framework.

It is necessary to include the pre-reflective level of experience in order to understand the participants' behavioural effects. The participants described how, after the camp, they performed actions or learned skills that they wanted but did not think they were able to do. This means that, even though these actions were physically possible, and the participants desired to do them, they nevertheless did not do so before the camp.

At the camp, they experienced going through bodily activities in which they could control and overcome challenging situations. It's the bodily self-experience of 'I can' control my movements during challenging activities despite my motor control disorder that grounded the cognitive development that the participants went through in the winter camp. This gave them an experiential foundation for increased self-control at the reflective level, which means increased self-efficacy, self-regulation, motivation and resilience. Thus, bodily activities and experience should be defining features of EC-based therapy, since they are necessary components for working with the pre-reflective as well as the reflective level of self-control.

It is in this way that the EC-based model of intervention we present here is different from more traditional skill-based learning and sports-training programmes for persons with disabilities. While all accounts argue that skill acquisition instantiates a shift in the experience of control from reflective conscious control to a pre-reflective conscious control, we on the contrary argue that the new skill the participants learned on the camp (e.g. ploughing) is not the most important aspect of their learning. Rather, their descriptions reveal that the experience of overcoming challenges had a value in itself and that learning new skills did not mean they stopped challenging themselves. They went on to find new obstacles and challenges on the slope.

This helps us to understand how the participants took something more profound with them from the camp, namely the bodily experience of being able to modify what they can and cannot do by practising. This is interesting in relation to CP, where the experience of intention and action can be disrupted because movements are sometimes experienced as ‘involuntary’, which can be experienced as limiting the field of possibilities for actions. What this study has shown is, however, that this relationship (intention and action) does not have to be constant; the limits to one’s actions is not given with the degree of functional ability (or disability). By practising on the ski slope they have expanded their field of actions both in relation to the concrete activity of skiing, but also in general. They have acquired a sense of being able to do more than they thought they could, which appears to have altered their attitude to subsequent situations in their everyday life. This means that for an EC-based model of intervention the aim should not be to learn a new skill or to improve motor functions as such, but instead to focus on the embodied experience while doing so.

That the embodied experience should be highlighted in therapy has also been emphasized by other EC-based models of interventions such as that developed by de Haan *et al.* who argue that one crucial feature of EC informed methods of treating OCD is ‘taking patients’ experiences seriously and properly investigating these experiences, rather than dismissing them as ‘maladaptive’ effects of patients’ faulty philosophical orientation’ (de Haan *et al.* 2014, p. 48). Röhrlich *et al.* combine EC with so-called Body Psychotherapy (BPT) (see Röhrlich *et al.* 2014 for an overview of BPT) and argue that body activity and experience are fundamental for diagnostic and therapeutic processes. Due to their bodily focus, Röhrlich *et al.* nevertheless construe EC-based therapy as standing in opposition to the focus and strategy of so-called ‘talking therapies’, which CBT is taken to be a part of.

However, adopting a holistic view on self-experience in EC means stressing the pre-reflective as well as the reflective level of experience. By including bodily experience and activities, the aim should not be to exclude the reflective level of therapy, as it is a fundamental principle in EC that the two levels of experience are related to each in the experience of control (Gallagher, 2012, 2013). In this respect, there is an obvious possibility for EC and CBT to work together, since the latter has done extensive therapeutic work on self-control at the reflective level. This is seen in the design of the winter camp, where the team gave the participants reflective coping strategies they could use to deal with challenging situations. There is an equal possibility for CBT to include a new aspect of pre-reflective self-experience in its therapeutic focuses.

### ***Situating self-control and exposure***

By understanding bodily self-experiences in the feeling of control as situated, one can gain better insight into, for instance, what it meant for the participants to grow more relaxed and focus on their surroundings, letting their movements and actions depend on what happened around them. Thus, one way to work with the pre-reflective level of control is to situate bodily self-experiences.

EC-inspired scholars have suggested working with the situating of self-experience in different contexts. De Haan *et al.* (2015) have argued for the situating of self-control in relation to OCD. Klinke & Jónsdóttir (2014) suggest working with environmental affordances as an EC-based approach to clinical practice for chronic obstructive pulmonary disease and, in the case of depression, Meynen stresses the importance of continuous contextual cues,

so that one's decision-making is in 'online', experienced engagement with current situations (Meynen, 2011a).

In the case of anxiety disorder, Meynen has argued that the exposure component of Metacognitive Therapy (MCT), and CBT in general, is in fact understandable from an EC perspective (Meynen, 2011b). It is the situated experience and actual bodily activity of the individual that should be used as a means to correct metacognitions. This was also one of the main points of the winter camp, since it's the actual situated experience of engaging with uncertain and challenging activities that helped the participants let go of rational control, worrying, and metacognitive coping, and made them experience a feeling of being in control.

MCT is an approach in the third wave that might preliminarily seem to contrast with EC, insofar as it focuses on meta- and rational control (Wells, 1995, 2000, 2005). However, whereas traditional 'CBT is concerned with testing the validity of thoughts... MCT is primarily concerned with modifying the way in which thoughts are experienced and regulated' (Wells, 2008, p. 652). One way to regulate thoughts in MCT is exposure, where the aim is 'to test the accuracy of worry content against perceptions of real situations'. (Wells, 1995, 314). This aim is closely related to EC-based therapy where there is a paradigmatic shift in emphasis from the 'what' of experience to the 'how' of experiencing (Röhricht *et al.* 2014, p. 12).

Exposure is a well-documented and discussed form of therapy in CBT, but in some cases described using behavioural terminology, such as: 'to expose patients to fear-provoking stimuli' (Bentz *et al.* 2010, p. 223). In EC, the use of notions such as 'stimuli' is problematic, since the experience of the world should not be understood as a static stimulus. Perception and action are intrinsically linked in EC, and we enact our experiences of the world (Noë, 2004). Thus, the use of notions such as 'affordances' or 'cues' would be more appropriate in EC, since they emphasize that the world shows itself as affording and presenting cues for actions.

Thus, in relation to situating bodily experience and control, we see possibilities for EC and CBT to work together. The former presents a new theoretical framework and the latter a well-established therapy of exposure that can be used for further development in both frameworks.

### ***Enacting self-control in therapeutic engagement***

To embody and situate experiences of control in EC means to do so in a social context. In the winter camp, part of this context was the relationship between the professional team and the participants, which the participants described as fundamental for their development. The team guided the participants, expressed belief in them, and gave them strategies, techniques and focal points to concentrate on so that the participants could control and overcome the challenges themselves.

It is a crucial point in EC that cognition is something you enact and actively develop. A defining feature for EC-based therapy is therefore that the therapist supports such enacted development. Whether the embodied and situated activities are done in physiotherapy, occupational therapy or psychotherapy, they should be something that one actively goes through oneself with sufficient guidance and collaboration. This additionally means that another defining feature in EC-based therapy is that the therapist should not take up an observational and distancing stance, but should *engage* with the person and become an enacting part of her therapy, bodily activities and experiences (Röhricht *et al.* 2014). This



should be done in order to perform the therapeutic guidance and collaboration in the best possible way. In the winter camp, this meant that both the ski instructors and the staff from EI skied down the hill with the participants. For some of the staff, especially the persons with CP, this was as challenging for them as it was for the participants.

In the EC literature, the notion of ‘engagement’ is crucial and can be used to understand the relationship in therapy. Satne and Roepstorff have recently defined engagement as involving two aspects: (1) an experiential aspect and (2) a normative aspect (Satne & Roepstorff, 2015, pp. 19–20). The first aspect illustrates that engagement with others is an affective, emotional and reciprocal we-experience and that communication with others should also be understood in such terms. For communication in a therapeutic setting, EC-based therapy focuses on embodied and situated engagement in order to incorporate non-verbal expressive behaviours such as movement, posture, gestures, bodily and facial expressions, etc. into their communicative praxis. Øberg *et al.* (2015) and Gallagher & Payne (2015) have shown how EC can illustrate new ways of scaffolding communication between therapist and patient and, thereby, contribute to the development of the therapist’s clinical reasoning and guidance.

Satne & Roepstorff (2015) describe the normative aspect of engagement by emphasizing that engagement is a *commitment* between persons (p. 20). The notion of ‘trust’ is important in describing this interpersonal commitment in our case, since it has been argued that the cognitive and strategic component of trust is a way to manage uncertainty (Becker, 1996, p. 45). For the participants in the winter camp, this uncertainty arose because they did not have sufficient knowledge to understand and rationally control the challenging activities. They lacked knowledge of the situation, and were therefore vulnerable but, as Baier highlights, trust is precisely the acceptance of this vulnerability (Baier, 1986, p. 235). For the participants, this meant accepting their experience of uncertainty while going through the challenges, and accepting and committing to the purpose of the camp, namely the overall idea of going through such challenges. In addition, this meant that the participants put their trust in being guided by and collaborating with the team so as to overcome the challenges.

From a therapeutic perspective, trust is an attitude in which the therapist recognizes and attends to the ‘patient’ or ‘client’ as a person. When understood as recognition, trust means upholding the autonomy and self-control of the person (Bernstein, 2011). To trust is therefore for the therapist to actually abandon control over the actions performed by the person they are working with so as to enforce the latter’s autonomy and self-control. In the winter camp, the team worked with such strategies of trust and recognition in order to encourage the participants to actively go through the challenging activities on their own. The team guided the participants and gave them conceptual tools and coping strategies, but with the overall aim of enhancing the participants’ experience of self-control.

Such a description of the therapeutic relationship in EC-based therapy has similarities with attempts in the third wave of CBT, especially with Acceptance and Commitment Therapy (ACT; Hayes, 2004). As a way to acquire contextual control, ACT works with psychological attitudes of acceptance and commitment, which we have discussed above in relation to trust. Acceptance is understood as the ‘active nonjudgmental embracing of experience in the here and now’ (Hayes, 2004, p. 656), which, in our case, would relate to the participants’ experience of uncertainty. Commitment refers to committed actions such as exposure, for instance. The aim in these actions is to increase psychological and behavioural flexibility, which is ‘the ability to contact consciously the present moment and the thoughts and feelings



it contains more fully and without needless defense, and based on what the situation affords, to persist or change in behaviour in the service of chosen values' (Hayes *et al.* 2011, p. 155).

Therapeutic processes are experiential and contextual in ACT, but it is crucial for ACT therapists that 'you do as you say', which means that therapists should also work with these processes of acceptance and commitment both on their own and in their relationship to their clients. It is a symmetric relationship where therapists should 'put themselves into the shoes of their client' (Hayes, 2004, p. 652). In ACT, there is no fundamental distinction between therapist and client with respect to the processes that need to be learned (Pierson & Hayes, 2007, p. 225).

EC-based therapy and the third wave of CBT seem to agree on the assumption that the therapeutic relationship is about sharing the same experiences, processes and engagement. As we saw in the winter camp, this relationship was crucial in developing the participants' experience of control. Hayes *et al.* nevertheless point out that, whereas this assumption has some merit, it has not been empirically tested (Hayes *et al.* 2011, p. 159). EC could provide a theoretical and methodological basis for testing such an engaging relationship, whereas the practice of, for example, ACT could illustrate ways of training EC-based therapists.

### *Self-control in a group context*

In the winter camp, the participants described how the social context of performing actions on the hill, while the other participants were watching and cheering, heightened their motivation to the challenging activities they were presented with. Participants described this social context as playing a fundamental role in the development of their experience of control and, in EC inspired social neuroscience, experimental research has shown that the social context and gaze of others is an influential reward component that changes the neural mechanism of action control (Pessoa & Engelmann, 2010; Schilbach *et al.* 2010, 2012; Gangopadhyay & Schilbach, 2012). Socializing the therapy process should therefore be a defining feature of EC-based therapy.

However, the social influence on the participants' experience of control went beyond the others' watching and cheering. The experience of being part of a group was emphasized as a highly influential factor in the participants' experience of control when they were skiing. Röhrich *et al.* have emphasized the use of 'group therapy' in EC-based therapy and presented the T-group or encounter group model as an example (Röhrich *et al.* 2014, pp. 15–16). The idea of 'group therapy' is not an EC contribution to therapy, and it has been included in many different ways in CBT. Nevertheless, as Röhrich *et al.* stress, there is some hesitancy in using group therapy in CBT, since it is difficult for the therapists to structure and control the therapy session. It is possible that, within a group context, the exposure to strong emotions that become too intense might lead to further traumatic experiences (Röhrich *et al.* 2014, p. 16).

This is definitely true, but a crucial point from the winter camp is that the sharing of experiences with other 'peers' strongly motivated the participants to take on challenging activities and, thereby, acquire a feeling of control. The use of peer and mutual support groups in cases of mental disorder is in fact well-established and discussed. Davidson *et al.* (1999) highlight four beneficial aspects of using such support groups in therapy that are relevant for our case: (1) Sharing similar life experiences with others can increase a person's understanding and acceptance of her situation and autonomy. (2) A structured process of

social interaction allows for adopting socially valued roles in which people are not restricted to the passive role of ‘patient’, but wherein they serve a reciprocal role of providing feedback and assistance to others as well as receiving feedback from them. (3) Mutual support exposes individuals to successful role models, offers them new tools, such as coping strategies and alternative perspectives, provides an opportunity for vicarious learning and modeling and, finally, enhances problem-solving skills. (4) Mutual support offers a *cognitive antidote* to participants’ problems by offering new worldviews and new ways of viewing themselves. It also offers an *environmental antidote* to the realities of social isolation (Davidson *et al.* 1999, p. 168).

Structuring group experience in therapy so as to combine these four aspects is a beneficial way to offer support. The camp design can be seen as an attempt to offer such supportive experience within the entire group. This strong, committed group-experience became crucial for the participants’ development, since there were as many action failures as there were successes. However, the participants all shared in one another’s risks, failures, and successes together, which changed their attitude to taking risks, failing and facing challenging and uncertain activities. For the participants, it was about sharing a process of having to control challenging and uncertain activities while having CP. The experience of this learning process was a ‘we experience’ in which we all risk, we all fail, but we all succeed and we all can control.

The social we-aspect in EC-based therapy should not be restricted to group therapy alone. Rather, as de Haan *et al.* (2014) stipulate in their discussion of OCD, this social component should be seen in a more encompassing and global view, one that understands that any treatment of the individual must keep in mind the daily environment, partners, friends and family with which and with whom she is always in interaction. We did not try to achieve such an encompassing view in the winter camp, but we did present one way of structuring a form of ‘group therapy’ by using the group activity of sports in the structuring process. Using sports as a model of intervention has already been shown to aid executive function development in children (Diamond & Lee, 2011) and has been used as a way to combine EC with the tradition of Adapted Physical Activity (APA; Duesund & Skårderud, 2003; Duesund 2008). Thus, sports camps may be a future collaborative possibility for both EC and CBT to work on.

## Conclusion

In this paper, we have presented a case-study for working with self-control in CP in order to further develop a framework for EC based therapy. We have developed such a framework in relation to the third wave of CBT and clarified the following five main points:

- (1) Adopt a holistic view of self-experience, which means working with both the pre-reflective (how) and reflective (what) levels of experience and understanding cognitive, emotional, perceptual and physical aspects of such experience as inseparable elements within the individual’s psychosocial context.
- (2) Include and work with the pre-reflective level of self-control, means working with the distinction and shift between two experiences of control, namely between the feelings of being in control and of exerting control.
- (3) Focus on embodying and situating experiences, since they are necessary components for working with the pre-reflective level of control.

- (4) Support enacted development, which means engaging with the person and becoming an enacting part of their therapy.
- (5) Socialize the therapy process, which means including group therapy and more encompassing social contexts.

In relation to these main points, we see interesting possibilities for cross-fertilization between EC and the third wave of CBT.

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### Ethical standards

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant Danish committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008.

Being part of a winter camp, informed consent was obtained from all individual participants included in the study and their parents.

### Declaration of Interest

The authors have no conflict of interest with respect to this publication.

### Recommended follow-up reading

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### Learning objectives

In this paper, we clarify five learning objectives, from which we see interesting possibilities for cross-fertilization between Embodied Cognition (EC) and CBT to work together:

- (1) Adopt a holistic view of self-experience and work with both the pre-reflective (how) and reflective (what) levels of experience.
- (2) Include and work with the pre-reflective level of self-control.
- (3) Focus on embodying and situating experiences as necessary components for working with the pre-reflective level of control.
- (4) Support enacted development, which means engaging with the person and becoming an enacting part of their therapy.
- (5) Socialize the therapy process, and including group therapy and more encompassing social contexts.