

## RECREATION

# Hiking in Nature for Those With Bipolar Disorder

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## Abstract

*Throughout recorded human history, there has been the conviction that connecting with the natural world improves wellbeing. Even with this knowledge, we are becoming more detached from nature both physically and psychologically. Although the psychological positive effect of being in nature is clearly seen in research, the concept of hiking in natural settings for those with bipolar disorder (BD) is not distinctly observed in the literature. It is a common notion that the main reason people hike is to immerse themselves in nature. For those with BD, the benefits of the leisure experience of hiking in nature offer a chance to escape the chaos of life's challenges that one may face with having an often-debilitating mental illness. Other benefits of this leisure experience include physical activity, which provides opportunities for self-efficacy development, practicing mindfulness, experiencing "awe" on occasion, and strengthening resilience. The goal of this paper is to better understand the impact of hiking in nature for those with the mental challenges of BD.*

## Introduction

This manuscript aims to inform individuals, providers, and caregivers about the potential impact of hiking in nature on individuals with BD. Hiking is often referred to as a soft adventure (Bichler &

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Peters, 2021) that offers motivational factors, including the opportunity to form new insights, relax from everyday life, develop and improve skills, and acquire new knowledge. Additionally, essential factors for the soft adventure context include developing personal limits, experiencing a different setting, fostering a sense of belonging, and involvement in all-encompassing natural settings (Pomfret & Bramwell, 2016). It is well known that hiking is a popular recreational activity that provides positive impacts on health and well-being (Gross & Sand, 2019; Han et al., 2020). Yet, the concept of hiking for individuals with a diagnosis of BD is underexplored. Individuals with BDs are often characterized by clinical complexity, swift changes in behavioral and affective domains, risk of relapse, and the potential for negative responses to treatments. Current treatments are often seen as only partially effective. Three-fourths of people with BD have a history of additional, coexisting mental health conditions, which are generally anxiety disorders, attention-deficit/hyperactivity disorders, and substance use disorders. There are physical problems associated with BD that include a two-fold risk of cardiovascular disease compared to the general population, as well as an increased incidence of obesity, diabetes, and sedentary behavior (Marzani & Price, 2021). Those with BD have a 9.2-year decrease in expected life span due to several lifestyle factors, and as many as one in five patients with BD complete suicide (Nierenberg et al., 2023). Not surprisingly, the chronic nature, the recurrence of manic and/or depressive symptoms, and the high prevalence of comorbidities have a major impact on the physical and psychological domains of those with BD that affect well-being and quality of life.

### **Bipolar Disorder and Hiking Excursion**

To evaluate the potential benefits of hiking for those with BD, it is essential to understand the characteristics of this disorder. The main types of BDs include bipolar I, bipolar II, and cyclothymia. BD is a chronic mental health disorder characterized by severe highs and lows in mood and energy. Mania (or hypomania, with less intense symptomatology) symptoms are characterized by inflated grandiosity, decreased need for sleep, pressured speech, flight of ideas or subjectively racing thoughts, distractibility, an increase in goal-directed activity or psychomotor agitation, and excessive involvement in activities with high potential for painful consequences.

Often occurring cyclically are depressive episode symptoms that are characterized by depressed or irritable mood and markedly diminished interest/pleasure in all (or almost all) activities most of the day, nearly every day. Also, symptoms include weight changes, insomnia, or hypersomnia; psychomotor agitation or retardation, fatigue, feeling worthless or excessive/inappropriate guilt, decreased concentration, and thoughts of death/suicide (Marzai & Price, 2021). Healthy lifestyle alterations, including physical activity such as hiking, can be a significant part of overall recovery for individuals with BD (Mental Health America, 2023). Additionally, a review focusing on outdoor recreation, which included hiking, found that this activity can be viewed as a therapeutic medium for enhancing the quality of life for individuals with mental health disorders (Frances, 2006).

There are different conceptualizations of what one person perceives as a hike compared to that of another. For this manuscript, hiking refers to a long, vigorous walk in a natural setting, often on trails or paths in areas such as parks, forests, or mountains. Characteristics of hiking vary and include duration, nature experience, physical activity, and terrain. Hikes can vary in length from a few miles to multi-day treks. The focus is generally on the experience of being in nature rather than merely getting from one point to another. It can include natural scenery, outdoor spaces, and wildlife, which is often found in more remote environments. Hiking is considered a physical activity for all fitness levels, from easy to strenuous, depending on the desires of the individual. Furthermore, hiking often involves traversing trails with uneven or rugged terrain, which can include mountains, hills, creeks, and forested areas. Usually, when one is on an urban or paved path, this activity would be considered walking. Hiking can be done as a solo activity or in a group setting. Hiking can also have a more specialized therapeutic approach, with programs such as wilderness therapy, adventure-based therapy, or nature-based rehabilitation. However, hiking, in a more general sense, also has the potential to be “therapeutic,” as this paper will explore. The focus of this manuscript is more generally on the concepts of hiking in nature and its applicability to individuals with BD.

For those with BP preparing for a hiking excursion, they need to be under the care of a provider who is aware of the patient’s physical and mental history and the appropriateness of their involvement in

this activity, individually or in a group-like setting. In both scenarios, it is crucial to inform providers and loved ones of the plans for a hike, particularly if it involves being on the trail for more than a day. It is also important to be stable on medication and other necessary treatment regimens. Potential hikers are advised to research trails and consider their physical capabilities, especially if they are inexperienced. Ideally, the hiker is not experiencing symptoms of mania (hypomania) and is in a state of euthermia, as studies suggest that vigorous exercise may exacerbate a manic state (Antosik-Wojcinska et al., 2020). Other potential shortcomings of the hiking experience may relate to the mood-regulating circuits in the brain that can be oversensitive to conditions that affect mood, including exercise.

Additionally, it has been found that activities involving a reward seem to trigger escalations in manic symptoms and with consistent progress toward rewards, can trigger increased energy and activation (Fulford et al., 2010). An issue may ensue if a hiker goes beyond their physiologic and psychologic capabilities and overexerts, which is possible since BD is associated with grandeur thinking as well as reward-seeking behavior. Also, compared to healthy controls, people with BD report that attaining their goals is extremely critical to their self-worth (Tharp et al., 2016). This is important to consider when hiking, given the variable nature of the activity, which often results in not reaching the desired destination due to unforeseen factors. This highlights the potential need for planning shorter day trips, rather than extended expeditions, for individuals with BD, particularly for the beginning hiker. It is necessary to acknowledge this information due to the complex needs of individuals with BD, particularly in relation to new experiences and the vulnerability of emotional lability. Even with these drawbacks in mind, considering the positive features of hiking in nature is imperative.

## **The Natural Environment**

Bratman and colleagues (2019) found that spending time in nature was correlated with increases in subjective well-being, positive affect, and a sense of purpose and meaning in life, as well as decreases in mental distress. In addition, with longitudinal studies, nature experiences positively affect various facets of cognitive function, including memory and attention, impulse inhibition, mental performance, as well as imagination and creativity. Related to cog-

dition, nature experiences have been shown to reduce rumination (repetitive thoughts fixed on negative emotions) and subgenual prefrontal cortex activation (sgPFC), which are both common for those with BD (Apazoglou et al., 2019; Richardson et al., 2016). The sgPFC has been shown to display increased activity during sadness and the behavioral withdrawal and negative self-reflective processes that are tied to rumination. Furthermore, the stress reduction hypothesis posits that spending time in nature prompts a physiological response that reduces stress levels. In a report by Bratman et al. (2021), it was quoted by Frederick Olmsted that related to stress, “nature employs the mind without fatigue and yet exercises it; tranquilizes it and yet enlivens it; and thus, through the influence of the mind over the body, gives the effect of refreshing rest and reinvigoration to the whole system.” (p. 124).

While the attention restoration theory embraces that, nature restocks one’s cognitive stores, restoring the capacity to focus and one’s ability to focus attention (Capaldi, et al., 2015). In a study of 60 participants diagnosed with BD, subjects were randomly assigned to a 50-minute walk in either a natural location (woodlands) or an urban location (along a road). Results revealed that individuals who hiked in nature experienced less anxiety, rumination, and negative affect, as well as greater positive emotions, and improved memory tasks, compared to those who walked in urban locations. Those who reported less rumination after the walk in the natural setting also showed an increase in subgenual prefrontal cortex activity. This region is typically deactivated in individuals with mood disorders (Bratman et al., 2015). In a study by Vidon (2019), remote and rural areas allow for alienation from everyday existence and allow for introspection and grounding. Meanwhile, Bichler and Peters (2021) confirmed that hiking represents a balanced and restorative way to experience nature. Their findings underline the importance of “relaxation” and the need to balance the benefits of hiking for physical and mental well-being. In Mau et al.’s (2021) systematic review of long-distance hiking and mental illness, seven studies explained the effect on well-being. The most common explanation focuses on the synergistic effect of the positive outcomes from hiking and exposure to nature, commonly referred to as “green exercise.” The explanation is based on the view that exercising in nature has a restorative impact

on mental well-being. Furthermore, studies with the use of neuroimaging revealed that hiking in natural environments reduced neural activity in the brain that contributes to mental illness (Bratman et al., 2015). Notwithstanding, hiking is merely considered a balanced and mostly restorative way to experience nature (Rantala et al., 2018). In a review of literature by Bachler and Peters (2021) that focused on hiking in nature, it was revealed that this activity allowed for several dimensions of positive effect, including:

- Relaxation: To relax mentally and physically and to get away from it all.
- Recognition: To be recognized and known, and to show others that they have abilities.
- Imagination: To visualize novel places and scenery and to have an adventure (Ewert et al., 2013).
- Challenge: To increase abilities, knowledge, and new challenges.
- Creativity: To have an opportunity to be introspective and to allow imagination.
- Self-efficacy: To develop decision-making skills and to gain a sense of power (Pomfret & Bramwell, 2016)
- Satisfaction: To foster a sense of gratification.

Additionally, hiking experiences offer a component of physical activity that allows for varying levels, depending on the individual's desires.

## **Physical Activity**

Physical activity, in general, contributes to the prevention and treatment of many mental health conditions (Vancampfort et al., 2017). The physical activity involved in hiking can yield advantageous results for those with BD, particularly if this increased activity becomes a regular practice. Consistent hiking (or distance walking) reduces the risk of heart disease, obesity, and diabetes, which is particularly relevant for individuals with BD (Felion & Marlo, 2022). Phillips (2017) points out that for individuals with BD, physical activity alters the progression of mood disorders by enhancing the levels of neurotrophic factors, beta-endorphins, neurotransmitters, and cortisol. Additionally, Kucyi et al. (2010) found that aerobic physical exercise is a promising treatment for neurocognitive dysfunction in

BD. Moreover, regular physical activity involvement improves bodily functions that include stress regulation, immune function, antioxidant resistance, circadian rhythm stabilization, and neurogenesis. In Melo's (2016) 18-month longitudinal study of those with BD, it was found that there is a connection between less physical activity and negative outcomes, including increased levels of anxiety, worsened functionality, elevations in severe insomnia, poorer functionality, and declines in body composition profile. Additionally, there were more negative mood-related episodes and psychiatric hospitalizations in those who were more physically inactive during this period. Proudfoot et al. (2012) also recognized an association between decreased physical exercise, depressive episodes, suicidality, and decreased quality of life.

Despite the myriad benefits of regular exercise, adults who are experiencing depressive symptoms, as is common in the cyclical nature of BD, have decreased exercise levels and are more likely than others to discontinue treatment regimens. As a rationale for this, it has been found that individuals with depressive symptoms report lower self-efficacy than those without depressive symptoms. Additionally, individuals with low self-efficacy tend to avoid challenges, discontinue strenuous activities more quickly, and are prone to increased stress (Bandura, 1977).

### **Exercise Self-efficacy**

Knowledge of the benefits associated with physical activity among individuals with BD needs to be factored into the consideration of whether individuals will be motivated to begin involvement in an exercise pursuit (i.e., hiking). If they do, it is essential to consider whether it will be adopted and sustained for even greater physical and mental benefits. The concept of exercise self-efficacy comes into play. Self-efficacy is the belief and conviction that one can successfully perform a given activity, and it is central to behavior change as it guides what behaviors people choose to engage in and how people respond to obstacles and challenges in changing their behaviors. Self-efficacy beliefs rank among the strongest predictors for initiating and maintaining a physical activity (Warner et al., 2014; van Stralen et al., 2009). Furthermore, during exercise, individuals with a higher level of self-efficacy were found to exhibit a greater sense of energy, expend less effort, and experience more

positive feelings (*Medrano-Ureña, 2020*). Bandura (1977) reported sources of self-efficacy, with the chief source being “mastery experience,” which represents experiences where one has been successful in accomplishing a task in the past, and thus serves as a dependable indicator of one’s ability to accomplish comparable tasks in the future. Therefore, prompting mastery experience in interventions is an effective way to increase self-efficacy beliefs for physical activity (Ashford et al., 2010). The other source is known as “vicarious experience,” which refers to the act of witnessing others successfully accomplish a difficult task. Thirdly, “verbal persuasion” involves trying to convince someone of their ability to perform a task effectively. Lastly, “physiological and affective states” are the fourth source of self-efficacy. This concept is based on appraisal processes; for example, if negative affect, such as distress, occurs before a difficult task, it may be interpreted as feeling unprepared or vulnerable, which can compromise self-efficacy and performance. Conversely, positive affect might influence self-efficacy if interpreted as a sign of readiness and confidence in one’s capabilities. As such, positive affect before a task is thought to activate memories of previous successes, thereby fostering self-efficacy beliefs (Bandura, 1997). In a study by Warner et al. (2014), exercise self-efficacy was significantly and positively related to mastery experience and self-persuasion, whereas negative affective states were negatively predicted by self-efficacy. Physical activity was significantly and positively predicted by self-efficacy, whereas vicarious experience and verbal persuasion by others were negatively related. With this in mind, we can more clearly perceive useful intervention techniques to facilitate the initiation and continuation of experiences, such as hiking, for individuals with BD. Since self-efficacy and subjective well-being are positively and significantly related, actions should be taken to increase the self-efficacy of individuals with BD, thereby improving their subjective well-being (Gupta, 2018). Additionally, it has been found that mindfulness predicts exercise self-efficacy (Neace et al., 2022).

### **Mindfulness While Hiking**

The natural setting experienced during hiking easily facilitates mindfulness-based involvement, which has been proven helpful for individuals with BD (Williams et al., 2008). Either practiced independently or guided by someone in the hiking group, mindfulness

aims to heighten the capacity to keep one's attention on purpose in the present moment and reduce judgment of thoughts. Inherently, there is a necessity to be present with sustained and focused attention while hiking the path on a trail. Hiking allows for an increase in awareness of thought patterns, feelings, and bodily sensations. In a wilderness setting, bodily sensations may include the feel of a breeze, the smell of trees, the view of sunshine through the trees, or one's beating heart and breathing. Keng and colleagues (2011) reported that mindfulness practices have been clinically connected with improved psychological health, including subjective states of enhanced well-being, greater emotional reactivity, functional alterations, reduced symptoms of stress, and decreased rumination. Specific to those with BP, mindfulness promotes self-acceptance and improved regulation of negative thoughts (i.e., anxiety, guilt, shame, and rumination). It was also found that the management of self-referent information is often dysfunctional in those with BD. The cortical midline structures (CMS) play a fundamental role in both self-referential thinking and emotional processing/regulation, which is also shown to be compromised in individuals with BD. Mindfulness interventions target aberrant self-referential thinking, and neuroimaging studies indicate that mindfulness interventions impact both the structure and function of CMS (Marchand, 2012). Thus, mindfulness intervention likely exerts benefit by controlling CMS functions linked to both self-referential thinking and emotional regulation, which is necessary for those with BD.

### **Experience of “Awe”**

In his book, Keltner discusses the “default-self” as a facet of our identity as people, specifically the component that encourages us to emphasize and “focus” on our unique qualities that differentiate us from others (2023, p. 33). The world, especially the United States, is becoming increasingly individualistic, and this selfishness/internal focus is spreading (Keltner, 2023, p. 33). This component of ourselves can become problematic if we allow it to control us and comprise our identity excessively, resulting in multiple undesired mental health struggles, one specifically being “rumination” (Keltner, 2023, p. 33). We find that this idea of the “default-self” and having too much emphasis in one's life is relevant to individuals with BD who are known to ruminate (Apazoglou et al., 2019; Keltner, 2023; Richardson et al.,

2016). Thus, we believe there to be immense potential in Keltner's idea of creating awe in the lives of those with BD to decrease this "default self" and increase the "small-self" to lead to a decrease in rumination (Keltner, 2023, p. 33, 34).

When one is hiking, particularly in remote areas, there are opportunities to experience profound emotions, often referred to as "awe." Awe is characterized by an appraisal of vastness and is reliably produced when individuals view scenes from nature (Shiota et al., 2007). Additionally, Ballew and Omoto (2018) found that the more absorbed one is with nature, the more likely they are to feel awe, with absorption functioning as a mediator in this relationship. Lopes et al. (2020) found that "walking in nature contributes" to more awe, and less negative emotions and rumination in comparison to "walking in a city" (p. 3). While not specifically focused on individuals with BD or mental illness, this result, combined with previous support for the benefits of hiking in nature, creates optimism for the positive outcomes that could ensue for BD populations specifically (Melo et al., 2016).

Awe is related to mental health; the emotion is linked to decreased activation of the dominant medial temporal gyrus, an area of the brain associated with fitting information into one's preexisting worldview, suggesting awe prompts individuals to consider novel perspectives (Guan et al., 2018). Preliminary evidence by Shurigar and Aegisdottir (2023) suggests exposure to awe leads individuals to restructure their thoughts about themselves, others, or the world. Additional support from Stellar and colleagues (2015) found that out of multiple positive emotions, individuals who noted feeling awe had fewer pro-inflammatory cytokines in their blood samples, suggesting decreased chemical stress and inflammation, which are known to increase the risk of individuals with BD entering a manic episode. Chirico and colleagues (2020) related awe to depression and noted that awe would act as a counterpart to the persistent self-referential process at the base of rumination and sense of hopelessness that is inherent in BD.

The above research supports the notion that exposing individuals with BD to experiences that create awe, such as hiking, could be beneficial in reducing their negative symptoms. One potential benefit of exposing individuals with BD to awe is that it may mini-

mize their “sense of self,” making them more aware of things outside of themselves (Bai et al., 2017; Monroy & Keltner, 2023). Another potential outcome could be an increase in prosocial behavior among individuals with BD, a phenomenon that feeling awe has been found to facilitate (Monroy & Keltner, 2023; Piff et al., 2015). Both results would be tremendous for individuals with BD since those with this disorder often have challenges maintaining relationships due to the variability of their mood swings and fluctuating energy levels. We propose that hiking in groups could be beneficial to this specific population, as doing so would allow them each to feel awe, and as their “sense of self” decreases and their prosocial behaviors increase from this experience, they are likely to feel increased bonds with the other group members (Bai et al., 2017; Monroy & Keltner, 2023; Nelson-Coffey et al., 2019; Shiota et al., 2007; Van Cappellen & Saroglou, 2012; Yaden et al., 2019). Overall, positive outcomes that feelings of awe lead to, like detachment from oneself, may allow individuals with BD to overcome negative symptoms such as self-loathing, self-doubt, and distorted self-image, especially when there are feelings of guilt or blaming, which is common among those with this disorder.

### **Resiliency Improved**

Hiking excursions allow for resiliency building. This may be particularly helpful for those with BD who have backgrounds that often involve destructive, chaotic, and guilt-ridden experiences. In a study by Choi et al. (2014), it was found that lower levels of resilience were related to higher levels of impulsive behaviors and increased amounts of episodes of depression in those with BD (Chuang et al., 2023). Additionally, previous studies revealed that higher levels of resiliency were associated with having a better quality of life for those with mental health disorders (Chuang et al., 2023; Mizuno et al., 2016; Post et al., 2018; Wartelsteiner et al., 2016). Other studies have shown that individuals with BD have lower levels of resiliency and quality of life compared to healthy controls (Chuang et al., 2023; Hofer et al., 2016, 2017). In a systematic review of articles by Chan and colleagues (2023), resilience was examined in participants with BD. It was found that higher resilience was associated with specific psychopathology that included less rumination, helplessness, aggression, and suicide attempts, as well as a lessened severity of depressive and psychotic symptoms. Additionally, more positive features

were seen that included less childhood trauma, more self-directed temperament, and better attitudes toward medication treatment. The findings regarding social factors included the presence of better support systems. Lastly, psychosocial functioning was found to be associated with better recovery, spiritual well-being, and quality of life. Furthermore, the study showed that resilience mediates depression, childhood trauma, and quality of life.

Hiking can build resilience by offering a challenging yet satisfying physical activity. When hiking, one may need to overcome discomforts and obstacles like weather and terrain, which allows for the development of adaptation, perseverance, and mental fortitude. One must often find solutions to problems if forward movement is to be attained. With the breadth of the challenges that hiking may bring and the need to tackle what lies ahead, a deep feeling of accomplishment and improvement in self-efficacy can result.

### **Application**

The experience of hiking in nature can be viewed as a therapeutic approach, whether through solo or group experiences. Group programs of this nature have a reported success record for facilitating positive change, such as wilderness therapy, adventure-based therapy, and nature-based rehabilitation. Individual and group psychotherapy in a natural environment context has been reported to be less threatening and more natural compared with traditional treatment settings (Fernee et al., 2017). The social aspects of group treatment may be challenging for some individuals. Opportunities for cooperative activities, social support, and honest self-expression are suggested to enable pro-social processes. These processes include the acceptance of others, relationship development, and may allow trust building. One's capacity to develop relationships is likely to impact the treatment experience and outcome. Furthermore, the duration and context of the therapy may allow the necessary time and space to address and process emotional issues. Reports indicate that programs in the natural environment facilitate the uncovering of the personal problems that have not been previously revealed in more traditional treatment modalities (Fernee et al., 2017). The potential impact of this form of therapy is related to motivation, readiness for change, and timing, and, therefore, should be assessed initially.

After experiencing difficulties and turmoil in their lives, individuals with BD may find a sense of peace in the natural setting while hiking. Being situated in nature may initially feel like a shock to some individuals. However, this initial sense of bewilderment will likely gradually be replaced by self-confidence as one starts to manage this rather simplistic activity. Spending time in nature allows for reflection on life. The opportunity to reflect on life is suggested to be a key change agent that can add new perspectives on one's life and the struggles encountered due to an illness. Outcomes for those engaged in the hiking experience can be becoming physically stronger, experiencing an increase in perceived competence and a sense of accomplishment, and becoming more resilient. Over time, such experiences may provide more profound impacts, such as an increase in self-efficacy.

When asking oneself, do I try a hiking experience, or do I stay at home? One does not fully understand why hiking is worth it until we are on the trail and deprived of the comforts that are often taken for granted (i.e., easy access to clean water). One can have the opportunity to overcome obstacles and emerge with a feeling of achievement at the end of the journey while being enveloped in the magnificence of the natural environment. If you pursue hiking, you are likely going to be stepping outside of your comfort zone. One may feel fearful at first due to the challenges of doing something new, and there is the component of the unknown. With this and the physical demands of hiking, there is the potential to second-guess; however, if you recognize that enjoyment may come from merely being in the natural environment, anticipating a reward, and attaining it, you may see that a hiking excursion is worth the effort. A profound sense of fulfillment, achievement, and so much more can exceed the challenges that one may anticipate.

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