



Therapeutic climbing in inpatient rehabilitation

A qualitative study of subjective experiences, perceived effects and importance in the rehabilitation process from the perspective of people with mental disorders

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Abstract: *Background:* Therapeutic climbing (TC) has been increasingly implemented in the context of mental health care, with promising effects. While most evaluation studies focus on symptom reduction, the specific elements and mechanisms that make climbing effective compared to other therapeutic sports remain unclear. This study explores the subjective experiences of participants of a climbing therapy program in order to explore the underlying processes and the subjectively perceived effects. *Method:* The study took place at an inpatient rehabilitation facility in southern Germany, where a weekly group TC program was part of the treatment for individuals with mental disorders. Data from 265 participants with ICD-10 mental disorders collected between 2010 and 2022 was analyzed via questionnaires quantitatively assessing physical, psychological, and social improvements with rating items. Additionally open answers on subjectively relevant psychological experiences were analyzed using a qualitative content analysis. *Results:* Climbing therapy was generally perceived as relevant to their rehabilitation and rated as influential in terms of improving physical and psychological condition as well as sociability. The qualitative analysis identified five main categories being “Successful coping and positive mood”, “Challenge and coping strategies”, “Self-reflection and self-perception”, “Social experiences and belaying” and “Letting go of worries and being in the moment”. *Conclusion:* The results support previous findings on the benefits of TC and highlight its relevance as a therapeutic tool. Participants with mental disorders reported various positive experiences, emphasizing the unique demands, motivational aspects and social context of climbing. Further high-quality research is needed to compare climbing’s potential with other therapeutic sports across different target groups.

Keywords: sports therapy, climbing therapy, psychotherapy, rehabilitation

Introduction and background

Physical activity has protective and health-promoting effects across various mental disorders, especially in depression [1, 2, 3]. This suggests the integration of exercise-based therapeutic approaches in the treatment of mental disorders, enhancing traditional psychotherapy [4]. Public health guidelines recommend physical activity for mental health and quality of life across all ages [5, 6]. However, the relationships are complex and influenced by factors like context, frequency and type of activity [7]. The modality and intensity of physical activity must be flexible in order to improve

opportunities and engagement in physical activity that is perceived as meaningful and enjoyable [1].

Therapeutic climbing (TC) is one of the physical activities which have been used as additional treatment component for mental health problems [8]. TC incorporates resistance and endurance training, combined with psychotherapeutic elements such as mindfulness and reflection, typically conducted in indoor gyms as group therapy over several weeks [8]. It integrates effective sports intervention factors and adapts to different fitness levels through various route difficulties. TC is highly motivating and safe, making it a potentially suitable therapeutic

sport, and has gained attention for treating mental illness [9, 10, 11, 12].

Intervention programs in TC vary considerably in terms of length and design, and the evaluation studies differ in the measurement instruments and the sample studied. Nevertheless, current reviews show broad positive effects of TC on a physical, psychological and social level [8, 10]. Regarding physical outcomes, TC enhances fitness, muscle strength, endurance, flexibility, coordination, and balance [10], all beneficiary for mental health [7]. Psychologically, TC can improve attention control and affect regulation in several mental disorders [8, 13, 14, 15] and increase self-efficacy in depression [11, 12]. Climbing's inherent emotional activation suggests its use for anxiety disorders [16]. Reviews highlight TC's benefits for depressive symptoms and further various clinically relevant aspects like obsessive-compulsive behavior and psychoticism, indicating its potential for diverse target groups [7], [8]. Given the high rate of comorbidity among mental disorders, TC's transdiagnostic impact seems particularly relevant [17, 18]. Climbing on a rope, using a belaying partner and device may have the potential to enhance trust, communication, and responsibility among mental health patients [8, 10]. These psychosocial aspects are vital for evaluating TC [10]. A survey of professionals offers initial qualitative insights, suggesting that TC may have a significant impact on the social, psychological, and physiological domains when thoughtfully used as an adjunct therapy across various target groups [9]. Further research is needed to explore TC's perceived importance and effects in the psychological but also in the social domain and the underlying modes of action [11, 12, 14]. The need to gain qualitative insights of patients' individual experiences was also raised by [16]. As the perspective of people with lived experience is still underexplored in TC research, this paper focuses on their subjectively important experiences, perceived improvements in physical and mental condition, social skills, and the relevance of TC to the treatment process. Exploring patient experiences with various disorders can expand previous research by providing insights beyond symptom reduction. Since patients play an active role in therapy, capturing their perspective is crucial for understanding mediation processes and implementation in practice [19]. Qualitative research allows detailed recording of these perceptions and experiences [20, 21].

Objectives and research questions

1. How do people with mental disorders rate TC's influence on their physical, psychological, and social conditions?
2. How do people with mental disorders perceive TC's importance for the rehabilitation process?

3. What subjectively important experiences do people with mental disorders report in a TC intervention?

Methods

Design and procedure

The data analyzed was collected between 2010 and 2022 at an inpatient rehabilitation facility in southern Germany, run by Diakonie Herzogsägmühle, which offers therapeutic climbing as part of treatment for people with mental disorders. This facility provides a range of therapeutic services, including psychotherapy, climbing therapy, occupational therapy, and creative therapies, to support holistic recovery and social reintegration. Individual rehabilitation plans are developed for each patient by a multidisciplinary team of professionals. Based on the suitability for the climbing therapy, the experts determined which patients were eligible to participate in the climbing program. However, patient motivation to engage in the program remained a critical factor for inclusion.

N = 330 participants from various units completed a questionnaire, originally designed for internal evaluation, during the final session of the TC program. They were informed beforehand about the possible research use of their anonymized data.

Intervention

The program took place in a public indoor climbing hall reserved for the therapy group and led by a qualified instructor trained in therapeutic climbing and extensive mental health experience. It consisted of eleven weekly four-hour sessions for groups of 4-6 participants, teaching climbing techniques and belaying. Each session included three feedback rounds for discussing goals, expectations and progress, with additional exercises like blindfolded climbing to enhance the experience [22].

Participants

During registration for the program, the sex, the associated unit within the facility, the diagnoses according to ICD-10 and the current medication were recorded. The original data set contained N = 330 records of which n = 65 were removed due to missing data, unit affiliation or reduction to the first record in cases of multiple participation. For further information see Figure 1.

Measures

The questionnaire in paper-pencil format was used to record the frequency of participation, subjective

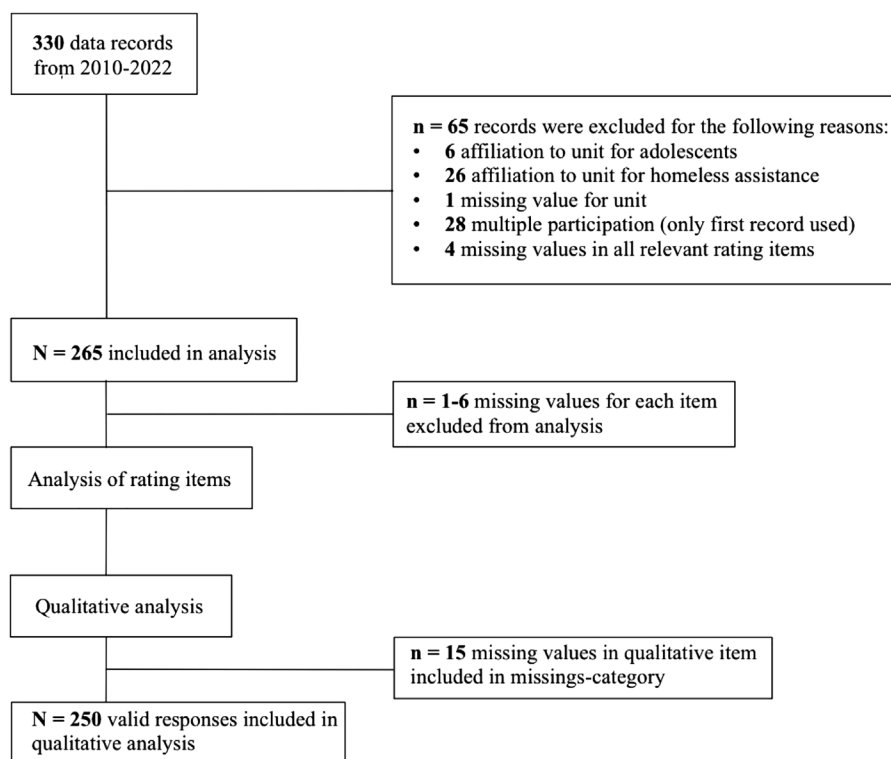


Figure 1. Data cleansing flow chart.

perceptions of various aspects and experiences at the end of the last session using mixed response formats.

This study focuses on the following quantitative items to answer research questions 1 and 2: (1.1) “My physical condition has improved through climbing”, (1.2) “My psychological condition has improved through climbing”, (1.3) “My sociability has improved through climbing”. The item (2) “I consider therapeutic climbing to be important in the context of rehabilitation” is aimed at the perceived importance of TC in the rehabilitation process. A straight, one-dimensional, ten-point rating scale with the endpoints *not at all* (1) to *strongly* (10) was used as the response format.

The focus for the objective of the self-reported subjectively relevant experiences is based on the analysis of qualitative free text responses to the item (3) “My most important psychological experiences were...” with a separate two-line response field.

In addition to the items mentioned above, further items were used in the questionnaire but were not considered due to the scope of this work.

Data analysis

The data was transcribed by an employee of the rehabilitation facility. The anonymized data was then sent to the researcher in digital form.

Analysis of rating items

All analyses of the quantitative data were carried out using the statistical program R [23]. Sporadic missing or invalid responses were minimal and excluded from analysis (see Figure 1).

Descriptive statistics were used to summarize the data. The response scale’s presentation may cause uneven perception of distances between categories, potentially rendering the data ordinal-scaled. Utilizing interval-scaled measures such as the mean and standard deviation can consequently result in systematic distortions of the findings [24]. Nevertheless, Harpe (2015) suggests that for single items with a numerical response format and at least five response categories, the intervals may be perceived evenly, allowing the data to be treated as interval-scaled [25]. To ensure a comprehensive and transparent presentation of the data, characteristic values were calculated for both ordinal and interval-scaled data [26]. For each rating item, the mean, median, standard deviation, and modus were calculated to provide a comprehensive overview of the central tendency and variability of the responses.

Qualitative analysis

The free-text responses were analyzed using the qualitative content analysis method as outlined by Mayring (2015/2021) [27], employing an inductive approach. Consistent with the exploratory nature of this study, a category system

was systematically developed from the responses to summarize the data in relation to the research question. The content analysis was conducted using the MAXQDA 2022 software [28]. The category system was regularly assessed in a circular process to ensure saturation, plausibility, and accurate representation of the data. Subsequently, the frequencies of the individual categories were determined using MAXQDA [28].

Results

Description of participants/sample

After data cleansing, 265 subjects with therapeutic climbing experience between 2010 and 2022 were included in the analysis: 29.8% ($n=79$) female, 69.8% ($n=185$) male, and one with missing information. Age was not recorded, but participants were likely young adults aged 20-30, according to the climbing therapist.

Diagnosis information was unavailable for 36 (13.6%) people. The majority had comorbid diagnoses ($n=147$, 55.5%), averaging 1.8 diagnoses each ($SD=1.3$, $range = 1-7$). For the main diagnosis, the most common diagnosis groups were affective disorders, including depressive disorders (30.2%, $n=80$), followed by schizophrenia, schizotypal, and delusional disorders (26.4%, $n=70$). Anxiety, stress-related or somatoform disorders and personality and behavioral disorders were both diagnosed in 8.3% ($n=22$) of the sample. Further information on the sample can be found in Table 1.

Participants participated on average at 7.9 TC sessions ($SD=2.03$, $range 3-15$).

Descriptive analysis of perceived effects and importance

The descriptive parameters and response distributions for the rating items are illustrated in boxplots in Figure 2.

Participants reported moderate but positive improvements in physical condition ($M=6.22$, $SD=2.42$) and psychological condition ($M=6.24$, $SD=2.23$), with sociability showing a wider distribution and lower average ($M=5.67$, $SD=2.50$). Therapeutic climbing was rated highly important for rehabilitation, with an average score of 8.72 ($SD=1.67$), and nearly half (47.92%, $n=127$) rated its importance at the highest rating.

Qualitative analysis of experiences

The following five main categories, with several subcategories, were identified based on the analysis of responses

Table 1. Descriptive characteristics of sample

	<i>n</i>	%
Sex		
Female	79	28.9
Male	185	69.8
Main diagnosis ¹		
F1 ^a	19	7.2
F2 ^b	70	26.4
F3 ^c	80	30.2
F4 ^d	22	8.3
F6 ^e	22	8.3
F9 ^f	8	3.0
Other	8	3.0
Number of diagnosis ²		
1	82	30.9
2	74	27.9
>2	73	27.6

Notes. No further demographic information (e.g. age) was available. ¹Diagnoses number ranged from 1 to 7. On average, participants had 1.8 ($SD=1.3$) diagnoses. Category of main diagnosis according to ICD-10: ^aMental and behavioral disorders due to psychoactive substance use, ^bSchizophrenia, schizotypal and delusional disorders, ^cMood affective disorders, ^dNeurotic, stress-related and somatoform disorders, ^eDisorders of adult personality and behavior, ^fBehavioral and emotional disorders with onset usually occurring in childhood and adolescence. ²Diagnosis information was missing for $n = 36$ (13.6%) participants.

from 250 participants and 445 coded segments, providing detailed insight into the participants' experiences (see Figure 3). The results are described as the percentage of participants whose answers fell into each specific category.

Successful coping and positive mood

Over half of the participants (51.2%, $n=128$) reported experiences related to successfully coping with challenges, sense of achievement and experiencing positive emotions. Among these, 22.0% ($n=55$) mentioned overcoming insecurities and fears, such as "Constantly overcoming fear while climbing". Additionally, 15.6% ($n=39$) highlighted handling challenging situations and achievement: "Sense of achievement," "Seeing the successes". Positive emotions associated with these achievement were noted by 8.8% ($n=22$): "I was pleased that I got to the top", "Feeling happy that I made it". A smaller group (3.6%, $n=9$) reported a general elevated mood: "Having fun", "I always felt really good during and after".

Challenge and coping strategies

About 36.4% of participants ($n=91$) shared experiences related to the perception and management of challenges. Motivational aspects and perseverance were mentioned by 11.2% ($n=28$), with statements like "Not giving up, developing ambition" and "Pursuing goals, staying strong". Coping strategies, including accepting failure and adapting goals, were noted by 8.4% ($n=21$). Negative emotions like

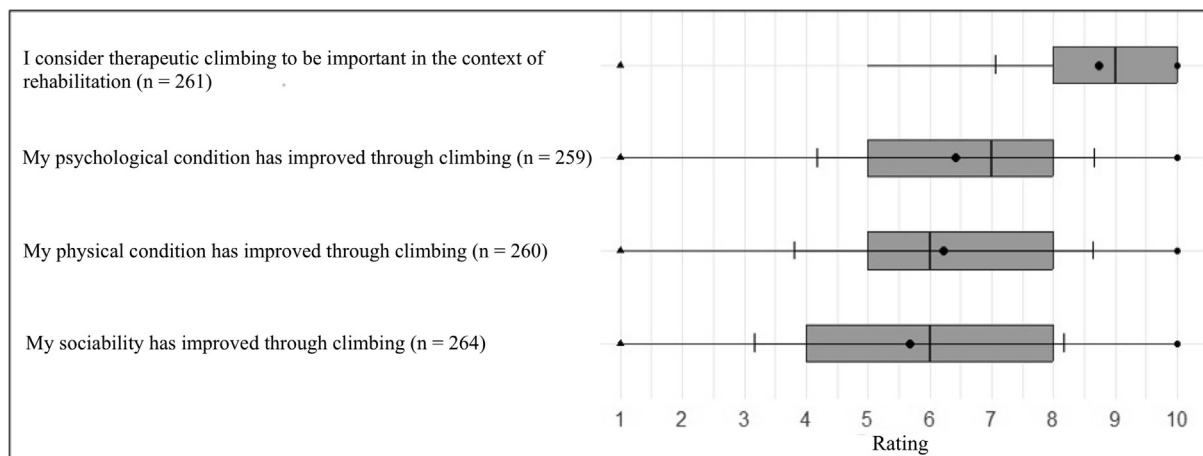


Figure 2. Distributions of the rating items illustrated as boxplots. Notes. This figure shows the distribution and central tendencies of participants' ratings on therapeutic climbing. The endpoints of the response scale used were verbally labeled as "not at all" (1) and "strongly" (10). The middle dots mark the average ratings (M) and the vertical bars outside the boxes indicate the estimated standard errors (SD). The vertical bars inside the boxes show the middle values (median). The boxes illustrate the middle 50% of responses (interquartile range) and the outer dots the minimum and maximum values.

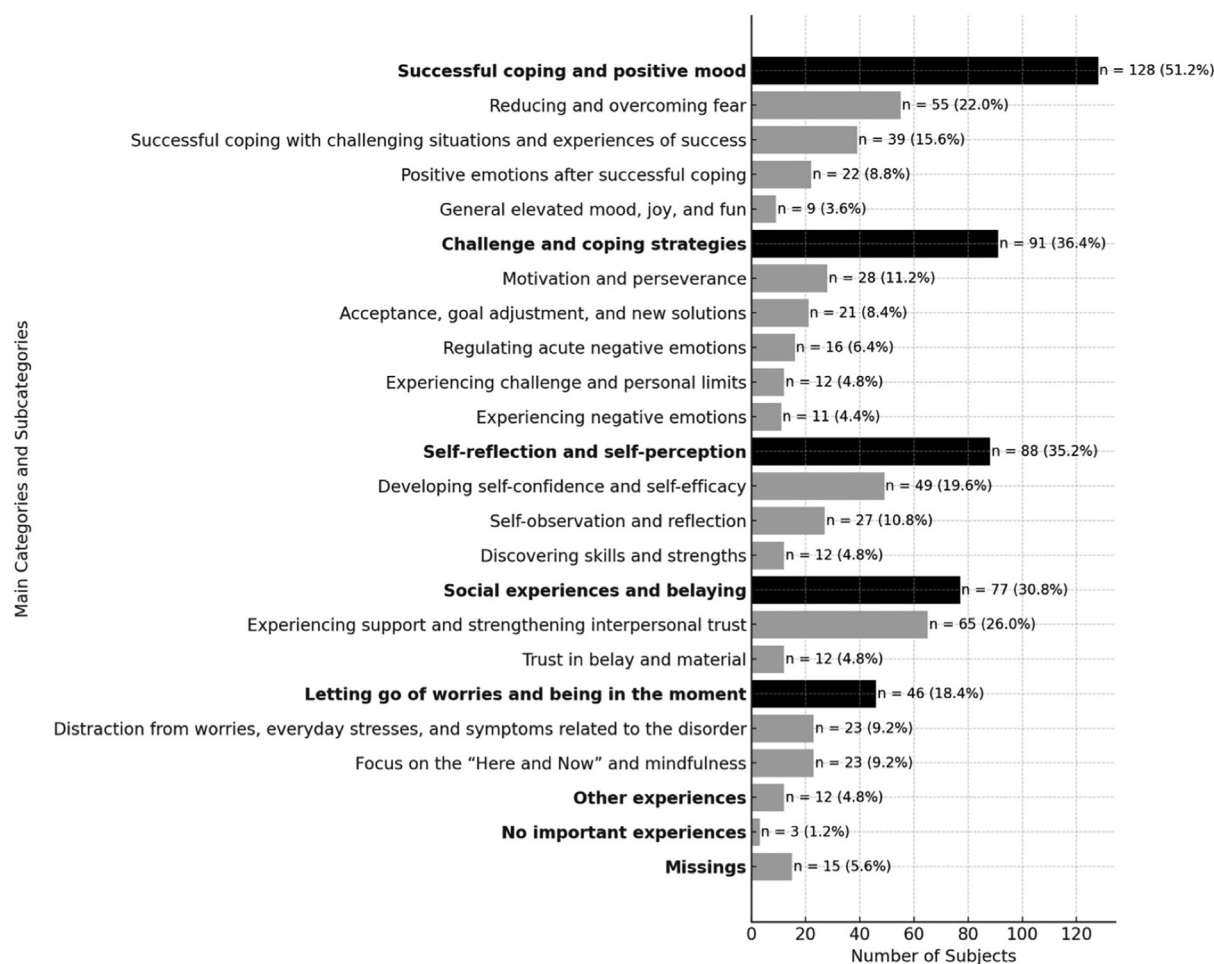


Figure 3. Frequencies of main and subcategories of reported experiences in numbers and percentages of subjects. Notes. The total number of valid responses (N = 445) exceeds the number of unique participants (N=250) because participants could provide multiple answers across different categories. The percentages are based on the 250 unique participants.

stress and frustration, and strategies to manage them, were reported by 6.4% (n=16). Another 4.8% (n=12) mentioned encountering personal limits.

Self-reflection and self-perception

A similar proportion, 35.2% (n=88), described experiences of self-reflection and self-awareness. Around 19.6% (n=49) reported developing self-confidence and self-efficacy: “Learning that I can trust myself”, “That I am not a failure”. Self-observation and reflection were mentioned by 10.8% (n=27), while 4.8% (n=12) focused on discovering new skills and strengths.

Social experiences and belaying

Social and belaying-related experiences were described by 30.8% (n=77). The most common subcategory, reported by 26.0% (n=65), involved interpersonal support, group feelings, and trust in the belayer: “I can trust others”, “Strong group feeling”, “That someone believes in me”. General feelings of safety in the context of belaying were mentioned by 4.8% (n=12): “The experience that nothing can happen” and to “Trust the harness”.

Letting go of worries and being in the moment

About 18.4% (n=46) described experiences of letting go of worries and focusing on the present moment. For 9.2% (n=23), climbing provided a distraction from illness symptoms or general worries: “Climbing kept me so busy that there was no room for other thoughts”. Another 9.2% (n=23) emphasized mindful attention to the present moment: “Stayed focused while climbing”, “Spent time in the here and now”.

The detailed category system with further descriptions and examples is provided in the Electronic supplementary material ESM1. Only 1.2% of participants (n=3) indicated that they did not gain any important experiences from therapeutic climbing.

Discussion

This study aimed to explore the experiences of patients with mental disorders participating in a TC program within an inpatient psychiatric rehabilitation context. Most participants perceive positive effects of TC on their physical and mental condition, as well as on their sociability, while also being highly valued by participants for its role in rehabilitation.

Qualitative data provided insights into the diverse positive experiences of participants, explaining why climbing is perceived as beneficial. Key experiences included coping with challenges and enhancing positive emotions, with many participants emphasizing feelings of accomplishment and personal growth. While participants reported challenges, these were often met with coping strategies and perseverance,

underscoring the activity’s potential to build resilience. Furthermore, therapeutic climbing fostered significant self-reflection, self-perception, and social connections, particularly through interpersonal support and trust-building. Lastly, climbing also provided a way for participants to focus on the present moment, offering distraction from worries and symptoms. Overall, in line with recent meta-analyses, reviews, and expert surveys [8, 9, 10], these findings highlight the multi-faceted impact of therapeutic climbing on physical, emotional, and social aspects of mental health recovery. The specific results are discussed in the context of existing research on therapeutic climbing.

The role of therapeutic climbing (TC) in helping participants overcome personal challenges and foster emotional resilience emerged as a significant theme, with participants highlighting the range of emotions experienced during climbing—from fear and frustration to joy and pride. This aligns with existing literature suggesting that TC facilitates adaptive emotional regulation by providing opportunities for success and managing failure [8, 29], which is crucial for treating mental disorders [30, 31]. Achieving goals during climbs promotes confidence and resilience, while accepting failure fosters healthy coping and self-acceptance [29]. Climbing was also described to provide an escape from everyday worries, reducing rumination. Physical activity, such as TC, can redirect attention from negative to positive stimuli, improving mood [32, 33]. These findings align with studies on general physical activity on affective processes as well as climbing’s therapeutic effects on affectivity, depression and coping [8, 11, 14, 34], suggesting TC may support resilience and healthier emotional coping mechanisms for those with mood disorders.

Many participants described managing fears, such as the fear of heights or failure, which suggests that TC functions similarly to exposure therapy, where gradual exposure to anxiety-provoking stimuli leads to desensitization and anxiety reduction [35]. Exercise in general has been shown to reduce anxiety symptoms, though effects vary by exercise modality and intensity [36, 37]. Climbing in a controlled environment may offer positive coping experiences for anxiety-provoking situations. Climbing has demonstrated anxiety-relieving effects in non-clinical groups [38], and research indicates positive outcomes for climbing in anxiety disorders, though not significantly different from other sports interventions [16]. These experiences underline the potential for TC to serve as an alternative or complement to traditional exposure therapy, particularly for anxiety-related disorders, by equipping individuals with practical strategies for coping with anxiety both during climbing and in other aspects of life.

Perceived self-efficacy is often reduced in mental illness but crucial for coping and resilience [39, 40, 41, 42]. Climbing appears to enhance self-efficacy mostly by providing experiences of success [39]. Participants often reported

overcoming mental and physical limits during climbing, leading to feelings of pride and joy, which can bolster future coping expectations [39]. These participant experiences align with existing research on the effects of general sporting activity and therapeutic climbing on self-efficacy [9, 10, 11, 12, 43], offering deeper insights into the mechanisms at play. The correlation between increased self-efficacy, higher well-being, and lower levels of depression and anxiety [44] further highlights the potential value of therapeutic climbing in treating mental disorders.

A significant aspect of TC is its potential to foster social interaction and build interpersonal trust. Participants emphasized the trust and cooperation developed with climbing partners, reflecting the social benefits of climbing described in previous literature [9, 10, 45, 46]. Therapeutic bouldering improves social skills like interpersonal sensitivity [11, 13], while rope climbing enhances social competence, communication skills, and a sense of responsibility [8, 46]. This may mirror effects observed in group therapy settings, where a communal sense of support and shared experiences substantially impact therapeutic outcomes, further reinforcing experiences of coping and success [10, 39, 47].

Finally, mindfulness was reported by participants as a significant aspect of their TC experience, a critical factor in the treatment of mental disorders by reducing depressive, stress-related, and anxiety symptoms [48, 49, 50, 51, 52]. Climbing requires sustained attention to the present moment and regulation of negative thoughts and fear [48] and has shown improvements in attention span for TC participants with ADHD and anxiety/obsessive-compulsive disorders [8, 53, 54]. Participants' reports of heightened engagement and flow during climbing suggest that TC fosters both immediate enjoyment and long-term motivation, potentially aiding adherence to therapeutic programs [11, 48, 55]. The concept of flow as central to how climbing enhances mindfulness, has been described in previous research [48]. Additionally, as participants noted, climbing seems to foster a more accepting, non-judgmental attitude toward experiences, a key aspect of mindfulness and thus particularly beneficial for individuals with disrupted, evaluative attention due to mental disorders [29, 56, 57].

Despite the promising findings, the effects of TC intensity and duration remain unclear [8], and individual differences, such as mental health severity, physical ability, or prior climbing experience, require further exploration. Further research should investigate how TC fosters emotional regulation, especially in anxiety-related disorders, and mindfulness and whether these processes lead to lasting mental health improvements. The social aspects of belaying, as frequently mentioned by participants, should also be examined to understand their contribution to therapeutic outcomes. Longitudinal studies and randomized

controlled trials using comparable control data are needed to determine TC's long-term benefits, optimal intervention designs and to compare the effects to other therapeutic sports. These insights will help integrate TC into broader therapeutic frameworks.

Limitations and strengths

Despite its limitations, this study offers valuable insights into the emerging field of therapeutic climbing, being the first to focus in detail on clients' perspectives. It emphasizes the importance of incorporating the experiences of individuals with mental illness in developing and refining TC programs. The qualitative approach captures detailed personal experiences, providing a holistic view of the therapy's impact. Additionally, the study benefits from a substantial number of participants, a natural setting, and real-world data from patients with lived experience of mental disorders and TC, enhancing the results' applicability to clinical practice. These strengths make the findings particularly relevant for informing therapeutic interventions and guiding future research in this field.

The results of this study should be interpreted cautiously due to several limitations. First, the qualitative analysis was conducted by a single coder, reducing robustness [27]. Second, absence of validated scales and reliance on self-reported data may introduce bias, especially for single-item measures [58, 59]. Third, missing demographic information restricts comparability. Fifth, the recruitment process, influenced by patient intention and expert recommendation, may have introduced selection bias. Lastly, analyzing only selected questionnaire items and collecting data during TC sessions may have led to a biased understanding of participants' experiences and social desirability bias of the given answers.

Conclusion

This study supports previous findings on the benefits of therapeutic climbing and expands evidence for its use in practice and possible mechanisms of action. Participants with different mental disorders perceive TC as important to their rehabilitation, impacting several levels of mental health and reported various positive experiences. Climbing in a group provided a framework for learning healthy ways to handle challenges, coping with fears, fostering feelings of success, self-efficacy, enhanced interpersonal trust and mindfulness-related benefits. Future high-quality research is needed to clarify the effectiveness of therapeutic climbing and explore its unique elements compared to other movement-based therapies.

Electronic supplementary materials

The following electronic supplementary material is available with this article at <https://doi.org/10.1024/2674-0052/a000093>.

ESM1. Category system of reported important psychological experiences.

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Conflict of interest

The authors declare no conflict of interest.


Publication ethics

The data in this paper were collected as clinical routine and evaluation data since 2010. In the context of a bachelor's thesis by the first author, the data were first time used and systematically


analyzed. At that time, ethical approval was not sought, as the study was intended for academic purposes and not intended for publication. However, given the potential value of the findings to the wider academic community, we now seek to publish the results. Noteworthy, no personally identifiable information was used in the retrospective data analysis set, ensuring full privacy and confidentiality of all subjects. This research was assumed to involve minimal risk and before data collection all participants were informed verbally about the potential use of their anonymized data and all participants consented.

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