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## **The influence of sport climbing on depression and anxiety levels - literature review**

**Grzegorz Zieliński, Aleksandra Byś, Michał Baszczowski, Michał Ginszt,  
Marta Suwała, Piotr Majcher**

Chair and Department of Rehabilitation, Physiotherapy and Balneotherapy, Medical University  
of Lublin

Corresponding author:

Michał Ginszt

Address:

Magnoliowa 2

20-143 Lublin, Poland

+48602533723

michal.ginszt@umlub.pl

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**Key words:** depression, climbing, anxiety

## **ABSTRACT**

**Introduction:** Depression, as one of the most common psychological disorders, which is characterized by anxiety problems, lack of energy, feeling of worthlessness or self-esteem problems affects from 5 to 17% of the population. Despite the fact that it is such a vast problem, standard methods of treatment are usually unsatisfactory and relatively not universally accessible. For these reasons, it is crucial that some alternatives to traditional methods of depression treating, such as physical activity should be pursued.

**Methods and materials:** The main study material of our research consisted of publications, which were found in PubMed, ResearchGate and Google Scholar databases. The first stage of the research was to find publications from the last 5 years and review the mentioned titles. The second stage was to conduct an overview of the abstracts as well as entire texts. Based on these criteria, four publications have been qualified for the study.

**Results:** The overview of the literature indicates that despite the differences in methodology, size and age of the study groups, some comparable conclusions when it comes to the effectiveness of practicing climbing on the process of regulating emotions can be drawn. What is more, practicing climbing can benefit depression treatment by controlling the feeling of fear and anxiety, which may also occur during depression.

**Conclusions:** The research suggests that sport climbing can positively influence the reduction of the depression and anxiety levels as well as maintain emotional stability. Further research should be carried out on the question of whether it is sport climbing as a particular sport that influences the reduction of depression and anxiety levels, or is any other form of physical activity equally influential when it comes the reduction of these disorders.

## **INTRODUCTION**

During recent years, the number of people engaging in extreme sports has significantly increased. One of the most commonly chosen extreme sports is sport climbing (1). The main idea of the sport climbing is to climb on a climbing wall using hand and footholds, while specific equipment is used only for protection (2). Within the spectrum of sport climbing we can distinguish different types such as: speed climbing (in which the main goal is to reach top of the climbing route in the shortest possible amount of time), lead climbing (in which the main goal is to reach the top of a route with the highest degree of difficulty with rope protection) and bouldering (climbers climb boulders without rope protection). Sport climbing is also practiced outdoors with the use of natural rocks (rock climbing) (3).

Depression as one of the most common psychological disorders affects over 121 million people worldwide. It is characterized by constant and long-lasting feeling of sorrow and the loss of interest and devotion for activities, which use to bring satisfaction. In addition, depression can be accompanied by additional symptoms such as: lack of energy, changes of appetite, elongated/shortened periods of sleep, states of anxiety, concentration difficulties, indecisiveness, restlessness, feeling of worthlessness, feeling of guilt and hopelessness as well as suicidal and self-mutilation thoughts and tendencies (4). The World Health Organization (WHO) states that depression is the most frequent reason for disabilities and the fourth main factor that contributes to the Global Burden of Disease. In addition in the year 2020 depression is bound to become the second highest cause of disability for all ages groups, while during 2010 it already was the second highest cause in the group from 15 to 44 years of age (5). In 2016 it was the second most occurring cause of death in the 15-29 age group (4). From overview of the literature it can be concluded that the majority suffering from depression and anxiety disorders is female, whereas the men more frequently present the tendency for substance abuse and addiction (6). It is estimated that women fall into depression two times more frequently than men. The frequency of the occurrence of depression is influenced by the Human Development Index. The biggest increase in the occurrence of depression is linked to the most highly developed countries (7).

Depression can also cause a vast array of physical disorders as well as be the trigger of increased premature mortality. The treatment of depression can significantly limit or even eliminate many of its effects. Nevertheless, only a small number of people suffering from depression disorders receive treatment and the quality of the treatment itself is relatively low. That is why the search for alternative ways of treatment is advised (8).

## **METHODS AND MATERIALS**

The main study material of our research consisted of publications, which were found in PubMed, ResearchGate and Google Scholar databases. In order of the proper identification of the adequate publications, the search has been conducted with the use of a combination of key words and terms such as: "depression", "climbing", "rock climbing", "personality", "anxiety" (according to Medical Subject Headings - MeSH). The first stage of the research was to find publications from the last 5 years and review the mentioned titles. The second stage was to conduct an overview of the abstracts as well as entire texts. Based on these criteria, four publications have been qualified for the study (tab. 1).

Table 1. Publications qualified for the study

The Author	The title and year of publication	Study groups	Methods and tools	Results
Kleinstäuber M. et al. 2017	<i>Rock climbing and acute emotion regulation in patients with major depressive disorder in the context of a psychological inpatient treatment: a controlled pilot trial.</i>	<p><u>Materials:</u> 40 adult patients suffering from depressive disorders were assigned to a climbing session (n = 20) or a relaxation session in accordance with Jacobson method (n = 20).</p> <p><u>Gender and age:</u> 19 women, 21 men with the average age of 41 ± 13 years.</p>	Positive and negative Affect Schedule (PANAS).	Climbing benefits the process of the regulation of emotions.
Luttenberger K. et al. 2015	<i>Indoor rock climbing (bouldering) as a new treatment for depression: study design of a waitlist-controlled randomized group pilot study and the first results.</i>	<p><u>Materials:</u> 47 participants have been randomly assigned to two groups. One of the groups stated and 8 week long period of bouldering training, the second group did not practice this sport.</p> <p><u>Gender and age:</u> 27 women and 20 men, with the average age of 44 ± 12 years.</p>	Beck Depression Inventory– second issue; SCL-90 questionnaire, FERUS and d2-R test.	Climbing can be an effective method of treating depression.
Ewert A., Aras D. 2016	<i>The effects of eight weeks sport rock climbing training on anxiety.</i>	<p><u>Materials:</u> 19 participants divided into two groups, control group, which consisted of 10 participants and a study group (n=9). The study lasted for 8 weeks.</p> <p><u>Gender and age:</u> 19 men with the average age of 22 ± 2 years</p>	Competitive Sport Anxiety Inventory-2 (CSAI-2)	Climbing can benefit the controlling and the process of overcoming feelings of anxiety.
Marczak M., Ginszt M. 2017	<i>Five-factor model personality traits in sport climbers.</i>	<p><u>Materials:</u> 60 climbers practicing the sport for at least 6 years.</p> <p><u>Gender and age:</u> 30 women, 30 men with the average age of 23 ± 1 years</p>	Big Five Personality Inventory (NEO-FFI) in Polish adaptation.	People who regularly practice climbing are characterized by a high level of emotional stability.

## **RESULTS**

The publications used in the research had similarities when it came to the number of test subjects in the study groups, but the people varied when it came to age. The methodology remained variable because in every study different questionnaires for clinical data were applied. Not all of the conducted research included exclusion criteria. Despite the different methodology and the size and age of study groups in the works of Kleinstäuber et al. (9) and Marczak and Ginszt (10), there are some similar conclusions which state that climbing aids the process of the regulation of emotions. The research of Luttenberger et al. (11) indicates that practicing climbing can benefit the treatment of depression. Despite a relatively small study group the reliability of this observation can be enforced by the study conducted by Ewert and Aras (12), which state that climbing can aid the controlling the feelings of anxiety which can also be present in depression.

## **DISCUSSION**

Presented results of the research conducted on the subject of the influence of climbing on the lowering of the levels of anxiety (12), depression (11), as well its influence on emotional stability (9,10) are consistent with the results of the study conducted by Eddolls et al., which state that increased physical activity benefits the quality of life and lowers the depression among adolescents (13). They conducted the research on 314 boys (aged  $12.5 \pm 1.1$  years) with the use of QoL questionnaire. The methods of the study, as well as the study group were significantly different in comparison to the ones presented in this overview. The mentioned boys did not practice extreme sports, however, the beneficial influence of physical activity on the level of depression is notable. The studies of Hennings A. et al. also confirm the benefits of physical activity among people suffering from depression. In the results, the authors noted that among the people who suffered from depression the decrease in pain threshold perception was observed (14).

The research conducted by Uglesić et al. on the group of 664 first-year students with the use of Beck Depression Inventory (BDI) and a questionnaire regarding their sporting activity, shows that physical activity had no significant influence on the lowering of the level of depression when it came to men but had a significant influence on the lowering of the depression symptoms among women (15). This particular research confirms the conclusions of this work only halfway because the group affected by physical activity was only female. The discrepancy in the results can be caused by significantly larger study groups. In opposition to the work of Uglesić et al. (15), we can place the study of Siwek et al. (16). They conducted research on 480 people who

practiced extreme and high-risk sports and 235 people (aged  $26 \pm 6$  years), who did not practice such sports. During this study, the men produced a lower score when it came to depression and anxiety temperaments while the women indicated an increase in cyclothymic and sensitive temperaments. The study of Siwek et al. also indicates that people who practice extreme sports have increased results when it comes to hyperthymic temperament (16). The hyperthymic temperament can have a significant influence on developing traits devoted to functioning in a situation of increased risk. It is connected with good adaptation and good quality of life (17). The information presented above is in accordance with the notions presented throughout this work.

In a literature overview conducted by Tomlinson et al. the authors noted that physical activity influenced the decrease of depression disorders symptoms, as well as the quality of sleep, however, the nature of the activity did not affect the fatigue, depression or sleep disorders (18). Based on the results of the study it can be suggested that it is not climbing as a particular sport but physical activity itself, which is a beneficial factor when it comes to the improvements among people suffering from depression. However, for the full enforcement and justification of such conclusions further research on this subject is advised.

## **CONCLUSIONS**

The studies suggest that sport climbing has a beneficial influence on the lowering of the depression and anxiety levels as well as allowing the security of emotional stability. Further research on the subject of whether it is sport climbing or any other physical activity equally as influential on the matter of lowering the level of depression is advised.

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