

IMMERSION IN NATURE: BODILY BENEFITS OF CAVING

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Abstract: Caving, as a cave activity, allows human beings to experience unique experiences, through an intense involvement with the cave environment, aiming at discovering and contemplating the environment. The human relationship with nature, through caving, can be a fundamental variable to try to understand the benefits that the activity in cave environments can provide to the body. This study aimed to analyze the benefits of caving on the well-being of its practitioners in the relationship between human beings and nature. This is a research with a qualitative approach, developed with the Speleogroup Peter Lund and the Association of Environmental Agents of the Peruaçu Valley with 30 individuals. Data were collected through semi-structured interviews, processed at IRAMUTEQ, through similarity analysis. The results were interpreted from the structural approach of understanding the benefits of caving in the well-being of its practitioners in the relationship between human being and nature. The analyzed results were structured based on the interviews, showing that caving promotes the well-being of its practitioners, through a relationship mediated by the presence of natural elements, and by the peculiar characteristic of the cave, such as silence and darkness. Emotion presented a positive benefit from the caving activity, as an emotional element linked to pleasure. Caving provided the acquisition of new attitudes and values to improve the quality of life. In this relationship, nature became an important partner in promoting physical and mental well-being, which can be assimilated through the bodily senses and introspection with the cave environment. Caving proved to be an activity that restores health, well-being, through the body's relationship with nature and with the cave.

Keywords: Cave, Caving, Immersion, Body, Nature.

INTRODUCTION

The human relationship with nature, through the adventure activity, can be a fundamental variable to try to understand what are the benefits that the adventure physical activity in nature, in cave environments, can provide to the body. Some studies show that activities in nature bring several benefits to well-being, and are restored when we interact with nature (MUTZ and MÜLLER, 2016; BOWEN, NEILL and CRISP, 2016; MOGHADAM, SINGH and YAHYA, 2015; OPPER et al., 2014; KENIGER et al., 2013; RYAN et al., 2010; PLANTE, CAGE and STOVER, 2006; ZINKN and BOYES, 2006).

Mutz and Müller (2016) investigated possible mental health benefits of outdoor and adventure education programs. The experiences provided an increase in self-efficacy, attention and subjective well-being and also reduced feelings of time pressure and mental stress among participants.

Bowen, Neill, and Crisp (2016), Nature Adventure Therapy promotes significant improvements in psychological resilience and social self-esteem. The authors claim that improvements are statistically significant in the behavioral and emotional functioning of participants in their interaction with nature.

Moghadam, Singh and Yahya (2015), in their study claim that no one would reject the fact that human beings are always completely dependent on nature for all their needs. The authors showed the experience of reliving the human connection with nature, as a possibility of reconciliation between human beings and nature. The authors claim that in this interaction, the subject will have a subtle and in-depth look at the relationship between human beings and nature, in order to show the positive psychological aspect of human and nature relationships, making human beings aware of the importance and benefits of a connection intimate with nature.

Opper et al. (2014) showed that outdoor activities have specific subsidies for the development of certain skills. The authors claim that outdoor adventure education programs can be used as a vehicle to develop certain important skills to effectively deal with daily challenges and demands. For the authors, the implementation of programs at the school level facilitates the development of young people's emotional intelligence, intrapersonal skills, adaptability and general mood.

Keniger et al. (2013) show the various types of benefits linked to interaction with nature. The authors highlighted that these benefits are: for physical health, cognitive performance, psychological, social and spiritual well-being. For the authors, the type of relationship will define the benefits of this interaction.

RYAN et al. (2010), in the study, the results showed that only the nature scenes increased subjective vitality. The authors stated that being outdoors was associated with greater vitality, a relationship that was mediated by the presence of natural elements. For the authors, nature is an important partner in this vitalizing relationship.

The study by Plante, Cage, Stover (2006) sought to assess the psychological effects of exercise when paired with virtual reality. The options consisted of an outdoor walk and a treadmill walk in the lab. The results suggest that greater energy was experienced when walking outside, while less energy was reported when viewing the virtual reality walk. These findings were most significant for female participants.

The results found by Zink and Boyes (2006), in their study of outdoor education, were personal and social development. The authors claim that the study provided data for the development of outdoor learning and education.

As for immersion in nature and its benefits, healing natural landscapes have represented

an important aspect of human life. When people began to design dwellings, places of healing were found within nature or through sacred groves, special rocks and caves. In the Western world, monastic communities supported the use of herbs and prayers, which almost always included a cloister garden. Modern advances in healing technology have largely diminished the importance of nature. Furthermore, studies show how nature influences our well-being (ULRICH, 1984; COLEY, KUO and SULLIVAN, 1997; KUO and SULLIVAN, 2001; MITCHELL and POPHAM, 2008; WEINSTEIN, PRZYBYLSKI and RYAN, 2009; KIM, 2010; STAMATAKIS, HAMER and DUNSTAN, 2011; CERVINKA, RÖDERER and HEFLER, 2012).

In a study of nature's welfare benefits, Ulrich (1984); Kim (2010); Cervinka, Röderer and Hefler (2012) showed that nature restores. According to the study carried out on human immersion in nature, one of the most intriguing areas of current research is the impact of nature on general well-being. As for immersion in nature, 95% of respondents said their mood improved after spending time outside. They went from being depressed, stressed, and anxious to a calmer, more balanced state. For the authors, time in nature or nature scenes is associated with a positive mood, as well as psychological well-being, significance and vitality. Also, time in nature or viewing nature scenes increases our ability to pay attention. Humans find nature inherently interesting and this is explained by the fact that they can naturally focus on what they are experiencing in nature. It also provides a break for our hyperactive minds, it also shows that time spent in nature increases our attention span.

Ulrich (1984) elaborates on the benefits of nature for well-being, with important considerations about the fact that nature calms down. The author claims that nature

helps us to deal with pain. We are genetically programmed to find trees, plants, water and other captivating elements of nature. We are absorbed by scenes of nature and distracted from our pain and discomfort. This is well demonstrated in a study performed with patients undergoing gallbladder surgery. Half had a view of trees and half had a view of a wall. According to Ulrich (1984), patients with tree vision tolerated pain better and spent less time in a hospital. More recent studies have shown similar results with nature scenes and plants in hospital rooms.

Mitchell and Popham (2008); Stamatakis, Hamer and Dunstan (2011), in studies carried out show that nature heals. They claim that being in nature or even seeing nature scenes reduces anger, fear and stress and increases good feelings. Exposure to nature not only makes us feel better emotionally, it contributes to our physical well-being, lowering blood pressure, heart rate, muscle tension, and production of stress hormones. It can even reduce mortality. According to Mitchell and Popham (2008); Stamatakis, Hamer and Dunstan (2011), research done in hospitals, offices and schools found that even a simple floor plan in a room can and do have a significant impact on stress and anxiety.

For Coley, Kuo and Sullivan (1997); Kuo and Sullivan (2001), nature connects. According to a series of field studies conducted at the Environmental Research Laboratory, time spent in nature connects us with one another and with the wider world. Another study by the University of Illinois shows that Chicago public housing residents who had trees and green spaces around their buildings reported knowing more people, having stronger feelings of unity with neighbors, being more concerned about helping and supporting one another. to others. They have more sense of belonging than tenants of treeless buildings. In addition to this greater sense of community,

they had a reduced risk of street crime, lower levels of violence and aggression between domestic partners. There is also a better ability to cope with the demands of life, especially the stress of living in poverty. This connection experience can be explained by studies that measured brain activity. When participants viewed the nature scenes, the parts of the brain associated with empathy and love lit up, but when they saw urban scenes, the parts of the brain associated with fear and anxiety were activated. It seems that nature inspires feelings that connect us between us and our environment.

Finally, a study carried out on the deprivation of nature shows that too much time in front of screens is deadly. For Weinstein, Przybylski and Ryan (2009), deprivation of nature, lack of time in the natural world, mainly due to hours spent in front of TV or computer screens, has been associated, unsurprisingly, with depression or loss of empathy and lack of altruism.

Furthermore, nature itself has the ability to capture the attention of even the smallest children. We cannot forget that we need to have a relationship with nature based on respect and love, awakening biophilic feelings with the environment.

MATERIALS AND METHODS

It is an exploratory and descriptive research, with a qualitative approach (THOMAS; NELSON; SILVERMAN, 2007). The sample consisted of 30 individuals of both sexes who met the inclusion criteria from two groups: Speleogroup Peter Lund (EPL) and the Association of Environmental Agents of Vale do Peruaçu (AAAVP), in the city of Montes Claros (MG) and Itacarambi (MG). Participants, aged between 21 and 59 years, were explained the research objectives, guaranteeing anonymity and the right not to respond or even withdraw from the study,

in addition to signing the Informed Consent Form.

Data were collected individually, through semi-structured interviews carried out between August 2016 and May 2017, at a place and time of convenience for the interviewees, with an average duration of 30 minutes. All interviews were recorded and transcribed in full and the content of the textual analysis was processed by the *software*: IRAMUTEQ (Interface pour les Analyses Multidimensionnelles de Textes et de Questionnaires).

IRAMUTEQ is a computer program that aims to discover the essential information contained in a text, through textual statistical analysis. This software aims to quantify a text to extract the most significant structures. It is observed, however, that although there is talk of quantitative analysis of textual data, the quality of the phenomenon studied is still considered (CAMARGO; JUSTO, 2013).

The program has five ways of analyzing textual data: classic textual statistics; search for specifics from defined segmentation of the text; descending hierarchical classification (CHD); Word similarity analysis and word cloud.

In this research, we opted for the similarity analysis that organizes “the distribution of vocabulary in an easily understandable and visually clear way” (CAMARGO; JUSTO, 2013, p. 516). This form of analysis is anchored in the theory of graphs, which allows the identification of occurrences between words and indications of connection between them, helping to identify the structure of the representation.

The research was approved by the Ethics and Research Committee of the Catholic University of Brasília (UCB) under registration number CAAE N. 50067415.2.0000.0029

RESULTS AND DISCUSSION

The analysis of similarity, which is a co-occurrence between words, brings in its result indications of the connection between the words. It makes it possible to identify the co-occurrences between words, allowing the formation of a kind of “semantic fan” that helps to identify the structure of the representational field of how caving directly intervenes in the well-being of its practitioners in the immersion of human beings with nature, as shown the following figure.

Figure 1, through the nuclei formed, shows the importance of immersion in nature and its benefits for human beings in the practice of caving. The testimonies suggest that there are benefits and positive aspects related to the caving practitioner’s personal satisfaction and well-being.

Studies show benefits of immersion in nature through outdoor activities. The statements corroborate the studies by (ULRICH, 1984; COLEY; KUO; SULLIVAN, 1997; LACRUZ; PERICH 2000; SERRANO, 2000; KUO; SULLIVAN, 2001; TAHARA; SCHWARTZ, 2003; MITCHELL; POPHAM, 2008; WEINSTEIN; PRZYBYLSKI ; RYAN, 2009; KIM, 2010; STAMATAKIS, HAMER; DUNSTAN, 2011; CERVINKA, RÖDERER, HEFLER, 2012; OPPER et al., 2014, LOUV, 2016).

In fact, no one is quite sure how nature’s magic works as a benefit to well-being. Explanations for the effect of nature on our bodies can range from evolutionary factors to air quality or even an aesthetic taste for everything that is green or alive (ULRICH, 1984).

In this sense, positive aspects related to well-being can be identified in the statement below.

I believe this affects our health. You have this possibility dealing with various practices that you perform. Do you have this condition

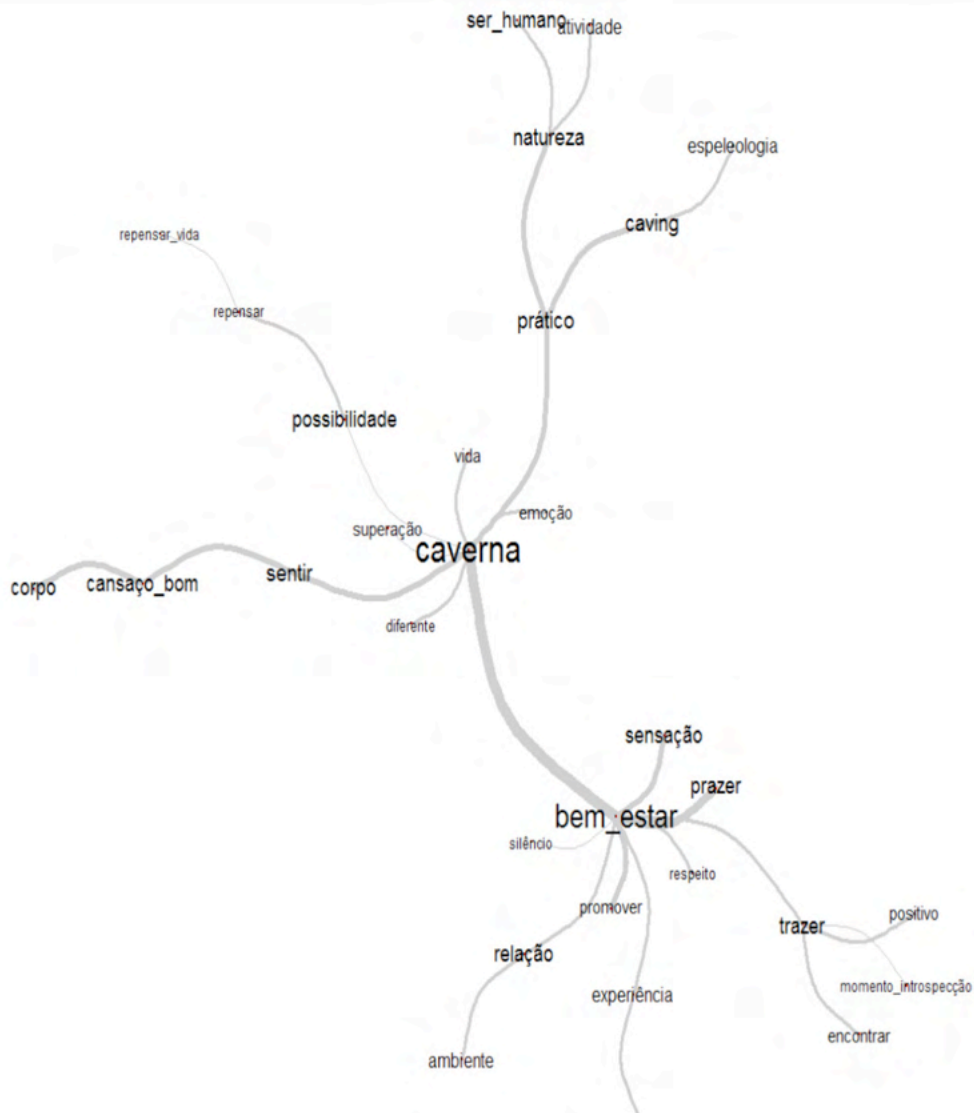


Figure 1- Analysis of the similarity between the words forming the question as caving intervenes directly in the well-being of its practitioners in the immersion of the human being in nature.

resting. You go back in time, **rethink your life**, rethink your practices, **rethink your way of living**, your relationship with other people, **personal satisfaction**, the possibility of knowing what **emotion** really is. Rethinking life and experiencing **feelings of pleasure.** (subject 17) (this excerpt was highlighted by us).

Serrano (2000) shows that seeking nature for leisure, rest and relaxation through contemplation or adrenaline cannot only serve to forget about life, which is marked by everyday life, but to reflect on it. For the author, the playful contact with the natural environment opens the possibility of breaking with ways of feeling, thinking and conducting our actions with values solidified by a routine of life. For the author, being in nature forces ruptures, negotiations and confrontations that lead to the construction of new readings about ourselves, our pleasures, our beliefs, about what we are, what we like and what we believe.

In turn, Tahara and Schwartz (2003, p.2) state that the experience of activities intensely linked to nature “[...] has become a new perspective in the field of leisure, in the sense of filling human restlessness in search of the improvement of the existential quality”. For the authors, adventure sports offer the possibility of experiencing feelings of pleasure, due to their characteristics that even give rise to an increase in the sense of the limits of freedom and of life itself.

The testimony of subject 25 emphasizes the occurrence of emotions, with a positive benefit from the caving activity, as an emotional element linked to pleasure.

It directly interferes with well-being. You are someone else. When you enter the cave, everything changes, **stress** changes, anger decreases, I feel **calmer**, my calmer pulse. At Cave, it's pure emotion, you become better emotionally. It's a multifaceted emotion and a mixture of fear. It's a pleasure making me

calm, I get calmer. (subject 25) (this excerpt was highlighted by us).

The statement above is similar to the studies by Mitchell and Popham (2008); Stamatakis, Hamer and Dunstan (2011). For Mitchell and Popham (2008); Stamatakis, Hamer and Dunstan (2011), studies have shown that nature heals. Being in nature or even seeing nature scenes reduces anger, fear and stress and increases good feelings. Exposure to nature not only makes you feel better emotionally, it contributes to your physical well-being, lowering your blood pressure, heart rate, muscle tension, and production of stress hormones.

The statements below show interesting characteristics linked to well-being.

Through **overcoming, satisfying curiosity** to know or explore what is not close to our **day-to-day**. We can also highlight the **fellowship** among practitioners. For people who enter a cave whether tourist or not, the **feeling** is of meeting **God**, depending on **belief or religion**. This feeling is often due to the **scenic beauty** of the place, of the **silence**. How capricious nature is! (subject 03) (this excerpt was highlighted by us).

A very positive well-being makes the body feel great. The cave's peculiarities contribute to this well-being. the body looks more **alive, a kind of tiredness good, pleasant, tasty**. All this is very **healthy**. **The body is full, a bodily fullness capable of awakening all the sleeping bodily senses.** **The cave is responsible** for this. **Silence** is the main **element of body fullness.** Do you think little? Everything there is perfect, it's life. (subject 20) (this excerpt was highlighted by us).

Silence makes us stay **closer to GOD**. This is good for the body, it brings **pleasure, peace, joy**. **It's an introspection moment due to the silence.** The environment promotes this. The cave resembles a church, or rather the church resembles a cave because **to silence, dark or twilight**. (subject 24) (this excerpt was highlighted by us).

It promotes pleasure. It's a feeling of well-being due to **silence, and moments of meeting, moment of peace, of meditation.** The silence is responsible for all of this. It's a very peaceful environment. (subject 26) (this excerpt was highlighted by us).

The testimonies suggest that being in the cave is like a person entering a state of meditation, with no need to concentrate, because the environment itself promotes such concentration. In the cave there is a more conscious and expressive contact of the visitor with nature, with himself and with others, enabling the acquisition of new attitudes and values to improve the quality of life.

In terms of peace and tranquility, these benefits can be found in the practice of caving. Lacruz and Perich (2000) assure that there are several reasons for the search for adventure physical activities in nature. Reasons expressed by the desire of human beings to break away from everyday life and get closer to nature, in order to enjoy its characteristics and particularities, the possibility of achieving a more peaceful and pleasurable life. The authors show that today's society is very stressful, producing tensions that affect the emotional state of human beings.

Silence, a peculiar characteristic of the cave, appears as a benefit for the brain, as the testimonies clarify.

For the possibility of **physical, mental, spiritual renewal.** I believe that the overcoming is also a point to be considered, after the psychological barriers. The cave has its own psychology which is **silence,** or rather, the silent psychology which belongs to the **cave.** The brain thanks. (subject 02) (this section was highlighted by us).

The possibility of finding oneself in a space as special as a cave brings unique feelings where the visitor can experience their own **dimensions** and the **dimensions of the environment.** You can glimpse

beauties that **are good for the mind due to silence. regenerate the brain,** also leads to **meditation and awakens the dormant bodily senses.** (subject 10) (this excerpt was highlighted by us).

As for silence, the newsletter Redespeleo, number 39, of September 30, 2006, contains an article entitled "Front to the unknown", in which the authors ¹, members of the Espeleo Grupo de Brasília describe their expedition in a cave, an environment considered by them as unknown. These authors refer to a concept of cave used by an unknown author, a cave is not just to be seen, it is to be contemplated, breathed, heard and drunk, as it is a real feast for the senses. The authors claim that a cave exploration activity favors the development and strengthening of skills and senses, such as vision, speech, reasoning, critical sense, hearing, smell and even intuition. Perhaps these are some signs of the human/nature relationship that emerge in AFAN, specifically in caving, the object of this study.

Other testimonials reinforce the existence of caving benefits in the well-being of its practitioners.

The **direct contact with nature allows self-knowledge, by overcoming of the personal limits** of body and mind, an **empathy for environmental problems** and a **reflection about the impacts of our society on the environment.** it brings **well-being** through the **contemplation of the cave.** The practices promote an **interaction of the human being with nature and human being with human being in mutual respect.** (subject 05) (this excerpt was highlighted by us)

It's the **well-being** for those who experience. Respect for the environment. So this respectful relationship is completed with all the **sensations** you have in Caving, a **feeling of good tiredness,** personal satisfaction, but one thing is fundamental, the **caving is a practice, caving is a group practice, of people.** Sharing these **sensations** that

1. The authors, Margarete, Monique, Natália and Fabiana, are all beginners and apprentices at the Espeleo Grupo de Brasília. This article was extracted from the Internet on 11/30/2006, at www.redespeleo.org/conectao/conectao.php.

are **individual**, but become collective. It is much broader, it defines the character more. **Happiness** is when you have people participating. (subject 15) (this excerpt was highlighted by us).

Producing lightness and well-being to my body, it is a kind of **good tiredness**, a tiredness that produces **pleasure and well-being**, giving life to the body. I feel more **refreshed**, more willing to carry out daily activities. Everyone must visit a cave. (subject 19) (this excerpt was highlighted by us).

Ryan et al. (2010) show that only the nature scenes increased subjective vitality. The authors stated that being outdoors was associated with greater vitality, a relationship that was mediated by the presence of natural elements. For the authors, nature is an important partner in this vitalizing relationship.

Plante's study; Cage and Stover (2006) evaluated the psychological effects of exercise walking outdoors and walking on a treadmill in the laboratory. The results show that there was more energy when walking in nature, while less energy was reported when walking in a virtual reality.

Ulrich (1984); Kim (2010); Cervinka; Röderer and Hefler (2012) showed the benefits of nature for well-being. They showed that nature restores and contributes to well-being. Among the positive benefits are improved mood, depression, stress and anxiety, being calmer and more balanced. Time in nature or nature scenes is associated with positive mood as well as psychological well-being, significance and vitality. Time in nature or viewing nature scenes also helps to increase our ability to pay attention.

Coley; Kuo and Sullivan (1997); Kuo and Sullivan (2001) show the importance of connecting with nature and that time spent in nature connects us with each other and with the world. Weinstein, Przybylski and Ryan (2009) warn about the deprivation of nature.

The authors showed that deprivation of nature has been linked to depression, loss of empathy, and lack of altruism.

The benefits provided by nature are many. Arguments can be used in favor that there is a predisposition in human beings to like nature. Studies on the relationship between human beings and nature, through outdoor activities, showed their benefits early on (MUTZ; MÜLLER, 2016; BOWEN, NEILL; CRISP, 2016; MOGHADAM; SINGH; YAHYA, 2015; OPPER et al., 2014; KENIGER et al., 2013; RYAN et al., 2010; PLANTE; CAGE; STOVER, 2006; ZINKN; BOYES, 2006).

It is important to point out what kind of relationship the human being establishes with nature, only the lived nature directly contributes to the full psychosomatic development of an environmental conscience. It establishes affective bonds that are extremely important for socio-environmental relationships, expanding environmental perception. In this sense, nature itself has the ability to capture the attention of even the smallest children. We cannot forget that we need to have a relationship with nature based on respect and love, awakening biophilic feelings with the environment (KELLERT, 1993).

FINAL CONSIDERATIONS

According to the objective proposed in this study, the results found showed that caving promotes the well-being of its practitioners in the relationship between human beings and nature. This study showed that in a relationship mediated by the presence of natural elements, by the peculiar characteristic of the cave, nature becomes an important partner in the promotion of physical and mental well-being, perceived through the bodily senses and introspection in an environment of cave. Caving proved to be an activity that restores health, well-being, knowledge and the body's

relationship with nature and with the cave.

Finally, knowing the benefits that nature provides us is not enough. It takes an immediate and permanent reconnection, a reconnection with the natural environment. We live in a world of Nature Deficit Disorder, lack of nature in the lives of children and adults (LOUV, 2016). In this sense, you need a true immersion with nature, you need a bath in nature.

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