

## SCIENTIFIC PRODUCTION ON INTERPRETATIVE TRAILS IN NATIONAL JOURNALS IN THE PHYSICAL EDUCATION FIELD<sup>1</sup>

PRODUCCIÓN CIENTÍFICA SOBRE RUTAS INTERPRETATIVAS EN PERIÓDICOS  
NACIONALES EN EL ÁMBITO DE LA EDUCACIÓN FÍSICA

PRODUÇÃO CIENTÍFICA SOBRE TRILHAS INTERPRETATIVAS EM PERIÓDICOS  
NACIONAIS DA ÁREA DE EDUCAÇÃO FÍSICA

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### Abstract

In this article, a literature review was carried out in order to identify the scientific production in national journals in the field of Physical Education on interpretative trails between the years 2010 to 2020. Publications in national journals evaluated between A1 and B2 by WebQualis were searched (2013 – 2016), using the descriptors: trail, interpretive trail, trail, trail-walking, hiking and interpretive trails. Nine articles were selected from the proposed objective divided into two categories of analysis: informative / environmental perceptions (IEP); and continuing education, attitudes and procedures (CEAP). The research shows that, although there is little research on the subject, there is a growing human search for a connection with nature, using protected areas as a means of contact with the natural environment. Moreover, it points to the need for Environmental Education to be present in the driving on trails work, in addition to suggesting continuous and transdisciplinary training, given the heterogeneous characteristics of the public that seeks contact with nature through the trails.

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**Keywords:** Physical Education; Interpretive Trail; Environmental Education.

### Resumen

En este artículo se realizó una revisión bibliográfica con el fin de identificar la producción científica en periódicos nacionales del campo de la Educación Física en senderos interpretativos entre los años 2010 a 2020. Se buscaron publicaciones en periódicos nacionales evaluadas entre A1 y B2 por WebQualis (2013 – 2016), utilizando los descriptores: sendero, sendero interpretativo, trail, trail-walking, hiking e interpretative trails. Del objetivo propuesto se seleccionaron nueve artículos divididos en dos categorías de análisis: informativo/percepciones ambientales (PEI); y educación continua, actitudes y procedimientos (CEAP). La investigación muestra que, aunque hay poca investigación sobre el tema, existe una creciente búsqueda humana por una conexión con la naturaleza, utilizando las áreas protegidas como medio de contacto con el medio natural. Además, apunta a la necesidad de que la Educación Ambiental esté presente en el trabajo de conducción en senderos, además de sugerir una formación continua y transdisciplinaria, dadas las características heterogéneas del público que busca el contacto con la naturaleza a través de los senderos.

**Palabras clave:** Educación Física; Sendero Interpretativo; Educación Ambiental.

### Resumo

Neste artigo, realizou-se uma revisão de literatura a fim de identificar a produção científica em periódicos nacionais na área de Educação Física sobre trilhas interpretativas entre os anos de 2010 a 2020. Foram pesquisadas publicações em periódicos nacionais avaliados entre A1 e B2 pelo WebQualis (2013 – 2016), utilizando os descriptores: trilha, trilha interpretativa, *trail*, *trail-walking*, *hiking* e *interpretative trails*. Nove artigos foram selecionados a partir do objetivo proposto divididos em duas categorias de análise: informativa / percepções ambientais (IPA); e formação continuada, atitudes e procedimentos (FCAP). A investigação evidencia que apesar de haver poucas pesquisas sobre o tema, há uma crescente busca do ser humano por uma conexão com a natureza, utilizando áreas protegidas como meio de contato com o ambiente natural. Ademais, aponta a necessidade da Educação Ambiental se fazer presente no trabalho de condução em trilhas, além de sugerir uma formação continuada e transdisciplinar, haja vista as características heterogêneas do público que busca o contato com a natureza por meio das trilhas.

**Palavras-chave:** Educação Física; Trilha Interpretativa; Educação Ambiental.

### Introduction

Since its institutionalization in 1981, Environmental Education (EE) has been a topic of discussion, highlighting the need for its inclusion in basic education (PORTUGAL; SORRENTINO, 2020). In the first decade of the 21st century, there was a growing number of studies related to EE. However, Garcia et al. (2020) indicates that since 2016, there has been a decline in the number of studies related to political-administrative aspects and reforms linked to the theme.

However, activities in natural environments continue to engage students, as they facilitate learning through interaction and the integration of theory with practice (FARIAS FILHO, 2019). Beyond conceptual aspects, the environment aids in reflecting on attitudes and values in content approaches (COTES, 2018). Thus, Physical Education can aid in the pursuit of meaningful learning by contextualizing and generating significance in the holistic development of the student (LEMKE; SCHEID, 2020).

In this regard, we must consider that the teaching-learning process of Environmental Education in Physical Education classes should take into account the experiences of the participants (LOPEZ; RADETZKE; GÜLLICH, 2020). Interpretive trails are recommended "[...] to soften the human being in his social commitment to the planet and his inevitable interrelation [...]" (COTES, 2018, p. 82). These trails are typically shorter (MINISTRY OF THE ENVIRONMENT, 2021) and less exhausting, thus facilitating the understanding of the knowledge presented during the course (BRITO; PAIVA, 2020). Thus, interpretive trails have emerged as a strategy that enhances environmental perception and learning (AMARAL; OVIGLI; JUNIOR, 2020; SOUZA, 2016).

Authors such as Osborne et al. (2021) argue that walking employs "[...] the senses of perception, [...] develops self-awareness, awareness of others, and the environment [...]", and allows during the journey "[...] to reconnect the human being with his nature, understanding himself as an inseparable part of the infinite that surrounds him [...]" (p. 345). Additionally, it aids in reflection and can enhance physical and psychosocial aspects. Walking on trails, whether in a Protected Area or not, is an excellent tool for linking interpretive resources with reality (TILDEN, 1977).

The practice in Protected Areas, especially those emphasizing research, extension, environmental education, and recreation and leisure activities focused on public use, holds significant importance for human physical and mental health. This is because contact with nature can reduce daily stress, improve blood levels, and help control blood pressure. Thus, health and environmental awareness are associated with activities such as environmental education and interpretation on trails, in addition to leisure and adventure activities in nature (PORRETTI et. al., 2020).

Despite interpretive trails being a tool that can foster participant awareness on environmental conservation, interpretation, and student socialization (MORITZ; GURGEL; ROCHA, 2014; ROCHA et al., 2017; COTES, 2018), activities in natural environments require attention to bureaucratic issues with educational institutions and mutual assistance (SOUZA et al., 2020; PALMIERI; MASSABINI, 2020). Bento and Nazar (2020) discuss the importance of organization in park management, emphasizing the creation of an Environmental Education (EA) program to add an educational perspective to activities conducted in this space.

Regarding acquired knowledge, Cotes, Alvarenga, and Nascimento (2020) concluded that visitor guides working on trails should be trained to provide clear information for public understanding. The authors emphasize the need to address conceptual, procedural, and attitudinal knowledge before and after experiences in the natural environment.

According to Maciel and Uhmman (2020), research aimed at understanding the use of trails as a teaching strategy aids in developing a school curriculum focused on environmental respect from a holistic perspective. Following the publication of the first version of the *Base Nacional Comum Curricular* [National Common Core Curriculum] (BNCC) in 2017, it was noted that the theme of Environmental Education (EE) was undervalued in its guidelines. This has contributed to the neglect of this content, despite the importance of the environment and its transformative role in student reflection (OLIVEIRA; NEIMAN, 2020).

A thorough analysis of the BNCC, a government document that outlines essential learning in Brazilian Basic Education and commits to holistic education, reveals that EE is only mentioned on one page (p. 19), indicating a significant devaluation in this teaching area. EE is a contemporary topic that the BNCC recommends schools to address in a cross-curricular and integrated manner, respecting their autonomy (BRASIL, 2017).

In the context of Physical Education, the BNCC categorizes the subject under the Languages area and outlines its thematic units: games and play; sports; gymnastics; dances; fights; and adventure body practices. Each thematic unit has its subdivisions. Adventure body practices, planned for the final years of elementary education,

are divided into two categories: urban and nature-based. This section of the document highlights skills related to experiencing body practices that respect natural heritage and minimize environmental degradation (BRASIL, 2017).

Given the recent changes noted, particularly the decreased focus on EE and its connection with leisure and adventure activities in nature, this study aimed to map the scientific production on trails and/or interpretive trails in national Physical Education journals, rated between A1 and B2 by WebQualis (2013 - 2016), from 2010 to 2020. Thus, this work aims to contribute to academic discussions on the approach of EE during trail practices, as well as reflect on initiatives reported in academic literature.

## Methodology

The methodological approach of this text employed what Hohendorff (2014) describes as a literature review article (LRA). The main steps include: establishing a theme with a focus; searching for relevant published texts using descriptors and database consultation; and crafting a coherent and engaging narrative, with a beginning, middle, and end, to present the ideas found in the researched texts.

Data was collected through a search of national Physical Education journals rated between A1 and B2 by WebQualis (2013 - 2016). The decision to collect data from national journals was made to better understand research in the national context. The descriptors used were: *trilha*; *trilha interpretativa*; trail; trail-walking; hiking; interpretive trails.

The research scope spanned from 2010 to 2020, and the inclusion criterion was relevance to the study object. Any unrelated studies were excluded from the analysis. The article selection and analysis procedure followed these steps: (a) reading all published article titles and/or abstracts; (b) identifying articles related to the research topic; (c) full reading of the articles; and (d) development of analytical categories (BARDIN, 2010).

The search was conducted in the following databases using the descriptors: Scielo, Lilacs, Science Research, *Periódico Capes*, Science, Elsevier, and Scholar.

Initially, 16 articles were identified, some of which contained more than one descriptor in the body of the referenced text. Thus, the articles were categorized based on descriptors related to the study's objective.

In a subsequent filter, article abstracts were read to identify works directly related to the research object. After analysis, nine studies remained in the journals: *Movimento*, *Motriz*, *LICERE*, *Motrivivência*, and *Interface*.

It is important to note that many studies and research included concepts and information related to one of the selected descriptors, but did not relate to the research object, thus not contributing to this study's analysis. Exclusion criteria included, for instance, studies on pharmaceutical itineraries. The phrase “[...] those who follow these therapeutic itineraries [...]” initially included the article due to the descriptor “*trilha*”, but it was subsequently excluded.

## Results

Of the nine selected studies, the oldest is from 2010 and the most recent, from 2020. The initial analysis aimed to examine the objectives of the articles, based on Bardin's study (2010). Subsequently, the findings were divided into two analytical categories: (a) Informational / Environmental Perceptions (IEP), and; (b) Continuing Education, Attitudes, and Procedures (CEAP).

In the material exploration, six articles were categorized under the IEP analysis category: (1) “*Percepção dos idosos sobre atividade de aventura na natureza*” [“Perception of elderly people about adventure activities in nature”]; (2) “*Participação de idosos em atividades de aventura na natureza: reflexões sobre aspectos socioambientais*” [“Participation of elderly people in adventure activities in nature: reflections on socio-environmental aspects”]; (3) “*Trilha interpretativa como estratégia de educação em saúde: potencial para o trabalho multiprofissional e Intersetorial*” [“Interpretive trail as a health education strategy: potential for multidisciplinary and intersectoral work”]; (4) “*Caminho da fé: reflexões sobre lazer e ambiência*” [“Path of faith”: reflections on leisure and ambience”]; (5) “*Emoções e riscos nas práticas na natureza: uma revisão sistemática*” [“Emotions and risks in practices in nature: a systematic review”]; (6) “*Atividade física de aventura na natureza para pessoas com*

deficiência” [“Adventure physical activity in nature for people with disabilities”]; (6). All articles in this analysis category concluded by elucidating the evaluated data through information, environmental issues, and reflections on these matters.

In the second CEAP analysis category, three articles were listed with the following titles: (1) “*Aprendizagem formal, não formal e informal: como condutores de dois Parques Nacionais estabelecem seu tirocínio*” [“Formal, non-formal and informal learning: how conductors in two National Parks establish their training”]; (2) “*Esportes de aventura praticados na Barra da Tijuca e São Conrado, RJ: um levantamento das modalidades e formação do instrutor*” [“Adventure sports practiced in Barra da Tijuca and São Conrado, RJ: a survey of the modalities and instructor learning”]; (3) “Attitudinal, conceptual, and procedural dimensions of the knowledge of trail guides in national parks”. Articles with the CEAP approach conclude on the necessity of physical education training, continuous learning, lifelong learning, and environmental issues related to attitudes and procedures.

Table 1 shows the journal where the article was published, its WebQualis (2016) rating, the year of publication, authors, title, and study objectives. The order shown in the table follows the chronological sequence of the study's publication.

**Table 1** - Scientific publications related to the research subject

Journal 2016 WebQualis	Year	Author(s)	Title	Objectives
Motriz B1	2010	Priscilla Pinto Costa da Silva e Clara Maria Silvestre Monteiro de Freitas	<i>Emoções e riscos nas práticas na natureza: uma revisão sistemática</i>	Conduct a review of scientific articles on the emotions and risks involved in adventure practices in nature.
Motriz B1	2010	Jaqueline Costa Castilho Moreira e Gisele Maria Schwartz	<i>“Caminho da fé”: reflexões sobre lazer e ambiência</i>	Identify attitudes that can promote pro-environmental behaviors during a walk.
Motrivivência B2	2016	Adriana A. F. Viscardi, Juliana P. Figueiredo, Priscila M. dos S. Correia, Alcyane Marinho	<i>Participação de idosos em atividades de aventura na natureza: reflexões sobre aspectos socioambientais</i>	Analyze the perceptions of 11 elderly individuals on socio-environmental aspects related to the practice of adventure activities in nature.
Movimento A2	2017	Marcial Cotes, William das Neves Salles, Alexandre Vinícius Bobato Tozetto, Juarez Vieira Nascimento	<i>Aprendizagem formal, não formal e informal: como condutores de dois Parques Nacionais estabelecem seu tirocínio</i>	Investigate the professional learning situations (formal, non-formal, and informal) of long-distance trail guides operating in two Brazilian National Parks.

LICERE B2	2017	Adriana A. da F. Viscardi, Priscila M. dos Santos, Giovana Z. Mazo, Alcyane Marinho	<i>Percepções de idosos sobre atividades de aventura na natureza</i>	Explore the perceptions of elderly participants in a university extension program on adventure activities in nature.
Interface: comunicação, saúde, educação B2	2018	Maria Elisabeth Kleba, Liane Colliselli, Altamir Trevisan Dutra, Eliara Solange Müller	<i>Trilha interpretativa como estratégia de educação em saúde: potencial para o trabalho multiprofissional e intersetorial</i>	Encourage people's perception and stimulate reflection on health-related topics of interest to specific communities.
LICERE B2	2019	Darlan P. Silva, Priscilla R. P. de F. Silva, Joslei V. de Souza, Marcial Cotes	<i>Atividade física de aventura na natureza para pessoas com deficiência</i>	Map the scientific production in national Physical Education journals from 2006 to 2016, related to the practice of adventure physical activities in nature for people with disabilities.
Motriz B1	2020	Marcial Cotes, Ana Maria Alvarenga e Juarez Viana do Nascimento	Attitudinal, conceptual, and procedural dimensions of the knowledge of trail guides in national parks Attitudinal, conceptual, and procedural dimensions of the knowledge of trail guides in national parks	Present the conceptual, procedural, and attitudinal knowledge of trail guides in two National Parks: Serra da Capivara National Park and Caparaó National Park.
Motrivivência B2	2020	Felipe da Silva Triani, Bruno Henrique Ribeiro Sampaio, Leonardo Mota de Castro, Jairo Antônio da Paixão	<i>Esportes de aventura praticados na Barra da Tijuca e São Conrado, RJ: um levantamento das modalidades e formação do instrutor</i>	Identify and analyze the most popular adventure sports in the region, as well as the training of instructors responsible for leading these sports in the respective natural spaces.

**Source:** Prepared by the Authors.

The studies listed in Table 1, based on their objectives and methodological paths, yielded varying results and conclusions. Freitas e Silva (2010) highlight, from the 30 articles they researched, various contexts where the pursuit of emotions and sensations, as well as safety-related aspects, became more significant. Cotes et. al. (2017) concluded that the learning of trail guides occurs through formal, non-formal, and informal situations, with the informal aspect being prominent, suggesting that this learning is lifelong.



Nonetheless, Silva et al. (2019) argues that there is a negligible number of studies involving people with disabilities and adventure physical activities in nature, while simultaneously providing evidence that disability is not a barrier to their participation.

Moreira and Schwartz (2010) indicate that during leisure time, participation in a long nature walk can catalyze pro-environmental attitudes and behaviors. Nevertheless, Cotes, Alvarenga and Nascimento (2020) emphasize the importance of guide training to address conceptual, procedural, and attitudinal dimensions, both before and during the hike.

Two studies by Viscardi et al. (2016) and Viscardi et al. (2017) highlights the need for better professional preparation to cater to the elderly in nature adventure activities. Additionally, they emphasize how these activities enable reflections on environmental issues. Continuing on adventure sports, Triani et al. (2020) highlights the need for Physical Education training for instructors of these modalities, as well as training courses for those interested in this field.

Regarding the use of interpretive trails to promote health, Kleba et al. (2016) highlight the potential of this tool in addressing health issues, fostering community involvement, and enhancing the value of leisure spaces.

Table 2 shows the themes discussed in the scientific publications, along with their title, year, authors, and thematic analysis categories.

**Table 2** - Themes addressed in scientific publications

Title	Reference	Thematic Analysis Category
<i>“Caminho da fé”: reflexões sobre lazer e ambiência</i>	Moreira & Schwartz, 2010	Environmental Information/Perceptions
<i>Emoções e riscos nas práticas na natureza: uma revisão sistemática</i>	Silva & Freitas, 2010	Environmental Information/Perceptions
Elderly Participation in Nature Adventure Activities: Reflections on Socio-Environmental Aspects	Viscardi et al., 2016.	Environmental Information/Perceptions
<i>Percepções de idosos sobre atividades de aventura na natureza</i>	Viscardi et al., 2017	Environmental Information/Perceptions

Interpretive Trails as a Health Education Strategy: Potential for Multi-professional and Intersectoral Work.	Kleba et al., 2018	Environmental Information/Perceptions
<i>Atividade física de aventura na natureza para pessoas com deficiência</i>	Silva et al., 2019	Environmental Information/Perceptions
<i>Aprendizagem formal, não formal e informal: como condutores de dois Parques Nacionais estabelecem seu tirocínio</i>	Cotes et al., 2017	Continuing Education / Attitudes and Procedures
<i>Esportes de aventura praticados na Barra da Tijuca e São Conrado, RJ: um levantamento das modalidades e formação do instrutor</i>	Triani et al., 2020	Continuing Education / Attitudes and Procedures
Attitudinal, conceptual, and procedural dimensions of the knowledge of trail guides in national parks	Cotes, Alvarenga & Nascimento, 2020	Continuing Education / Attitudes and Procedures

Source: Prepared by the Authors.

## Discussion

Considering the time frame of the research findings and the selected thematic analysis categories: Informational / Environmental Perceptions (IEP) and Continuing Education/Attitudes and Procedures (CEAP). The findings align with those of Moritz, Gurgel, and Rocha (2014), and Rocha et al. (2017) and Cotes (2018) discuss interpretive trails, as the awareness generated through trail walking directly relates to learning from the information provided, fostering a more conscious understanding for individuals interacting with nature. As long as this activity is conducted in relation to socio-environmental elements.

In this regard, it is understood that the IEP category generated by the findings substantiates Maciel and Uhmman (2020), as the research contributed to environmental respect with a holistic view and real knowledge gain through environmental perceptions. The inclusion, adventure, socio-environmental issues, risks, and emotions expressed in the research category reflect what trails and the practice of environmental interpretation foster for reflections on environmental issues.

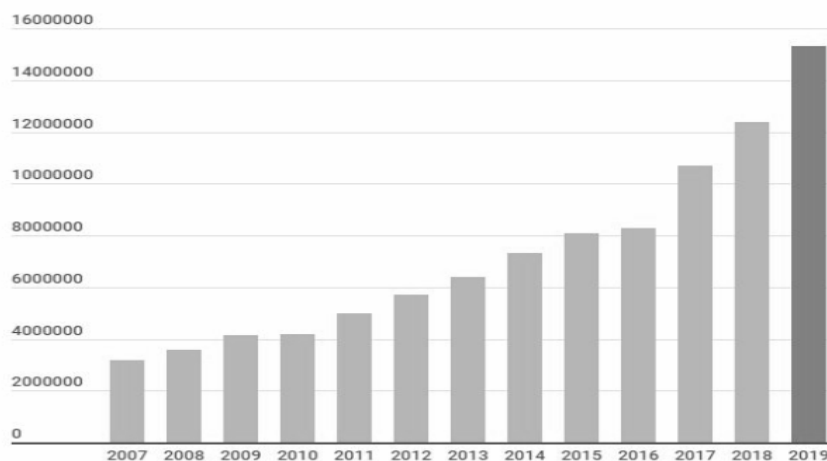
The six articles categorized under IEP engage with environmental perception. Specifically concerning two groups - the elderly and people with disabilities, the studies highlight the transformative role of EE and sensory development through trail use, aligning with the research of Oliveira and Neiman (2020).

The CEAP category is predominantly educational, as noted by Souza et al. (2020) and Palmieri and Massabini (2020) emphasize the crucial role of EE in fostering awareness and care for nature. Here, it is important to recognize the significance of EE, considering two aspects: transforming and educating. Furthermore, it is worth noting that leisure activities on trails offer an interesting educational aspect, as they have the potential for informal instruction (COTES; ALVARENGA; NASCIMENTO, 2020).

This underscores the need for Environmental Education (EE) to be integrated into the pedagogical work of school Physical Education, considering its formative importance in the educational context through the use of trails. Several authors have discussed how Environmental Education (EE), when integrated with this curriculum component, can foster environmental awareness and value construction in students (RIOS; DE SOUSA FILHO; RIBEIRO, 2018; MEDEIROS, 2020; DE OLIVEIRA; ESTEVAM; MAIA, 2020; NEUENFELDT; MAZZARINO; DA SILVA, 2021).

The interrelation of EE, trails, and environmental interpretation on trails is evident in all findings. However, Kleba et al.'s work notably emphasizes the health-related aspect. (2016). Hence, Porretti (2021) underscores the importance of immersing in nature within Protected Areas in this process, highlighting the unifying effect the environment has on humans. By enhancing the quality of life for those seeking contact with nature, and the importance of Environmental Education (EE) in this activity to fulfill its role in educational transformation, the data from this investigation becomes relevant.

**Figure 1 - Visitor Index in Federal Protected Areas (2007-2019)**  
**Visitação em unidades de conservação federais**



Source: ICMBio (2020).

Graph 1 indicates the human quest for connection with nature by seeking Protected Areas for this amalgamation with the natural environment, showing a clear increase over the last decade. Porretti (2021) notes that media has added value to adventure sports, potentially influencing the inclusion of adventure body practices in the BNCC.

Similarly, it is understood that both the media and the COVID-19 pandemic have driven the general population to seek protected areas for a sense of well-being, leading to a somewhat forced awareness of the importance of this interaction (COTES, 2018; DA SILVA-MELO; MELO; GUEDES, 2020). The media, through the use of thrilling, action-packed, and idyllic images of adventure sports, aims to instill a conscious or unconscious passion in the population, based on the transmitted images and messages.

Thus, there is an attempt to retain these viewers, indirectly encouraging the pursuit of leisure and adventure activities in nature. Despite its potential superficiality, it does not engage in environmental concerns.

### Final Thoughts

This research is not exhaustive, and it is believed that more systematic evaluations of the importance of leisure activities on interpretive trails for health and public awareness/education are crucial. Despite this, it's clear that there are few studies investigating interpretive trails and their applications, despite this study acknowledging their significance for health, leisure, and educational awareness in the relationship between humans and the natural environment. Considering that between 2010 and 2020, this research accounted for only nine works published in national journals.

Another notable aspect is the potential influence of media on the public's leisure activities in seeking Protected Areas. The media, through the use of thrilling, action-packed images of adventure sports set in idyllic locations, aims to instill in society a conscious or unconscious passion for consuming nature, conveyed through the images and messages transmitted.

Thus, there is an attempt to retain these viewers, indirectly encouraging the pursuit of leisure and adventure activities in nature. Visitor guides on trails may not engage with environmental concerns if they lack proper training.

Knowledge for operating on natural environment trails emerges as the predominant factor for activity success, given the clear heterogeneity of the audience, which can range from students, people with disabilities, to the elderly. This requires ongoing, transdisciplinary training to keep up with the evolution and demand of the public seeking this contact with nature through trails.

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