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Review article

Promoting physical activity through the media and neurocommunication

[*Promoción de la actividad física a través de los medios de comunicación y la neurocomunicación*]

[*Promoção da atividade física através dos meios de comunicação e da neurocomunicação*]

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ABSTRACT

Introduction: This academic article examines the impact of media and neurocommunication on the promotion of physical activity. It addresses how the interaction of these two areas can be effectively used to influence health and exercise-related behaviors in the population. The potential of these tools to change behaviors and increase physical activity among different demographic groups is explored through a meticulous review of the literature and analysis of various communication campaigns.

Objective: To analyze the most effective strategies that combine neurocommunication and digital media to encourage active lifestyles. To achieve this, quantitative and qualitative methods are used, allowing for a rigorous evaluation of current and past public health campaigns, and assessing their effectiveness in modifying behavior related to physical activity.

Materials and Methods: A literature review methodology was chosen, utilizing prominent academic databases such as PubMed, Scopus, and Web of Science. The review process focused on identifying studies addressing the effectiveness of media and neurocommunication techniques in promoting physical activity.

Results: The results highlight the effectiveness of integrating neurocommunication techniques with digital media platforms, demonstrating that well-designed interventions can significantly improve physical activity levels. Furthermore, the study suggests that personalized campaigns, which use neurocommunication data to tailor the message to the specific characteristics of the target audience, are particularly effective.

Conclusions: The article provides evidence that the combination of neurocommunication with digital media strategies is a powerful approach to promoting physical activity. This approach has the potential not only to improve individual health but also to positively influence public health on a large scale.

Keywords: neurocommunication, sports, health, physical activity, media.

RESUMEN

Introducción: este artículo académico examina el impacto de los medios de comunicación y la neurocomunicación en la promoción de la actividad física. Aborda cómo la interacción de estas dos áreas puede ser utilizada efectivamente para influir en las conductas relacionadas con la salud y el ejercicio en la población. A través de una meticulosa revisión de la literatura y el análisis de diversas campañas de comunicación, se explora el potencial de estas herramientas para cambiar comportamientos y aumentar la actividad física entre diferentes grupos demográficos.

Objetivo: analizar las estrategias más efectivas que combinan la neurocomunicación y los medios digitales para fomentar estilos de vida activos. Para ello, se utilizan métodos

cuantitativos y cualitativos que permiten una evaluación rigurosa de campañas de salud pública actuales y pasadas, y se evalúa su eficacia en la modificación del comportamiento relacionado con la actividad física.

Materiales y métodos: se ha optado por una metodología de revisión literaria utilizando bases de datos académicas prominentes como PubMed, Scopus y Web of Science. El proceso de revisión se centró en identificar estudios que abordan la eficacia de los medios de comunicación y las técnicas de neurocomunicación en la promoción de la actividad física.

Resultados: los resultados destacan la eficacia de integrar técnicas de neurocomunicación con plataformas de medios digitales, demostrando que las intervenciones bien diseñadas pueden mejorar significativamente los niveles de actividad física. Además, el estudio sugiere que las campañas personalizadas, que utilizan datos neurocomunicativos para adaptar el mensaje a las características específicas del público objetivo, son particularmente efectivas.

Conclusiones: el artículo proporciona evidencia de que la combinación de neurocomunicación con estrategias de medios digitales es una aproximación poderosa para promover la actividad física. Este enfoque no solo tiene el potencial de mejorar la salud individual, sino también de influir positivamente en la salud pública a gran escala.

Palabras clave: neurocomunicación, deporte, salud, actividad física, medios de comunicación.

RESUMO

Introdução: Este artigo acadêmico examina o impacto da mídia e da neurocomunicação na promoção da atividade física. Aborda como a interação dessas duas áreas pode ser usada de forma eficaz para influenciar a saúde e os comportamentos relacionados ao exercício na população. Através de uma meticulosa revisão da literatura e análise de diversas campanhas de comunicação, é explorado o potencial destas ferramentas para mudar comportamentos e aumentar a atividade física entre diferentes grupos demográficos.

Objetivo: analisar as estratégias mais eficazes que combinam a neurocomunicação e os

meios digitais para promover estilos de vida ativos. Para isso, são utilizados métodos quantitativos e qualitativos que permitem uma avaliação rigorosa das campanhas de saúde pública atuais e passadas, e avalia-se sua eficácia na modificação de comportamentos relacionados à atividade física.

Materiais e métodos: optou-se por uma metodologia de revisão de literatura utilizando bases de dados acadêmicas de destaque, como PubMed, Scopus e Web of Science. O processo de revisão concentrou-se na identificação de estudos que abordassem a eficácia das técnicas de mídia e neurocomunicação na promoção da atividade física.

Resultados: Os resultados destacam a eficácia da integração das técnicas de neurocomunicação com plataformas de mídia digital, demonstrando que intervenções bem concebidas podem melhorar significativamente os níveis de atividade física. Além disso, o estudo sugere que as campanhas personalizadas, que utilizam dados neurocomunicativos para adaptar a mensagem às características específicas do público-alvo, são particularmente eficazes.

Conclusões: O artigo fornece evidências de que combinar a neurocomunicação com estratégias de mídia digital é uma abordagem poderosa para promover a atividade física. Esta abordagem não só tem o potencial de melhorar a saúde individual, mas também de influenciar positivamente a saúde pública em larga escala.

Palavras-chave: neurocomunicação, esporte, saúde, atividade física, mídia.

INTRODUCTION

This paper explores how the promotion of physical activity through media incorporating neurocommunication characteristics can serve as a tool to address self-help needs related to emotional management, update educational requirements, promote sports practice, encourage academic updating, and develop a sustainable business model. The central strategy involves developing products and services designed to bring healthy lifestyles and sports practice closer to a specific segment of the population and, consequently, to society as a whole.

It is widely recognized and demonstrated that physical activity significantly contributes to well-being and a healthy lifestyle, a perspective widely accepted both socially and academically (Reigal *et al*., 2013). The associated benefits, which underpin this text, include a lower probability of developing certain diseases and the experience of greater overall well-being (Powell and Paffenbarger, 1985). Furthermore, exercise has been shown to increase levels of neurotransmitters such as serotonin and dopamine, thus improving mood (Herrera, 2008). The positive effects of exercise on mood are also well-documented (Jiménez *et al*., 2008). However, a fast-paced lifestyle, unhealthy habits, and the prioritization of work or leisure over overall health can decrease interest in adopting lifestyle habits that benefit both internal (mental) and external (physical) well-being. Additionally, the increase in technologies and entertainment options is altering behaviors and contributing to a decline in active lifestyles (Niñerola *et al*., 2006). Numerous government institutions, aware of their responsibility for public health, seek to mobilize the necessary resources to have a positive impact on the entire population. (Dishman, 1998).

Neurocommunication

Neurocommunication is an interdisciplinary field that explores the intersection of neuroscience and communication, investigating how brain processes influence and are influenced by communicative interactions. This field draws on knowledge from neuroscience, cognitive psychology, linguistics, and communication sciences to better understand how the human brain processes, interprets, and responds to messages (Barrientos-Báez and Caldevilla-Domínguez, 2019). At its core, neurocommunication studies the neural mechanisms underlying the reception and transmission of information, focusing on how individuals understand and react to various types of verbal and nonverbal communication. Using advanced neuroimaging techniques such as functional magnetic resonance imaging (fMRI) and electroencephalography (EEG), researchers can observe brain activity in response to specific communicative stimuli and thus identify activity patterns associated with different communicative processes (Urbina, 2023).

A central aspect of neurocommunication is the study of how messages can be designed to maximize communicative effectiveness. For example, by understanding, which stimuli generate greater activation in brain areas related to attention and emotion, communicators can create more captivating and memorable messages. This application is particularly relevant in fields such as marketing and advertising, where neuromarketing has become a valuable tool for evaluating and improving the effectiveness of advertising campaigns (Campo, 2021).

Furthermore, neurocommunication also addresses how individual differences in brain structure and function can influence how people process communicative information. This includes how factors such as age, sex, and cultural differences affect the perception and interpretation of messages (García-Erviti, 2024). Neurocommunication not only has implications for improving communication strategies in various sectors but also offers valuable insights into more effective treatments for speech and language disorders, improving educational and therapeutic interventions for individuals with communication difficulties (Leal Jiménez, 2020).

The goal is to exhaustively identify and synthesize the research, theories, and practices applicable to the use of media and neurocommunication strategies in campaigns designed to promote physical exercise.

The article also aims to discover and define new possibilities and emerging methodologies in this field, paying special attention to technological innovations and recent advances in applied communication sciences and neurosciences. It will also explore how emerging technologies, such as augmented reality and brain-computer interfaces, can be integrated to develop more effective and personalized interventions. By providing a detailed and up-to-date understanding, this study aspires to serve as an essential guide for researchers and professionals in the public health sector, as well as for policymakers and health promotion programs, thus contributing to the development of innovative and effective strategies to increase levels of physical activity through multidisciplinary approaches.

A thorough literature review was conducted using prominent academic databases such as PubMed, Scopus, and Web of Science. The review process focused on identifying studies addressing the effectiveness of media and neurocommunication techniques in promoting physical activity. Specific keywords such as "neurocommunication," "sports," "health," "physical activity," and "media" were used.

The review primarily included articles published in English and Spanish from 2019 to the present, selecting those that offered empirical evidence on communication strategies and their impact on behavior related to physical activity.

The selected studies were critically analyzed to determine the relevance of their methodologies and findings. This systematic review allowed for the consolidation of a body of knowledge supporting the discussion of how traditional and neuroscientific approaches can be integrated to promote more active lifestyles through effective communication.

DEVELOPMENT

Communication, trade, and technology

The exchange of goods and ideas has been increasingly prevalent since societies began producing goods in excess of their subsistence needs. This led to the exchange and trade of these surpluses through increasingly frequent and intense contacts between various human groups. In this context, e-commerce finds its roots in the United States in 1960 with the creation of EDI (Electronic Data Interchange), a pioneering tool that allowed companies to conduct electronic transactions reliably. During the 1970s, the first commercial transactions using computers were carried out, although initially these offered quite limited services (Janssens and Cuyvers, 2023).

Over time, the introduction of "telesales" and catalog shopping began to popularize a wide variety of products to the general audience, overcoming the limitations of physical proximity and adopting the use of credit cards for payments. The creation of the World Wide Web by Tim Berners-Lee in 1989 marked a radical change in communication and marketing methods, as noted by López and Sandulli in 2007.

Today, devices such as mobile phones and tablets, along with social networks, have transformed consumption habits. The ability to compare prices and the ease of buying products or services anytime and anywhere encourage online commerce, echoing the phrase from Oliver Stone's film, "Money Never Sleeps." Furthermore, social networks have proven to be valuable tools for conducting market research at very low costs, allowing companies to quickly reach increasingly segmented audiences through specialized firms. Messages on these platforms have evolved from the pure persuasion of traditional advertising to include commercial values and objectives that resonate with current societal demands, such as solidarity, sustainability, and socialization. Cloud technology has allowed companies to expand significantly and adapt to emerging markets and niches that were previously unknown (Blázquez León, 2022).

Over the last two decades, the internet and e-commerce have experienced exponential growth, driven by new digital possibilities for interaction and participation. Portals like Amazon, described by Forbes magazine as the world's most valuable company, and others such as eBay, El Corte Inglés, AliExpress, and Alibaba, are clear examples of this boom (Laza, 2021).

The incorporation of the new communicative and commercial paradigm in online companies in the sports and healthy lifestyle sectors has advanced considerably since its beginnings in the 1980s. Platforms like Zinkcare, which focus on providing specialized health and wellness services under a B2B model, along with Activilandia and Inithealth, which interactively offer personalized services tailored to clients' health indicators, challenges, sports goals, and concerns, are notable examples. These platforms are not only dedicated to service provision but also encompass training, promoting and

protecting health through simple, portable devices such as mobile phones, computers, and tablets (Salazar *et al*., 2022).

In this sense of increasingly (rather, consummated) digitalization of communication, social networks have consolidated themselves as fundamental communication media in contemporary society, characterized by a series of distinctive attributes that differentiate them from other traditional media. These digital platforms facilitate the creation, exchange, and discussion of content among users, operating under structures that promote interactivity and collective participation (Matosas-López and Cuevas-Molano, 2021).

One of the primary characteristics of social networks is their ability to sustain communities of users who share interests, hobbies, or personal relationships. This sense of community not only allows interaction through likes, comments, and shares, but also fosters the formation of sub-communities and broader communication networks (Díez *et al*., 2021). Furthermore, social networks are distinguished by their immediacy. The speed at which information is shared and received is practically instantaneous, allowing users to be continually updated with real-time events. This immediacy is crucial during significant events such as political crises, natural disasters, or social movements, where platforms act as primary channels for the rapid dissemination of information (Valle and Vélez-Bermello, 2021). Personalization is another significant attribute. Users can filter and select the type of content they wish to see and share, allowing them to create a highly personalized media environment. At the same time, social media algorithms adjust news feeds to show relevant content based on previous interactions, which can reinforce exposure to homogenous perspectives and opinions, a phenomenon known as echo chambers (Castillo *et al*., 2024).

The accessibility of social networks is also noteworthy. With just an internet-connected device, users can access these platforms from almost anywhere in the world. This universality has democratized the way information is created and shared, allowing individuals without access to traditional media to participate in global discourse (Bonilla-del-Río and Calero, 2022). Finally, social networks are powerful tools for

marketing and commercial communication. They allow companies, large and small, to reach specific audiences with unprecedented precision thanks to data analysis and targeted marketing. However, this use also raises concerns about data privacy and information manipulation (Sicilia *et al*., 2022).

The role of neurocommunication

Neurocommunication in the realm of online media focuses on how the brain processes information received through digital platforms. Factors such as visual and auditory attention are crucial, as media utilize elements like vibrant colors, movement, sounds, and music to capture and maintain user attention. These elements activate specific areas of the brain, making us more receptive to the transmitted message (Caldevilla-Domínguez *et al*., 2022). Cognitive load also plays a significant role, as online media present information rapidly and in multiple formats. The structure and presentation of this information can significantly influence the effectiveness of its processing. An excessive load can lead to cognitive fatigue, decreasing comprehension and retention of the content (Martínez, 2021).

Emotion is another key factor in communication mediated by online media. Content that evokes emotions is generally more effective in terms of retention and persuasion, as it stimulates areas of the brain associated with emotional processing (Yera, 2021). Furthermore, the interactivity of online media offers unique opportunities to enhance user engagement and involvement. The ability to interact with the content activates brain mechanisms related to reward and active participation, which can improve learning and retention: according to Barrientos-Báez *et al*. (2023, p. 184):

> "The widespread and appropriate use of these technologies already constitutes an incursion into neurocommunication, in the sense that their use in the interface with the citizen exerts a degree of attraction on young audiences. As well as the importance for this new generation of total interactivity as a value when appreciating an interaction with a medium, service, or stimulus (Castillo-Prada, 2022) in a context where technologies capable of providing direct interaction have

long been a proven factor of relevance in the process of building trust with audiences [...]".

Largely, the neurocommunication approach that characterizes the new communication environment is to increasingly reduce the amount of conscious effort required to maintain attention and comprehension of the presented material. This is what infotainment and social chronicle programs, as described by Mercado-Sáez (2020), have always done. These formats facilitate the assimilation of information by freeing the viewer from the need to make any transformation process on the message transmitted.

In this sense, the increasing personalization of content to individual preferences is also noteworthy. This allows online media to be especially attractive, activating areas of the brain related to personal relevance and self-referencing, which increases attention and deep processing of the content (Egido-Piqueras *et al*., 2023). The repetition and reinforcement of key messages through various formats and channels are also crucial, as they can strengthen the neural connections related to those messages, which is fundamental for learning and memorization (Nava Valtierra *et al*., 2023).

Ultimately, social networks offer a multitude of different approaches to the narrative style of content. This can significantly affect how this content is processed, and well-told stories can activate brain regions associated with visualization, empathy, and understanding (Caldevilla-Domínguez *et al*., 2022).

Emotions

Ultimately, communicators, whether large or small, will benefit from being associated primarily or solely with positive emotions. Any customer base will be larger if it includes segments of the public unwilling to disassociate from the communicator or company due to negative associations. These are usually identified with more conventional CSR issues (Jordá, 2023). However, in the case of physical activity as a "product" to promote, they take another form: effort. This is clearly a problem for a large part of the audience, as evidenced by Sánchez Ruiz-Cabello *et al*. 2019:

> The WHO estimates that 1.9 million deaths worldwide are attributable to physical inactivity and at least 2.6 million deaths result from overweight or obesity. Furthermore, it estimates that physical inactivity causes 10% to 16% of breast, colon, and rectal cancer cases, as well as an increase in the number of cases of type 2 diabetes and coronary heart disease. (p. 36)

As already discussed, ultimately, the key to communication or the acceptance of communication and its message by the audience, lies in the emotions it arouses in them. In today's digital age, video games, mobile applications, and gamification/ludification strategies have emerged as influential tools for promoting physical activity, redefining traditional perceptions of exercise as arduous labor and transforming them into emotionally rewarding and playful experiences. This paradigm shift is fundamental not only to increase physical activity levels among diverse demographic groups but also to foster sustained commitment to healthy lifestyles (Song *et al*., 2011).

Video games oriented to physical activity, such as those found on platforms like Wii Fit and Xbox Kinect incorporate game elements into physical exercise routines, resulting in an immersive and stimulating experience. These games use motion-tracking technology to engage the player in physical activities that simulate sports and other exercises, making the exercise process more appealing and less monotonous (Tripette *et al*., 2017).

On the other hand, fitness mobile applications use gamification/ludification techniques to motivate users through reward systems, challenges, and visible progress. Apps like "Zombies, Run!" blend immersive narratives with physical activity, encouraging users to run in the real world while completing missions within in an apocalyptic zombie survival game setting. This approach not only makes the act of running more exciting but also establishes a strong emotional connection with physical activity, promoting a regular exercise routine (Nyenhuis *et al*., 2020). Gamification/ludification in the exercise also extends to more structured contexts such as gyms and health centers, where playful elements are incorporated into training routines to improve motivation and user experience. Point systems, achievements, leaderboards, and personalized rewards are some of the strategies used to transform exercise routines into competitive and socially

rewarding activities (Silva and Prieto, 2021). From a psychological perspective, gamification and the use of interactive technologies in exercise work by aligning physical activities with intrinsic and extrinsic rewards, which can significantly increase motivation and, in turn, adherence to an active lifestyle. By associating exercise with play and pleasure instead of effort, these approaches alter attitudes towards physical activity and reinforce a positive cycle of participation and satisfaction (Martínez and Gallego, 2021).

CONCLUSIONS

The integration of neurocommunication and digital media can effectively increase participation in physical activity. This research strongly suggests, through theoretical arguments and recognition of social realities, that the application of innovative communication strategies, supported by neuroscientific knowledge, is not only capable of capturing public attention but also of fostering a deeper and more sustained commitment to an active lifestyle. Modern media, especially online platforms, offer unique opportunities to convey health messages in a more personalized and engaging way, which can significantly alter perceptions and behaviors related to physical activity.

The analysis also suggests that by combining neurocommunication with media tactics, it is possible to address the psychological and emotional barriers that often hinder regular engagement in exercise. Advances in digital technology and neuroscience open new avenues for more effective interventions that not only motivate through play and entertainment but also educate and empower individuals with information to make better decisions about their health.

Health-related competencies must be consistent, practical, and effective to ensure overall well-being. In this context, digital communication plays a crucial role, as it facilitates the dissemination of essential messages to the entire population. Therefore, it is imperative that public institutions, in fulfillment of their responsibility, and private institutions, as

a recommendation, persist in their efforts to address, through mass communication, the environmental, cultural, or ignorance-derived factors that affect people's daily health. Furthermore, they should provide simple and universally accessible solutions to prevent future problems.

It is essential that both public and private institutions continue to explore and optimize the use of these resources to improve public health. The ability of the media to reach wide audiences, combined with the precision of neurocommunication to influence cognition and behavior, represents a powerful tool in the fight against physical inactivity and its associated consequences. By continuing to advance in this intersection of fields, we can expect to see improvements not only in individual and collective health but also in the reduction of long-term healthcare burdens.

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The authors declare having competing interests.

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