A Study on the Influence of New Media Sports Information on Physical Exercise Behavior of Henan College Students: Mediating Effect Based on Health Literacy

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Abstract

This article aimed to 1) examine the relationship between new media sports information and physical exercise behavior among college students in Henan Province; 2) analyze the direct effect of new media sports information on physical exercise behavior and the mediating role of health literacy among college students in Henan Province; and 3) propose practical recommendations for improving health literacy and promoting physical exercise participation among college students in Henan Province based on the research findings. The sample consisted of 718 college students from universities in Henan Province, China, selected using a questionnaire survey through both online and offline data collection methods. The instrument used for collecting data was a structured questionnaire concerning new media sports information, health literacy, and physical exercise behavior. Data were analyzed using descriptive statistics, Pearson correlation, multiple regression analysis, mediation analysis, and structural equation modeling (SEM) using SPSS and AMOS. Results were as follows: 1) There was a significant relationship between new media sports information and students' physical exercise behavior in Henan Province. Findings indicated that access to and evaluation of sports information through new media platforms were associated with students' participation in physical exercise activities. 2) New media sports information significantly influenced students' physical exercise behavior, with health literacy acting as a partial mediator. Exposure to sports information through digital media enhanced students' understanding of health and exercise, which in turn encouraged more

active participation in physical activities. 3) Based on the findings, several practical suggestions were proposed to improve health literacy and promote physical exercise participation among college students, including developing new media health communication platforms, strengthening campus health education programs, improving online sports information services, and encouraging interactive digital communities such as social media–based sports initiatives.

Keywords: New Media Sports Information; Health Literacy; Physical Exercise Behavior

Introduction

The rapid development of digital technologies and social media has significantly transformed the way individuals access sports and health information. In recent years, new media platforms have become important channels for disseminating sports–related knowledge, exercise guidance, and health information. Studies have indicated that social media and digital platforms influence how individuals communicate, obtain information, and engage in sports–related activities (López–Carril et al., 2020). The increasing availability of online sports information has also expanded opportunities for individuals to learn about physical activity, fitness knowledge, and health promotion. As a result, new media has become an important tool for promoting physical activity and encouraging healthy lifestyles among young people, especially university students.

College students represent a key population group for health promotion because they are in an important stage of developing long–term lifestyle habits, including physical exercise behavior. Recent reports in China have indicated that many college students do not meet the recommended level of physical activity, while sedentary behavior and screen time continue to increase among young adults. These problems may negatively affect students' physical health, mental well–being, and quality of life. Henan Province was selected as the study area because it has a large population of college students and a rapidly expanding digital media environment, making it an appropriate context for examining the influence of new media sports information on students' exercise behavior.

Previous studies have shown that exposure to sports information through digital media can influence students' attitudes toward exercise, improve their understanding of physical activity, and increase their motivation to participate in sports activities (Filo et al., 2015). In addition, research has suggested that digital media environments can facilitate communication and knowledge sharing related to sports participation, thereby influencing individuals' health literacy and exercise

behavior (Greenhow & Chapman, 2020). However, although new media provides a large amount of sports information, the quality and credibility of such information vary.

Although previous studies have examined the relationship between digital media and health behavior, limited research has explored the mediating role of health literacy in the relationship between new media sports information and physical exercise behavior among college students, particularly in the context of China. Therefore, understanding how new media sports information affects students' physical exercise behavior and how health literacy mediates this relationship remains an important research issue.

Therefore, this study aimed to examine the relationship between new media sports information and students' physical exercise behavior in Henan Province, to investigate the influence of new media sports information on the physical exercise behavior of college students in Henan Province, and to propose practical recommendations for improving health literacy and increasing participation in physical exercise activities among college students. This study was conducted among college students in Henan Province, China, using questionnaire surveys and statistical analysis to explore the relationships among new media sports information, health literacy, and physical exercise behavior. The findings of this study are expected to provide useful implications for universities, health educators, and policymakers in developing effective strategies to enhance health literacy and promote physical exercise participation among college students.

This research paper presents an analysis of the influence of new media sports information on physical exercise behavior and examines the mediating role of health literacy among college students. The results of this study may contribute to academic discussions on digital health communication and provide practical recommendations for promoting physical activity among university students.

Research Objectives

1. To examine the relationship between new media sports information and physical exercise behavior among college students in Henan Province.

2. To analyze the direct effect of new media sports information on physical exercise behavior and the mediating role of health literacy among college students in Henan Province.

3. To propose practical recommendations for improving health literacy and promoting physical exercise participation among college students in Henan Province based on the research findings.

Literature Review

1. New Media Sports Information

New media sports information refers to sports-related content disseminated through digital platforms such as social media, mobile applications, and online communities. These platforms enable users to access, share, and interact with sports and health information in real time, thereby increasing engagement and accessibility. In recent years, new media has become a key channel influencing individuals' knowledge, attitudes, and behaviors related to physical activity. Empirical studies have shown that media use is significantly associated with sports participation behavior. A meta-analysis by Tian et al. (2023) reported a positive relationship between media use and sports participation ($r = 0.193$), suggesting that exposure to sports information can encourage individuals to engage in physical activity. In addition, digital media environments, particularly social media platforms, facilitate communication, interaction, and the sharing of sports-related content, which can enhance motivation and participation in physical activities (Zheng & Mason, 2022).

However, the influence of new media is not entirely positive. While active engagement with sports information can promote exercise behavior, excessive or passive media consumption may contribute to sedentary lifestyles. Therefore, new media sports information plays a dual role as both a facilitator and a potential barrier to physical activity, highlighting the need to better understand its impact on college students' exercise behavior.

2. Health Literacy

Health literacy refers to individuals' ability to access, understand, evaluate, and use health information to make appropriate health decisions. It involves both cognitive and social skills that enable individuals to maintain and promote their health (Li et al., 2022). As an important determinant of health outcomes, health literacy influences health behaviors, healthcare utilization, and overall well-being.

Empirical evidence indicates that low health literacy is associated with adverse health outcomes. Chang et al. (2020) reported that more than one-third of patients have inadequate health literacy, which is linked to poor disease management, increased hospital readmission, and higher healthcare costs. In China, although health literacy has improved significantly from 6.48% in 2008 to over 23% in 2020, substantial disparities remain across regions and populations (Li et al., 2022). Therefore, enhancing health literacy is essential for promoting healthy behaviors and improving population health, particularly in the context of increasing access to digital health information.

3. Physical Exercise Behavior

Physical exercise behavior refers to individuals' participation in planned and structured physical activities aimed at improving physical fitness and overall health. Among college students, such behavior is influenced by both physiological and psychological factors. Previous research indicates that physical exercise behavior is positively associated with physical fitness and self-efficacy, suggesting that students who engage more frequently in physical activity tend to have better physical and mental health outcomes (Han et al., 2022). Furthermore, physical exercise behavior plays a significant role in promoting psychological well-being, including enhancing resilience, reducing stress, and improving emotional stability (Li et al., 2024).

Recent studies have also emphasized the importance of psychological mechanisms in shaping exercise behavior. Zhang et al. (2024) found that procrastination negatively affects physical exercise behavior, while exercise commitment and action control act as significant mediating factors. Specifically, higher levels of exercise commitment and self-regulation can enhance participation in physical activity, whereas procrastination reduces engagement. These findings indicate that physical exercise behavior is not only determined by external conditions but also strongly influenced by internal psychological processes. Therefore, strengthening motivation, commitment, and self-regulation abilities is essential for promoting sustained physical exercise behavior among college students.

Conceptual Framework

This study is based on the premise that new media sports information significantly influences college students' physical exercise behavior. Exposure to sports-related information through platforms such as social media and mobile applications can shape students' awareness and decision-making regarding physical activity. Health literacy is proposed as a mediating variable that explains this relationship, as it enhances individuals' ability to access, understand, and apply health information. Therefore, new media sports information is assumed to affect physical exercise behavior both directly and indirectly through health literacy, as illustrated in Figure 1.

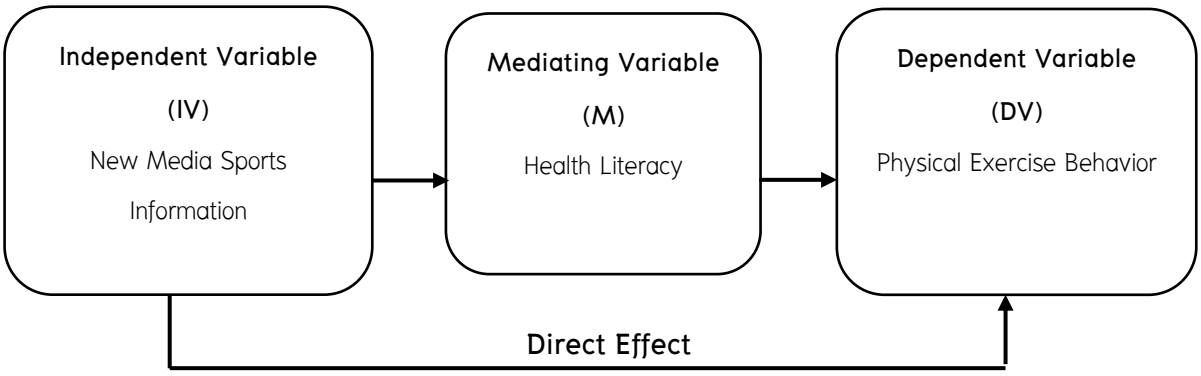


Figure 1 Conceptual Framework

Research Methodology

This study employed a quantitative research design using a survey method to examine the relationships and influences among new media sports information, health literacy, and physical exercise behavior among college students in Henan Province, China.

1. Population and Sample

The population of this study consisted of college students enrolled in universities in Henan Province, China. The sample included 718 college students selected using convenience sampling. This sampling method was adopted because it allowed the researcher to efficiently access respondents from different universities through both online and offline channels. However, convenience sampling may limit the generalizability of the findings to the entire population of college students in China. Therefore, the findings should be interpreted within the context of the selected sample.

Participants were recruited from several universities in Henan Province through online questionnaire distribution and direct offline data collection. The inclusion criteria required respondents to be currently enrolled college students in Henan Province who voluntarily agreed to participate in the study.

2. Research Instrument

The instrument used for data collection was a structured questionnaire developed based on relevant literature and previous studies related to new media sports information, health literacy, and physical exercise behavior. The questionnaire consisted of three main parts:

2.1 New Media Sports Information

This variable measured students' access to, trust in, and evaluation of sports-related information obtained through digital media platforms such as social media, websites, and mobile applications. The scale consisted of 10 items. Sample items included "I frequently obtain sports information through social media platforms" and "I trust sports and health information obtained from online media."

2.2 Health Literacy

This variable assessed students' ability to access, understand, evaluate, and apply health-related information in daily life. The scale consisted of 12 items covering health knowledge, health attitudes, and health-related decision-making skills. A sample item was "I can evaluate whether online health information is reliable before applying it."

2.3 Physical Exercise Behavior

This variable examined students' frequency, duration, and participation in physical exercise activities. The scale consisted of 8 items. Sample items included "I regularly participate in physical exercise activities each week" and "I spend sufficient time engaging in physical activity." All questionnaire items were measured using a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree.

The content validity of the questionnaire was evaluated by three experts using the Index of Item-Objective Congruence (IOC), with values ranging from 0.67 to 1.00. Reliability was tested separately for each variable using Cronbach's alpha coefficient. The reliability coefficients ranged from 0.78 to 0.91, indicating acceptable internal consistency.

3. Data Collection

Data were collected through both online and offline questionnaire distribution. Online questionnaires were administered via digital platforms, while offline questionnaires were distributed directly to students in selected universities. Participation was voluntary, and all respondents provided informed consent prior to completing the questionnaire.

4. Data Analysis

The collected data were analyzed using descriptive statistics, including frequency, percentage, mean, and standard deviation, to describe the general characteristics of the variables.

Inferential statistics were employed to examine the relationships and influences among variables, including Pearson correlation analysis and multiple regression analysis. Mediation analysis was conducted to examine the mediating role of health literacy in the relationship

between new media sports information and physical exercise behavior. Structural equation modeling (SEM) was further applied to confirm the relationships among variables and assess the model fit.

Before conducting the statistical analyses, the assumptions of normality and multicollinearity were examined. The results indicated that the data met the acceptable criteria for statistical analysis. Model fit was evaluated using several fit indices, including RMSEA, GFI, TLI, and CFI, following commonly accepted SEM criteria.

Research Results

1. Results of examining the relationship between new media sports information and students' physical exercise behavior

The results of correlation analysis indicated that there was a statistically significant positive relationship between new media sports information and students' physical exercise behavior ($r = 0.206$, $p < .01$). In addition, new media sports information was positively correlated with health literacy ($r = 0.147$, $p < .01$), and health literacy was also significantly related to physical exercise behavior ($r = 0.166$, $p < .01$). These findings suggest that greater exposure to and engagement with sports information through new media platforms is associated with higher levels of physical exercise participation among college students.

Table 1 Correlation results of each variable

	New Media Sports Information	Health Literacy	Physical Exercise Behavior
New media sports information	1.000		
Health literacy	0.147***	1.000	
Physical exercise behavior	0.206***	0.166***	1.000

***Note:** **p < .01. Values represent Pearson correlation coefficients.*

All variables are positively correlated at the 0.01 significance level.

As shown in Table 1, all variables were positively and significantly correlated.

2. Results of studying the influence of new media sports information on physical exercise behavior

The results of multiple regression analysis revealed that new media sports information significantly influenced students' physical exercise behavior (b = 0.231, p < .001), explaining 42.4% of the variance (R^2 = 0.424). Furthermore, new media sports information significantly predicted health literacy (b = 0.051, p < .001). When both variables were included in the full model, both new media sports information (b = 0.208, p < .001) and health literacy (b = 0.445, p < .001) significantly predicted physical exercise behavior, with the model explaining 61.3% of the variance (R^2 = 0.613).

In addition, mediation analysis indicated that health literacy played a partial mediating role in the relationship between new media sports information and physical exercise behavior. The indirect effect was statistically significant (effect = 0.023, 95% CI [0.006, 0.038], p < .01), accounting for approximately 9.96% of the total effect.

Moreover, the structural equation model (SEM) analysis confirmed these findings. The model demonstrated a good fit (RMSEA = 0.044; GFI = 0.979; CFI = 0.988), indicating that new media sports information had both direct and indirect effects on physical exercise behavior through health literacy.

Table 2 Multiple regression model

	Physical exercise behavior	Health literacy	Physical exercise behavior
Constant	2.422***	1.147***	1.912***
	(14.725)	(22.076)	(9.050)
New media sports information	0.231***	0.051***	0.208***
	(5.629)	(3.966)	(5.064)
Health literacy			0.445***
			(3.793)
Sample size	718	718	718
R2	0.424	0.215	0.613
Adjustment R2	0.410	0.201	0.586

***Note:** ***, *, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Values in parentheses are t-values. Dependent variables: Physical exercise behavior and health literacy*

As presented in Table 2, new media sports information significantly predicts physical exercise behavior.

Table 3 Test of mediating role

Path	Meaning	Effect value	Lower limit of 95% CI	Upper limit of 95% CI	z /t	p–value	Conclusion
New media sports information => Health literacy => physical exercise behavior	Indirect Effect	0.023	0.006	0.038	2.759	0.006	
New media sports information => Health literacy	X=>M	0.051	0.026	0.077	3.966	0.000	
Health literacy => physical exercise behavior	M=>Y	0.445	0.215	0.674	3.793	0.000	Partial mediation
New media sports information => physical exercise behavior	Direct Effect	0.208	0.128	0.289	5.064	0.000	
New media sports information => physical exercise behavior	Overall Effect	0.231	0.150	0.311	5.629	0.000 0.000	

Note: *Bootstrap method was used to test mediation effects. Confidence intervals (CI) do not include zero, indicating significant mediation.*

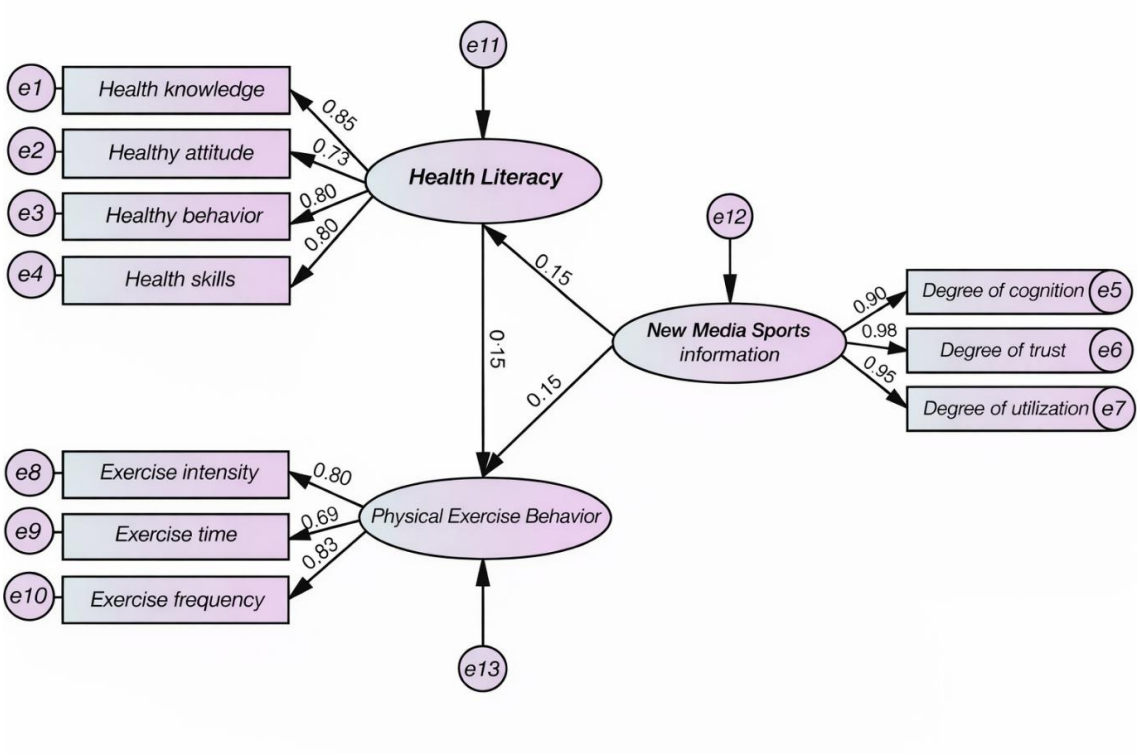


Figure 2 Structural Equation Model (SEM Path Diagram)

Note: All path coefficients are standardized and significant at $p < .01$.

Arrows indicate hypothesized relationships among variables.

Figure 2 and Tables 4–5 confirm the robustness of the structural model.

Table 4 Model fit indices

Statistical test value	RMSEA	GFI	IFI	TLI	CFI
Critical value	<0.08	>0.90	>0.90	>0.90	>0.90
Inspection result data	0.044	0.979	0.988	0.983	0.988
Model compatibility judgment	Yes	Yes	Yes	Yes	Yes

Note: *RMSEA < 0.08 and GFI, IFI, TLI, CFI > 0.90 indicate good model fit.*

Table 5 Path analysis results

Path	Coefficient	S.E.	C.R.	P	Standardize Action coefficient
Health literacy <-- New media sports information	0.057	0.017	3.456	0.000	0.153
Physical exercise behavior of college students in Henan Province <-- Health Literacy	0.382	0.121	3.171	0.002	0.154
Physical exercise behavior of college students in Henan Province <-- New Media Sports Information	0.169	0.039	4.273	0.000	0.182

Note: *All path coefficients are statistically significant at the 0.01 level.*

3. Results of proposing effective suggestions to improve health literacy and promote physical exercise behavior

Based on the empirical findings, several effective suggestions were proposed. First, universities should enhance the development of new media platforms that provide accurate, reliable, and engaging sports and health information, as trust in information was found to be the most influential factor in promoting exercise behavior. Second, health education programs should be strengthened to improve students' health literacy, particularly in terms of health knowledge, attitudes, behaviors, and skills. Third, institutions should promote the effective use of digital media by encouraging students to actively access, evaluate, and apply health information. Finally, the establishment of interactive online communities and social media–based sports initiatives can further enhance student engagement and participation in physical exercise activities.

Table 6 Descriptive statistics of variables

Name	Sample size	Minimum value	Maximum value	Average value	Standard deviation
Physical exercise behavior	718	1.000	5.000	3.323	1.027
New media sports information	718	1.000	5.000	3.904	0.916
Health literacy	718	0.148	2.064	1.348	0.321

Note: *Mean values above the midpoint (3.00) indicate moderate to high levels of the variables.*

Table 7 Sample characteristics

Name	Options	Frequency	Percentage (%)
Gender	Male	507	70.61
	Female	211	29.39
Educational background	Junior college	622	86.63
	Undergraduate	75	10.45
	Master's degree or above	21	2.92
From the region	Rural areas	506	70.47
	City areas	212	29.53
Average monthly Household income	0 to 999 yuan	65	9.05
	1,000 to 1,999 yuan	92	12.81
	2,000 to 4,999 yuan	242	33.70
	5,000 to 9,999 yuan	178	24.79
	10,000 to 19,999 yuan	77	10.72
	More than 20,000 yuan	64	8.91
Health condition	Very bad	5	0.70
	Not good	26	3.62
	good	296	41.23
	Very good	391	54.46
Academic performance	Poor	21	2.92
	Mid to low	28	3.90
	Medium	270	37.60
	Upper-middle level	208	28.97
	Excellent	191	26.60
Ways to acquire Health knowledge	Book	107	14.90
	Health Brochure	68	9.47
	Newspaper	42	5.85
	Magazine	5	0.70
	Network	496	69.08

Note: *The sample reflects the general characteristics of college students in Henan Province.*

Discussions

1. The relationship between new media sports information and students' physical exercise behavior

The findings of this study revealed that new media sports information was significantly and positively correlated with students' physical exercise behavior. This indicates that increased exposure to sports-related information through new media platforms is associated with higher

levels of participation in physical activity among college students in Henan Province. This result is consistent with previous studies suggesting that social media serves as an important channel for disseminating sports information, shaping attitudes, and encouraging behavioral engagement in physical activities (Filo et al., 2015; López–Carril et al., 2020).

Moreover, the positive relationship between new media sports information and health literacy, as well as between health literacy and physical exercise behavior, supports the notion that access to digital health–related content enhances individuals' understanding and awareness of health practices. This aligns with the meta–analysis by Tian et al. (2023), which demonstrated that media use is significantly associated with increased sports participation behavior. Similarly, Zheng and Mason (2022) emphasized that social media plays a crucial role in influencing physical activity by providing information, motivation, and social support. Therefore, the present findings reinforce the importance of new media as a key factor in promoting active lifestyles among college students.

2. The influence of new media sports information on physical exercise behavior

The results further indicated that new media sports information significantly influences students' physical exercise behavior, both directly and indirectly through health literacy. The regression and structural equation modeling (SEM) analyses confirmed that health literacy functions as a partial mediating variable in this relationship. This suggests that new media not only directly encourages physical activity but also enhances students' ability to access, understand, and apply health–related information, which in turn promotes exercise behavior. This finding is consistent with the concept of health literacy as a critical determinant of health behavior (Chang et al., 2020; Li et al., 2022). Individuals with higher health literacy are more capable of interpreting health information and making informed decisions regarding their physical activity. Furthermore, the mediating role of health literacy aligns with previous research indicating that cognitive and informational factors play a significant role in shaping exercise behavior among college students (Han et al., 2022).

In addition, the direct and indirect effects identified in this study are supported by recent research showing that psychological and behavioral mechanisms, such as self–efficacy and motivation, can mediate the relationship between external influences and exercise behavior (Li et al., 2024; Zhang et al., 2024). Therefore, the results highlight the dual role of new media as both an informational and motivational tool in promoting physical exercise among students.

3. Suggestions to improve health literacy and promote physical exercise behavior

Based on the research findings, several practical suggestions can be proposed to improve health literacy and promote physical exercise participation among college students. First, universities should develop and enhance new media platforms that provide accurate, reliable, and engaging sports and health information. As indicated by the results, trust in information plays a crucial role in influencing students' exercise behavior, which is consistent with the role of digital media in educational engagement (Greenhow & Chapman, 2020). Second, institutions should strengthen health education programs to improve students' health literacy, particularly in terms of knowledge, attitudes, and practical skills. This is supported by Li et al. (2022), who emphasized the importance of systematic health education in improving public health literacy in China. Improving health literacy will enable students to better understand and apply health-related information obtained from new media. Third, universities should encourage students to actively engage with digital media by developing critical evaluation skills and promoting the effective use of online sports information. Integrating social media into educational and sport-related activities can enhance student participation and interaction, as suggested by López-Carril et al. (2020).

Finally, the establishment of interactive digital communities, such as social media–based sports groups and online fitness initiatives, can further motivate students to participate in physical exercise. These platforms can provide social support, increase motivation, and create a sense of belonging, which are essential factors in sustaining long-term exercise behavior (Filo et al., 2015; Zheng & Mason, 2022).

New Knowledge from Research



Figure 3 Knowledge from Research

This figure presents the knowledge derived from the study by explaining the mechanism through which new media sports information influences college students' physical exercise behavior. The findings indicate that new media sports information affects physical exercise behavior both directly and indirectly through health literacy as a mediating variable. Exposure to reliable sports and health information through digital platforms enhances students' ability to access, understand, evaluate, and apply health information, which subsequently promotes greater participation in physical exercise activities. These findings contribute to the understanding of digital health communication and provide practical implications for universities and policymakers in developing strategies to improve health literacy and encourage active lifestyles among college students in Henan Province.

Conclusion

This study aimed to examine the relationship and influence of new media sports information on students' physical exercise behavior, as well as to propose practical recommendations for enhancing health literacy and promoting physical activity among college students in Henan Province.

First, the findings revealed that there was a statistically significant positive relationship between new media sports information and students' physical exercise behavior. Students who had greater access to and engagement with sports-related information through new media platforms tended to participate more actively in physical exercise. In addition, health literacy was also significantly associated with both new media sports information and physical exercise behavior, indicating its important role in this relationship.

Second, the results demonstrated that new media sports information significantly influenced students' physical exercise behavior. The analysis further showed that health literacy functioned as a partial mediating variable, meaning that new media sports information not only directly affected physical exercise behavior but also indirectly influenced it through improving students' health literacy. This suggests that the effectiveness of digital sports information is enhanced when students are able to understand, evaluate, and apply health-related knowledge.

Third, based on the empirical findings, several effective suggestions were proposed to improve health literacy and promote physical exercise participation among college students. These include the development of reliable and engaging new media platforms for sports and health communication, the strengthening of health education programs within universities, and the promotion of students' ability to critically access and utilize health information. Additionally, encouraging the use of interactive digital communities and social media-based sports activities can further increase students' motivation and participation in physical exercise.

In conclusion, this study highlights the significant role of new media sports information and health literacy in shaping students' physical exercise behavior. The integration of digital media and health education can serve as an effective approach to promoting active lifestyles and improving the overall well-being of college students in Henan Province.

Suggestions

1. Practical Recommendations

Universities should enhance the quality of new media sports information by developing reliable and engaging digital platforms. Health education programs should be strengthened to improve students' health literacy, particularly in accessing and applying health information. In addition, institutions should promote the use of social media and interactive online communities to encourage students' participation in physical exercise.

2. Suggestions for Future Research

Future studies should include a broader sample and apply experimental or mixed-method designs. Further research may also examine additional factors such as motivation or self-efficacy, as well as the long-term effects of new media on physical exercise behavior.

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