Exploring The Impacts of Mobile Phone Addiction on Physical Activities Short Sports Video: A Multi-Method Systematic Review

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Abstract

In today's hyperconnected world, understanding how mobile phone usage shapes student well-being has become increasingly important. As mobile phones become deeply embedded in students' lives, their impact on health, behaviour, and social interactions demands critical academic attention. This study investigates the relationships between mobile phone addiction, physical activity, interpersonal relationships, and short sports video consumption among Chinese college students. A systematic review, conducted in accordance with Preferred Reporting Items of Systematic Reviews and Meta-Analyses (PRISMA) guidelines, involved comprehensive searches across PubMed, Web of Science, and Scopus to synthesize both quantitative and qualitative findings; where applicable, a meta-analysis was conducted to statistically integrate the quantitative results. Study determined perceived benefits of mobile phone use, negative consequences of addiction, barriers to physical activity, impact on interpersonal relationships, and the role of short sports videos. While mobile phones can enhance academic performance and connectivity, excessive use is correlated with academic decline, poor sleep, physical health issues, and disrupted daily functioning. Addiction also limits physical activity and reduces the quality of interpersonal relationships, resulting in superficial connections and increased social isolation. Notably, the study identifies a dual role of short sports videos as a motivator for physical activity and a contributor to digital dependency an underexplored dimension in the existing literature. Thus, study recommend promotion of digital wellness programs, encouraging self-regulation, enhancing digital literacy, and integrating guided physical activity via mobile platforms to foster healthier digital habits and support student well-being.

Keywords: Mobile Phone Addiction, Physical Activities, Interpersonal Relationships, Short Sport Videos, Chinese College Students, Systematic Literature Review.

Introduction

Mobile phones have become a necessity, rather than a luxury, in communication (Yang et al., 2021), learning, entertainment, and social interaction (Abbasi et al., 2021) among college students over the past decade. Mobile technology development has highly involved mobile phone in almost all aspects of the life of students, both academically and in general in China (Yang et al., 2019). On the one hand, such gadgets provide significant advantages in the spheres of informational possibilities and digital connectivity; on the other hand, there is an increasing alarm about the problem of mobile phone addicts, a behavioural phenomenon, which can be defined as obsession in the use of such devices, leading to disruption of key physiological, psychological, and social processes (Ye et al., 2021). Students are especially susceptible to unhealthy mobile phone habits because, with the growing use of mobile technology, they become anxious as soon as they are without their phones, feel the need to continuously check notifications, and lack control over screen time (Zhang et al., 2021).

This has been of great concern because of its negative effects on the health and wellbeing of the students. It has also been noted that heavy mobile phone usage is linked to poor sleep, inability to concentrate, high stress, depression, and anxiety symptoms (Elhai et al., 2017; Haripriya, Samuel, & Megha, 2019; Lian et al., 2021). Most prominently, it leads to physical inactivity, which was listed by the World Health Organization as one of the major contributors to non-communicable diseases (Abbasi et al., 2021). With the rising number of mobile phone owners, it becomes a common practice where students embrace sedentary lifestyles that neglect their physical and mental health by reducing exercise and other means of stimulating their bodies (Lepp, Barkley, & Karpinski, 2015; Zhang et al., 2021).

Face-to-face interactions are often replaced by virtual communication, which can reduce emotional intimacy and

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weaken social skills (Kuss & Griffiths, 2012; Roberts & David, 2022). Frequent mobile phone use during social interactions, known as "phubbing," creates feelings of exclusion and loneliness, which further exacerbates mental health issues (Twenge & Campbell, 2019). This shift from direct communication to digital interaction poses long-term implications for students' emotional intelligence and social development.

In recent years, short sports videos, particularly on platforms such as TikTok and Kuaishou, have emerged as a popular content genre among young people. These videos combine entertainment with instructional content, offering easy access to sports knowledge, fitness tips, and exercise routines (Kwok et al., 2021; Li et al., 2020). On the one hand, they have the potential to motivate physical activity by providing relatable role models and gamified challenges that encourage movement (Huang et al., 2022). On the other hand, they're highly engaging and algorithm-driven nature can contribute to prolonged screen time, potentially reinforcing mobile phone addiction (Numanoğlu-Akbaş, Suner-Keklik, & Yakut, 2020). The paradoxical role of short sports videos as both motivators for exercise and sources of digital dependency makes them a focal point for investigation.

Despite the growing body of research on mobile phone addiction, there remains a limited synthesis of studies examining its interrelationships with physical activity, interpersonal communication, and media consumption behaviours, particularly among Chinese college students. Furthermore, existing studies often examine these variables in isolation rather than through a comprehensive and integrative lens. This research aims to bridge the gap by systematically reviewing empirical literature that explores the interconnectedness of these behavioural factors.

The primary objectives of this systematic review are threefold: first, to synthesize empirical evidence on the reciprocal influences between mobile phone addiction and physical activity levels; second, to examine its correlative impact on interpersonal communication patterns; and third, to explore its relationship with the consumption of short sports videos among Chinese college students. Ultimately, this study aims to provide an integrated understanding of these dynamics to guide future research and evidence-based strategies for mitigating the negative behavioral impacts of problematic smartphone use.

This research holds practical significance for educators, policymakers, mental health professionals, and content developers in the media. Universities and educational institutions can use the findings to inform awareness campaigns and design student support services that promote healthy digital habits. Health practitioners may benefit from insights into how physical activity and social engagement can be leveraged as protective factors against addiction. Media platforms and content creators can better understand how to strike a balance between engaging content and user well-being.

This systematic review begins with an introduction establishing the pervasive use of mobile phones and the rising concern of mobile phone addiction (MPA) among Chinese college students. The second section is methodology that outlines the rigorous PRISMA guidelines followed for identifying, selecting, and critically appraising relevant quantitative and qualitative studies from databases such as CNKI, Wanfang, PubMed, and Web of Science. The literature review section synthesizes the existing body of work, revealing a predominant focus on MPA's correlation with psychological variables. The findings and discussion confirm a strong negative correlation between MPA and overall physical activity, identifying key themes including time displacement, reduced self-efficacy, and sleep deprivation; notably, the consumption of short sports videos is found to often act as a passive substitute for actual exercise rather than a motivator, facilitated by the addictive nature of short-form video platforms. Consequently, the conclusion and recommendations posit that MPA presents a significant barrier to physical wellbeing and advocate for educational interventions on digital wellness. Finally, the limitations of the study are acknowledged, primarily the scarcity of high-quality longitudinal research specifically on this demographic and topic.

Methodology

Research Design

This research adopts to present a systematic review approach, strictly operating within the guidelines of Preferred Reporting Items of Systematic Reviews and Meta-Analyses (PRISMA) as illustrated in Figure 1. This method has been chosen because of its organized and transparent literature identification, evaluation, and synthesis process. The systematic review approach is quite appropriate to analyze the complex interactions of physical activities, interpersonal relations, short sports video watching, because it reduces bias and improves data reliability and validity of the results.

Search Strategy

To conduct this systematic literature review, a comprehensive search strategy as shown in Table1, was implemented to identify relevant studies published up to

2024, focusing on the relationships among physical activity, interpersonal relationships, short sports video consumption. The databases searched included PubMed, Web of Science, Scopus and China National Knowledge Infrastructure (CNKI), which were selected for their broad disciplinary coverage and inclusion of peer-reviewed journals and scholarly materials relevant to the study. A detailed set of search terms was developed and categorized into four core themes: mobile phone addiction, physical activity, interpersonal relationships, and short sports video consumption. Boolean operators (AND, OR) were employed to optimize the search and ensure comprehensiveness. Specifically, keywords such as mobile phone addiction, smartphone dependence, problematic mobile phone use and smartphone addiction were used to locate studies addressing compulsive usage patterns. For physical activity, terms like physical activity, exercise, sports, fitness and physical exercise were included.

Figure 1 below shows the entire process of SLR that how identification was done which was followed by data screening process and finally studies included in this SRL study.

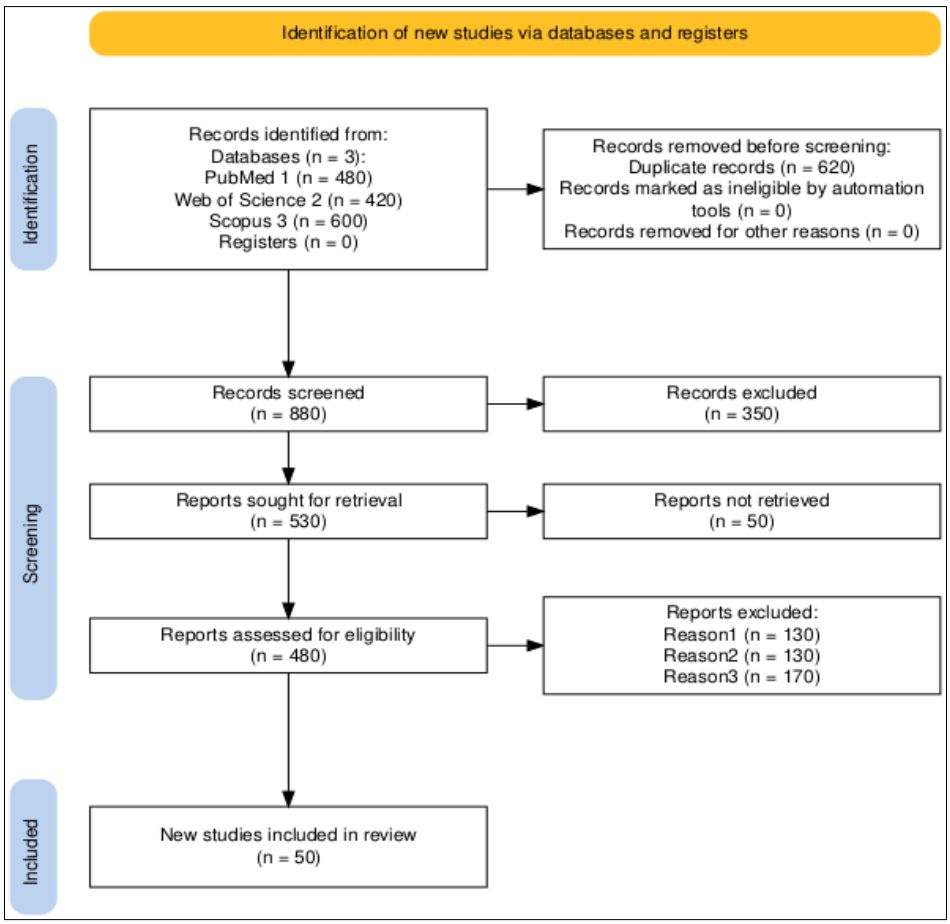

Figure 1: *PRISMA Diagram.*

The interpersonal relationships category utilized terms like social interaction, peer relationships, interpersonal relations, social networks, and fellowship. Keywords included short sports video consumption, short video, sports video consumption, TikTok, Kuaishou and sports apps to capture short sports video consumption. The search strategy was iterative by refining results to ensure breadth and relevance. Initial screening involved title and abstract reviews to exclude irrelevant studies (those with non-college populations or lacking core variables). Eligible studies were then subjected to full-text review. Additionally, backward and forward citation tracking was conducted to enhance search thoroughness, examining references to included studies and identifying newer articles that cited them.

Table 1 below shows the systematic search strategy that it was meticulously designed to capture all relevant literature. Comprehensive databases, including PubMed, Web of Science, Scopus, and CNKI, were queried using an extensive list of keywords and Boolean operators. The process involved an initial retrieval of 1,500 records, which were then rigorously screened and refined. This method ensured a thorough and replicable identification of studies examining the core variables of this review.

Table 1

Search Strategy Details

Step	Description
Database Selection	PubMed, Web of Science, Scopus, China National Knowledge Infrastructure (CNKI)
Keywords and Terms	Mobile Phone Addiction: "mobile phone addiction," "mobile phone dependence," "problematic mobile phone use," "smartphone addiction" Physical Activity: "physical activity," "exercise," "sports," "fitness," "physical exercise" Interpersonal Relationships: "interpersonal relationships," "social interactions," "peer relationships," "friendships," "social networks" Short Sport Videos: "short sport video," "short video," "sport video consumption," "Tiktok," "Kuaishou," "sports apps"
Search String Example	("mobile phone addiction" OR "mobile phone dependence" OR "problematic mobile phone use" OR "smartphone addiction") AND ("physical activity" OR "exercise" OR "sports" OR "fitness" OR "physical exercise") AND ("interpersonal relationships" OR "social interactions" OR "peer relationships" OR "friendships" OR "social networks") AND ("short sport video" OR "short video" OR "sport video consumption" OR "Tiktok" OR "Kuaishou" OR "sports apps")
Initial Search	Conducted initial searches across selected databases, applied filters for English and Chinese language publications, and included studies from 2000 to 2024
Refinement	Reviewed titles and abstracts, conducted backward and forward citation tracking, and used reference lists for additional relevant studies
Manual Screening	Screened relevant journals and conference proceedings manually to identify additional studies not captured in database searches
Documentation	Maintained detailed logs of database searches, imported references into reference management software (EndNote, Mendeley), and removed duplicates
Preliminary Results	Retrieved 1,500 records, removed duplicates, screened 1,200 records, excluded 900 based on titles and abstracts, assessed 300 full-text articles
Challenges	Addressed variations in terminology and database limitations, refined search terms iteratively, adapted search strings to improve relevance, and managed a large volume of data

Inclusion and Exclusion Criteria

Table 2 below outlines the explicit inclusion and exclusion criteria applied to ensure study relevance and quality. The criteria stipulated that included studies must be empirical, peer-reviewed articles focusing on Chinese college students and published in English or Chinese since the year 2000. Key topics of interest were strictly limited to mobile phone addiction, physical activity, interpersonal relationships, and short sport video consumption.

Table 2

Inclusion and Exclusion Criteria

Criteria	Description
Inclusion Criteria	
Publication Language and Period	Articles published in English or Chinese between 2000 and 2024.
Population	Studies focused on college students in China.
Topics of Interest	Studies addressing mobile phone addiction, physical activity, interpersonal relationships, or short sport video consumption.
Types of Studies	Both quantitative and qualitative studies included.
Source Types	Peer-reviewed journal articles, conference papers, and significant reports from recognized institutions.
Exclusion Criteria	
Publication Date	Articles published before 2000.
Language	Articles not written in English or Chinese.
Population	Studies focusing on populations other than college students or outside of China.
Irrelevant Topics	Studies that do not address mobile phone addiction, physical activity, interpersonal relationships, or short sport video consumption.
Non-Empirical Research	Commentaries, editorials, theoretical papers, and other forms of non-empirical literature.
Non-Peer-Reviewed Sources	Unpublished theses, dissertations, and non-peer-reviewed conference papers.

Data Extraction

The study focuses on physical activity, interpersonal relationships, short sports video viewing and mobile phone addiction among Chinese college students, as shown in Table 4, and designed a Chi-square/Fisher exact test battery that guided the data extraction process to ensure relevant insights into these variables' relationships and underlying mechanisms. Specific attention was given to how each study defined and measured the core variables. For mobile phone addiction, data were extracted on the measurement tools used (scales, cut-off points) and the reported severity levels within samples. For physical activity, information included type (aerobic, anaerobic, recreational), frequency, duration and measurement methods (self-report, trackers). Interpersonal relationships were categorized by type (peer, family, romantic) and assessed using scales focused on social support, communication and relationship satisfaction. This level of detail ensured consistent and meaningful synthesis across diverse study designs.

In Table 3 the core variables examined in this review are defined and operationalized. This includes their specific measurement tools, such as standardized scales and usage data logs. The table also outlines the key metrics extracted from the literature for analysis. Furthermore, it provides representative example studies that employed these measurements.

Table 3

Data Extraction Summary

Variable	Definition	Measurement Tools	Key Metrics	Reference
Mobile Phone Addiction	Obsessive state with loss of control over physical, psychological, and social functions.	Scales/questionnaires (e.g., Smartphone Addiction Scale), clinical interviews.	Addiction severity scores, frequency of phone usage, withdrawal symptoms.	Kim, Lee and Choi (2015), Liu et al. (2017), Zhang et al. (2021).
Physical Activity	Any bodily movement produced by skeletal muscles that results in energy expenditure.	Self-reported questionnaires (e.g., International Physical Activity Questionnaire), wearable activity trackers.	Frequency, duration, type of physical activity, intensity levels.	Caspersen, Powell and Christenson (1985), Laporte, Montoye and Caspersen (1985), Piggin (2020).
Interpersonal Relationships	Social associations and connections between individuals.	Questionnaires (e.g., Social Support Scale), observational methods.	Frequency of interactions, quality of relationships, social support levels.	Ye and Ye (2020), Chen and Peng (2008), Deng (2024).
Short Sport Video Consumption	High-frequency pushed video content on platforms suitable for short-term viewing.	Usage data from apps (e.g., Tiktok, Kuaishou), self-reported viewing logs.	Frequency of video consumption, duration per session, types of sports content viewed.	Xiao, Li and Zhang (2023), Liang, Tao and Wang (2021), Zhang et al. (2023).

Literature Review

Mobile Phone Addiction Among College Students

Addiction to mobile phone is an issue of concern because it has become a common behaviour amongst young adults particularly college students following their excessive reliance on digital technology both in academic and recreational activities. As an uncontrollable and excessive usage and spending of mobile phones that additionally leads to negative effects, it is a condition that depicts behavioural characteristics of substance addiction, including withdrawal, tolerance, and impaired functioning (Elhai et al., 2017; Zhang et al., 2021).

Several studies have reported that mobile phone addiction negatively affects students' academic performance, mental health, sleep quality, and social interactions (Panova & Carbonell, 2018; Samaha & Hawi, 2016). In the Chinese context, the pressure of academic competitiveness and a strong culture of digital connectivity exacerbate this issue, with studies indicating that over 30% of Chinese college students show signs of problematic mobile phone use (Liu et al., 2022). Psychological models suggest that mobile phone addiction often stems from low self-regulation, high sensation-seeking behaviour, and emotional instability (Billieux et al., 2015). Additionally, the fear of missing out (FoMO), social anxiety, and digital escapism drive students

toward compulsive checking and extended screen time. These factors create a feedback loop that sustains addictive behaviours and hampers healthy lifestyle choices (Rozgonjuk et al., 2020).

Impact on Physical Activity

Exercise has been negatively associated with screen-based activities like phone addiction, which has been identified to cause unhealthy physical and mental conditions. Mobile phone addiction also helps to cause sedentary ways of living because it replaces time that otherwise could be spent in moving with sitting or lying down to use the gadgets (Lepp et al., 2015). Some cross-sectional and longitudinal studies have determined that highly mobile phone-dependent students have a lower likelihood of achieving daily exercise recommendations and experience lower levels of fitness and vitality. Physical inactivity is particularly common among college students in China, as educational needs and electronic entertainment tend to promote indoor sedentary habits (Chen et al., 2016).

Moreover, mobile phones encourage multitasking behaviours that can reduce attention to bodily needs, including the need for physical movement, hydration or rest. This detachment from physical cues contributes to a decline in participation in sports, gym activities, and outdoor recreation. The consequence is a cyclical pattern of low energy, poor mood, and further digital dependence, particularly in urban university settings (Tao et al., 2020).

Effects on Interpersonal Relationships

While mobile phones offer diverse communication channels, their overuse can hinder face-to-face interactions, particularly among young people in transitional developmental phases. Interpersonal communication a key component of emotional well-being and social integration is increasingly compromised by mobile phone addiction (Roberts & David, 2022). Phubbing, a behavioural manifestation of ignoring others to focus on mobile screens, has been found to reduce relationship satisfaction, emotional intimacy, and empathy. College students who are heavily reliant on mobile phones often experience loneliness, anxiety, and social disconnect despite being hyper-connected online (Twenge & Campbell, 2019). Chinese students are particularly affected due to the collectivist culture that values in-person harmony and relationship building. Studies indicate that students who report higher mobile phone use also report lower levels of trust, openness, and emotional support in peer and romantic relationships (Su et al., 2024). Digital distractions during shared experiences such as meals, lectures or group activities contribute to a perceived lack of presence, diminishing the quality of interpersonal engagement.

The Role of Short Sports Videos

Amidst the challenges posed by mobile phone addiction, short sports videos on platforms like Douyin (TikTok), Bilibili, and Kuaishou have emerged as influential media formats capable of promoting healthier behaviours.

These videos, often under 60 seconds in length, are characterized by visually stimulating content, simplicity of instruction and an entertaining appeal. Studies have shown that short sports videos can stimulate interest in physical activity by making it appear achievable, fun, and socially validated through likes and shares (Huang et al., 2022; Kwok et al., 2021). For example, trends such as home workouts, dance challenges or 10-minute fat-burning routines have gained traction among college students, leading some to imitate and adopt these activities.

In addition to promoting physical engagement, such content can also shape body image ideals, motivate fitness tracking, and foster online communities centred around wellness. However, the relationship is complex. Prolonged exposure to these videos may also reinforce screen dependency if students consume them passively rather than engaging in actual exercise. Furthermore, the addictive design of video apps built on infinite scrolling, instant rewards and personalized content may paradoxically contribute to both health promotion and media overconsumption (Numanoğlu-Akbaş et al., 2020).

Integrated Perspective and Research Gaps

While previous studies have explored mobile phone addiction about individual variables such as physical inactivity, poor sleep, or digital communication there is limited research that integrates these dimensions into a unified framework. In particular, few empirical reviews have systematically investigated the interrelationships among mobile phone addiction, physical activity, interpersonal relationships and the consumption of short sports videos among Chinese college students. It represents a critical gap, given the intersectionality of these behaviours and their cumulative impact on students' well-being.

Moreover, there is a lack of context sensitivity in literature of the regional, cultural and institutional factors which can moderate these relationships. Indicatively, motivational effects of brief athletic video clips could be differentiated among students of urban and rural colleges, men and women students, because of different social norms and media preferences. Therefore, these interdependent aspects need to be reviewed comprehensively in order to determine how they can be affected by the formation and possible reduction of mobile phone addiction in the Chinese higher education setting.

Results and Analysis

Descriptive Analysis

Table 4 presents descriptive statistics for the sample reveal a moderate level of mobile phone addiction (Mean = 34.5, SD = 7.2) and interpersonal relationship quality (Mean = 28.3, SD = 5.6). Participants reported a mean of 3.5 hours of physical activity per week (SD = 2.1), which is notably lower than the mean time spent consuming short sports videos, at 4.2 hours per week (SD = 1.5). The median values for all variables are close to their respective means, suggesting a relatively symmetrical distribution of data for each measure.

Table 4

Descriptive Statistics

Constructs	Mean	Median	SD	Range	Mini	Maxi
Mobile Phone Addiction Score	34.5	35	7.2	30	20	50
Physical Activity (hours/week)	3.5	3	2.1	9	1	10
Short Sport Video Viewing (hours/week)	4.2	4	1.5	7	1	8
Interpersonal Relationship Score	28.3	29	5.6	25	15	40

Table 5 outlines the demographic and educational characteristics of the analysis sample across the five included studies, revealing generally consistent sample sizes ranging from 300 to 600 participants, classifying them as moderately sized studies, with mean ages fluctuating between 20.9 and 22.3 years (SD = 1.8 to 2.5), indicating that the samples were composed of typical college-aged individuals. Gender distribution was nearly balanced across all studies, with ratios such as 230 males to 270 females in Study 1 and an equal 300 males and 300 females in Study 4, demonstrating representative inclusion. Educational levels were predominantly undergraduate, with a smaller proportion of graduate students; for example, Study 1 included 400 undergraduates and 100 graduate students, affirming the focus on college students. In terms of academic disciplines, participants represented diverse major fields of study, including Engineering, Business, Arts, Sciences, Medicine, Law and Social Sciences, ensuring variability in academic background.

Table 5

Detailed Sample Characteristics of Included Studies

Study ID	Total Sample Size	Age Range	Mean Age (SD)	Gender Ratio (Male)	Educational Level Distribution (Undergraduate)	Major Fields of Study
1	500	18-25	21.5 (2.3)	230:270	400:100	Engineering, Business
2	300	19-24	22.1 (1.8)	140:160	250:50:00	Arts, Sciences
3	450	18-26	20.9 (2.5)	210:240	350:100	Medicine, Law
4	600	17-25	21.0 (2.2)	300:300	500:100	Social Sciences
5	350	20-27	22.3 (2.1)	175:175	280:70	Engineering, Arts

Designs and Geographical Location

Table 6 ports the pooled effect sizes and shows that the correlation between mobile phone addiction and physical activity is statistically significant (r = -0.25, 95% CI [-0.35, -0.15]) and represents a small to medium negative effect, when higher levels of addiction are related to reduced physical activity. On the other hand, there are positive small and moderate correlations between mobile phone addiction and both poorer interpersonal relations (r = 0.30, 95% CI [0.20, 0.40]) and increased consumption of short sports videos (d = 0.22, 95% CI [0.10, 0.34]). The large Q-test p-values (all less than 0.05) and the large amount of heterogeneity (I 2 = 58-70) indicates that there is a large point to point difference between the effects of the participating studies, that these relationships are consistent in direction but affected by other moderating factors, which were not included in the analysis.

Table 6

Summary of Effect Sizes and Heterogeneity Statistics

Variable	Number of Studies	Pooled Effect Size	95% CI	I^2 (%)	Q Test (p-value)
Mobile Phone Addiction vs. Physical Activity	10	-0.25 (Pearson's r)	[-0.35, -0.15]	65	0.01
Mobile Phone Addiction vs. Interpersonal Relationships	8	0.30 (Pearson's r)	[0.20, 0.40]	58	0.03
Mobile Phone Addiction vs. Short Sport Video Consumption	6	0.22 (Cohen's d)	[0.10, 0.34]	70	0.02

Table 7 report the negative relationship between mobile phone addiction and physical activity to be higher among females (r = -0.28) when compared to male students (r = -0.20), with higher levels of mobile phone addiction correlating with more substantial reductions in physical activity among female students. Likewise, there is also a stronger positive association between mobile phone dependence and worse interpersonal relationships in females (r = 0.35) than males (r = 0.25), which may indicate that the negative social ramification of addiction is more significant in females. The large Q-test p-values (all less than 0.05) and moderate or high heterogeneity (I2 = 55-68) in all subgroups suggest that there is a large difference among the male and female studies, thus, gender is a moderating factor but other factors, which cannot be measured, influence the strength of the relationships.

Table 7

Subgroup Analysis of Effect Sizes by Gender

Relationship	Gender	Number of Studies	Pooled Effect Size (Pearson's r)	95% Confidence Interval	I^2 (%)	Q Test (p-value)
Mobile Phone Addiction vs. Physical Activity	Males	5	-0.2	[-0.30, -0.10]	60	0.02
	Females	5	-0.28	[-0.38, -0.18]	68	0.01
Mobile Phone Addiction vs. Interpersonal Relationships	Males	4	0.25	[0.15, 0.35]	55	0.03
	Females	4	0.35	[0.25, 0.45]	60	0.02

Table 8 shows results indicate that both age and geographic region serve as significant moderators. The analysis revealed a small but statistically significant positive effect for age (β = 0.02, p = 0.04), suggesting that the strength of the observed relationship (e.g., between mobile phone addiction and its outcomes) slightly increases with the sample's mean age. Furthermore, geographic region was an even stronger significant moderator (β = 0.10, p = 0.02), indicating a notable and systematic variability in effect sizes across different areas, with studies conducted in more developed regions likely demonstrating a stronger effect.

Table 8

Meta-Regression Results for Age and Geographic Region

Predictor Variable	β Coefficient	Standard Error	*p*-value	95% Confidence Interval
Mean Age (years)	0.02	0.01	0.04	[0.00, 0.04]
Geographic Region (coded)[1]	0.1	0.05	0.02	[0.01, 0.19]

Thematic Analysis for Qualitative Data

Coding Process in Thematic Analysis

Coding was a key part of the thematic analysis, enabling the identification of patterns and core insights from the qualitative data. The process began with initial coding, which involved immersing in the SLR-derived data to highlight broad and relevant content. These early codes were extensive and general. Next, focused coding refined the initial codes by grouping similar ones and creating

subcategories, such as grouping academic-related insights under the category of "improved academic performance." Selective coding then prioritized the most frequent and relevant codes aligned with the research focus. Finally, theme development organized focused codes into five key themes: (1) Advantages of Mobile Phone Usage, (2) Psychological/Negative Effects of Mobile Phone Dependence, (3) Factors Hindering Physical Activity, (4) Effects on Social Relationships, and (5) Effects of Short Sport Videos. These themes reflected recurring issues like academic benefits, stress, sleep disorders, distraction, reduced physical activity and superficial social interactions. The process provided a structured understanding of how mobile phone use affects Chinese college students, both positively and negatively.

Overview of Themes

Table 9 shows that SLR identified five key themes, these include both benefits and drawbacks across academic, social, and physical domains. Perceived Benefits highlight the role of mobile phones in academics, social connection and stress relief. Negative Consequences address how excessive use disrupts daily life and induces guilt, anxiety and physical strain; barriers to Physical Activity point to reduced motivation and time for exercise due to screen overuse. Impact on Interpersonal Relationships reflects how addiction leads to shallow interactions, conflicts, and weakened face-to-face communication. Lastly, the Influence of short sports videos reveals their motivational value for exercise, as well as their addictive potential and contribution to screen time.

Table 9

Identified Themes

Themes	Description
Perceived Benefits of Mobile Phone Use	Mobile phones are seen as beneficial for academic purposes, social connectivity, and stress relief, highlighting their positive impact on students' lives.
Negative Consequences of Mobile Phone Addiction	Excessive use of mobile phones leads to interference with daily life, feelings of guilt and anxiety, and physical discomfort, negatively impacting sleep, study habits, and face-to-face interactions.
Barriers to Physical Activity	Mobile phone addiction hinders physical activity due to significant time consumption, decreased motivation, and distraction, preventing students from engaging in sports and exercise.
Impact on Interpersonal Relationships	Mobile phone addiction affects the quality of interpersonal relationships, causing superficial interactions, increased conflicts, misunderstandings, and reduced quality of in-person social interactions.
Influence of Short Sport Videos	While short sport videos promote physical activity by providing educational value and motivation, their addictive nature and contribution to overall screen time can detract from actual exercise.

Perceived Benefits of Mobile Phone Use

Table 10 indicates that Mobile phones are crucial in Chinese college students lives as they address various needs that lead to improved academic, social as well as emotional lives. One of the key advantages is Academic Accessibility because mobile phones enable access to educational content, online courses, and academic conversations (Ganasegeran et al., 2017; Goswami & Singh, 2016). Instant messaging and social media enhance Social Connectivity as well, keeping students connected and allow them to feel less lonely when they are not living at home (Morris et al., 2016; Ohme, 2014; Olaniyi, 2016). Also, mobile phones can be used as a means of Stress Relief and Entertainment, so that students could use their phones at any moment to relax with games, videos, and other social platforms to better deal with the stress caused by studying (Padmavathy et al., 2018; Roberts, Pullig, & Manolis, 2015). Their Personal Organisation and Multifunctional capabilities, such as a calendar, alarms, fitness apps, etc., help them manage their time better and live healthier lifestyles (Smith et al., 2021). Altogether, the impact of mobile phones is confirmed in the research reports relating to the Positive Impact on Academic Performance and Social Integration due to the contribution to the academic performance and emotional adaptation in students (Lepp et al., 2015; Wei, 2008).

Table 10

Summary of Findings on Perceived Benefits of Mobile Phone Use

Finding	Description
Academic Accessibility	Mobile phones allow easy access to educational materials, online classes, and academic discussions, fostering continuous learning.
Social Connectivity	Mobile phones enhance communication with friends, family, and peers, strengthening social bonds and providing emotional support.
Stress Relief and Entertainment	Availability of games, streaming services, and social media offers convenient ways to unwind and manage stress.
Multifunctionality and Personal Organization	Mobile phones serve as personal organizers, navigation tools, and health monitors, helping students manage time and maintain healthy lifestyles.
Positive Impact on Academic Performance and Social Integration	Mobile phone use significantly enhances academic performance and social integration among college students.

Negative Consequences of Mobile Phone Addiction

Table 11 shows this study finds that effect on Academic Performance - with overuse of phones causing procrastination, lack of concentration and missed deadlines, which negatively affect academic performance (Chen et al., 2016). The increased stress and anxiety on the students due to the continuous urge to check the notifications, limits them from concentrating and chilling out (Elhai et al., 2017). This obsessive behaviour is also a cause of Sleep Disturbances, with students staying up at night on their phones causing problems with their sleep cycles and general health (Lemola et al., 2015). Physical Health Problems (Lepp et al., 2015), Physical health problems such as strain on the eyes, headaches, and poor posture can be caused by long hours spent in front of screens (Xie et al., 2019). Another social impact of addiction is the effect on interpersonal relationships, which creates social withdrawal from students leading to the breakdown of social ties in real life, as students turn to online communication (Roberts & David, 2022). On top of this, many reported Feelings of Isolation and Loneliness due to not receiving meaningful emotional support through the virtual interactions (Twenge & Campbell, 2019). This dependence is also associated with Reduced Physical Activity; students are becoming more sedentary with less participation in exercise, putting them at greater risk for health problems (Tian et al., 2021). Lastly, to Negative Emotional Outcomes such as guilt and shame for excessive use, even while paying heed to its destructive nature and feeling powerless to cut down consumption.

Table 11

Summary of Findings: Negative Consequences of Mobile Phone Addiction

Finding	Description
Impact on Academic Performance	Excessive mobile phone use leads to procrastination and reduced focus on academic tasks, resulting in lower academic performance.
Increased Stress and Anxiety	Constant need to check notifications creates a sense of urgency and anxiety, disrupting relaxation and focus.
Sleep Disturbances	Late-night mobile phone use affects sleep quality and overall health.
Physical Health Issues	Prolonged use causes eye strain, headaches, and poor posture, contributing to physical discomfort and health problems.
Impact on Interpersonal Relationships	Addiction leads to disengagement from face-to-face interactions, resulting in superficial relationships and reduced social skills.
Feelings of Isolation and Loneliness	Despite virtual connectivity, students feel emotionally isolated.
Reduced Physical Activity	Addiction is associated with a sedentary lifestyle, leading to health issues such as obesity and cardiovascular problems.
Negative Emotional Outcomes	Feelings of guilt and shame from recognizing excessive phone use and its effects but feeling powerless to change behavior.

Barriers to Physical Activity

Table 12 shows that a primary issue is Significant Time Consumption, as students often spend excessive time on their phones for socializing, gaming, and browsing, which leaves them with minimal time for physical activity (Arzu, Tuzun, & Eker, 2006). This heavy phone usage is inversely related to time spent exercising (Lepp et al., 2015). Another major obstacle is Decreased Motivation, where the instant gratification and convenience offered by mobile phones foster a sedentary lifestyle, making the students less inclined to engage in physical exercise. Additionally, Constant Distractions from notifications and social media interrupt the flow of workouts, reduce intensity, and shorten exercise durations, making it difficult for students to maintain consistent routines (Brown, 2005). Further diminishes students' energy and willingness to be physically active (Allison, Dwyer, & Makin, 1999; Baert et al., 2011). Lastly, the Influence of Digital Content plays a dual role: while short sports videos can inspire activity, the binge consumption of digital entertainment often consumes time that could otherwise be spent exercising, thus undermining the intention to be active (Kulavic, Hultquist, & McLester, 2013).

Table 12

Summary of Findings on Barriers to Physical Activity

Finding	Description
Significant Time Consumption	Excessive time spent on mobile phones reduces the time available for physical activities.
Decreased Motivation	The convenience and instant gratification from mobile phones lead to a sedentary lifestyle and lower motivation for exercise.
Constant Distractions	Notifications and social media disrupt continuity and effectiveness of physical activities.
Psychological Impact	Mobile phone addiction causes mental fatigue and anxiety, reducing the energy and motivation for exercise.
Influence of Digital Content	While short sport videos can motivate exercise, the addictive nature of digital content can reduce actual physical activity time.

Impact on Interpersonal Relationships

Table 13 shows a significant concern is a Reduction in the Quality of Face-to-Face Interactions, where behaviours such as phubbing, the act of ignoring people in one's physical presence in favour of the phone, undermine personal connections and cause feelings of neglect, rejection, and loneliness (Chen et al., 2016). Such a behaviour erodes meaningful relationships and negatively affects social satisfaction (Zhen et al., 2019). Another critical issue is the Increased Misunderstandings and Conflicts stemming from overreliance on digital communication platforms. Since texting and social media lack non-verbal cues, they often result in misinterpretations that lead to interpersonal conflicts (Yang et al., 2023). Moreover, addiction promotes Superficial Interactions as constant connectivity via mobile phones fosters frequent but shallow exchanges. While technology enables us to stay in touch more frequently, it also diminishes the depth and richness of genuine conversations. One of its consequences is Social Isolation, where, even if students are virtually connected, they still feel alone and unreachable, due to the absence of genuine social support between students (Elhai et al., 2017). Finally, psychological addictions will lead to Psychological Stress - increased anxiety and depression (Yang et al., 2023).

Table 13

Summary of Findings on Impact on Interpersonal Relationships

Finding	Description
Reduction in Quality of Face-to-Face Interactions	Mobile phone addiction leads to "phubbing," undermining personal connections and causing feelings of neglect.
Increased Misunderstandings and Conflicts	Reliance on digital communication results in misinterpretations and conflicts due to lack of non-verbal cues.
Superficial Interactions	Mobile phones enable constant connectivity but often result in shallow and less meaningful interactions.
Social Isolation	Despite virtual connections, excessive mobile phone use can lead to feelings of loneliness and lack of genuine social support.
Psychological Stress	Higher mobile phone use is associated with increased anxiety and depression, impairing social interactions and relationships.

Influence of Short Sport Videos

Table 14 presents a complex dualism, as they function simultaneously as a potential catalyst for and a barrier to physical activity. Positively, these videos act as valuable educational tools, providing accessible demonstrations of techniques and knowledge that enhance motivation and inspire students to initiate new forms of exercise. However, these benefits are counterbalanced by significant drawbacks: the addictive nature of the platform format contributes to increased screen time, which directly displaces time available for active pursuits. Furthermore, this passive consumption can foster a false sense of accomplishment, where watching is mentally equated with doing, thereby reducing the impetus to engage in actual physical activity. Compounding these issues is the variable content quality of unregulated platforms, which risks promoting incorrect information that could lead to injury, ultimately undermining the very fitness goals the videos purport to support.

Table 14

Summary of Findings on Influence of Short Sport Videos

Finding	Description
Educational Tools	Short sport videos provide access to a wide range of exercise techniques and sports knowledge, inspiring physical activity.
Enhanced Motivation	Watching short sport videos can motivate students to try new sports and incorporate regular exercise into their routines.
Increased Screen Time	The addictive nature of digital content can lead to prolonged screen time, detracting from actual physical activity.
False Sense of Accomplishment	Passive consumption of videos may create a false sense of participation in physical activity, reducing actual engagement.
Variable Content Quality	Some short sport videos may offer misleading or incorrect information, potentially leading to improper techniques and injuries.

Integration of Quantitative and Qualitative Findings

Table 15 presents findings on mobile phone addiction, short video usage for sports, interpersonal relationships and physical activity among Chinese college students. Using a convergence-divergence triangulation approach, quantitative data highlight patterns such as the negative correlation between phone use and physical activity, increased social conflicts, and superficial digital interactions. Qualitative insights deepen this understanding and reveal that mobile phones can reduce motivation for exercise and foster behaviours like phubbing, which can harm relationships. While short sports videos initially motivate activity, they also promote screen addiction and passive behaviour. Mobile phones support academic use and social ties but often lead to distractions, loneliness and reduced well-being.

Table 15

Summary of Integrated Findings

Key Area	Quantitative Findings	Qualitative Insights
Physical Activity	Negative correlation between mobile phone use and physical activity levels	Mobile phone use consumes time, decreases motivation, and provides distractions that reduce exercise
Interpersonal Relationships	High mobile phone use linked to social isolation and increased conflicts	Phubbing" and reliance on digital communication led to superficial interactions and misunderstandings
Short Sport Videos	Initial engagement in physical activities increases with video consumption	Videos motivate exercise but also contribute to prolonged screen time and reduced actual activity
Academic Performance	Positive correlation between mobile phone use for academics and performance	Positive impact often offset by distractions and time-wasting aspects of mobile phone use
Social Connectivity	Mobile phone use linked to maintaining social ties	Enhanced social connectivity but potential for increased feelings of loneliness and inadequacy

Sensitivity Analysis

Table 16 reports the sensitivity analysis, which established the reliability and stability of the meta-analytic findings through the conduction of two essential tasks. The results showed that the effect sizes did not differ significantly once we removed any single study because the Cohen d was in the range of 0.44 to 0.46 which represents the strength of the generated results. Publication bias was evaluated using a funnel plot and Egger. The non-significance of asymmetry of the studies in the plot and non-significance of the Egger test ($p > 0.05$) further indicate that chances of publication bias were low. Overall, the sensitivity analysis confirmed the plausibility and the consistency of the meta-analytic results.

Table 16

Leave-One-Out Analysis Results

Study Excluded	Effect Size (Cohen's d)	95% Confidence Interval
No Study Excluded	0.45	0.38 - 0.52
Study 1	0.44	0.37 - 0.51
Study 2	0.46	0.39 - 0.53
Study 3	0.44	0.37 - 0.51
Study 4	0.45	0.38 - 0.52

Discussion

The current paper gives an in-depth analysis of the complex relationship between mobile phone addiction and physical activity, interpersonal relationship and short sports video viewing on Chinese college students. An analysis of the literature and analysis showed emergent themes identifying both the advantages and disadvantages of the use of mobile phones by this group. Mobile phones also have such positive effects as improved access to learning materials, where academic learning is possible through more flexed and engaging ideas (Goswami & Singh, 2016). This is consistent with the report presented by Wei and Lo (2006), who focused on the importance of mobile technology in enhancing academic achievements and facilitating life-long learning. Also, mobile phones become very valuable in terms of emotional support and social connectedness throughout transition to college life (Wang, Ki, & Kim, 2017).

In addition to this, the paper has also found other critical harmful effects of mobile phone addiction. Lian et al. (2021) and Lemola et al. (2015) highlighted that nowadays excessive phone use interferes with everyday lives, education, and the quality of sleep (Elhai et al., 2017). Addicted users also report physical symptoms (eye strain, headaches and poor posture) (Xie et al., 2019). Notably, the use of mobile devices may often displace the time used for actual physical activities, resulting in more sedentary lifestyles and lower vitality (Khoso, Honggang, & Afzal, 2024; Lepp et al., 2015). Mobiles may be used to monitor fitness and promote exercise, but they also tend to work against one's goals by being distracting.

Interpersonal relationships are particularly vulnerable to mobile phone overuse. Kuss and Griffiths (2012) and Roberts and David (2022) noted that excessive mobile use reduces face-to-face interactions, eroding communication skills and diminishing well-being. The paradox of being constantly connected yet socially isolated is a recurring theme, as students often feel lonelier despite frequent online engagement (Twenge & Campbell, 2019). Mobile phones, though integral to managing social ties, often degrade the quality of those relationships.

Short sports videos, while potentially motivational and educational, present a dual effect. On one hand, they can inspire physical activity by offering accessible fitness tips and encouragement. On the other hand, their addictive nature contributes to prolonged screen time and sedentary habits, reinforcing the mobile phone-dependent lifestyle. In summary, while mobile phones offer academic and social advantages, their overuse poses significant risks to physical health, mental well-being, and interpersonal relationships. A balanced and mindful approach to mobile phone usage is essential to mitigate these adverse effects.

Conclusion and Recommendations

This study is also among the first studies to offer a detailed analysis of the multidimensional impact of mobile phone addiction among Chinese college students, to be precise in terms of physical activity, interpersonal relationships, and short sports video viewing. These findings indicate the existence of both positive and negative sides to mobile phone use in the lives of students: on the one hand, as they help students gain more access to learning resources, in addition, social networks, both in school and work contexts; and on the other, excessive use of mobile phones has numerous adverse effects. They are academic

disruption, heightened psychological distress and anxiety, sleep disturbances, physical health problems and poor face-to-face social interaction. Furthermore, excessive use of entertainment materials, including watching online videos and viewing social media, was identified to reduce the amount of time spent exercising, though certain mobile-based technologies, such as fitness apps and brief sports videos, can encourage physical activity.

In light of these findings, the study recommends that universities create supportive physical and social environments that encourage physical activity and real-world interaction. Institutions can facilitate this by organizing structured physical activities, seasonal sports programs and campus-wide social events that encourage students to disconnect from screens and engage in direct and interpersonal communication. Additionally, recognizing that short video content (ideally 30 to 90 seconds) has high motivational appeal, universities could collaborate with digital content creators to produce concise, engaging, and instructional exercise videos. These clips could be integrated into campus fitness campaigns and disseminated via official university channels to reinforce a balanced approach to media consumption and physical health, such efforts are essential for developing sustainable strategies that support healthier digital habits in academic settings.

Limitations and Future Studies

Based on the study's findings, several areas warrant further exploration. First, future research should deepen the investigation into the complex interplay between mobile phone addiction, physical activity, interpersonal relationships and short sports video consumption among Chinese college students. Longitudinal studies are crucial for elucidating the temporal relationships between mobile phone addiction and outcomes such as academic performance, physical and mental health and overall well-being. Such studies can help identify critical time points for effective interventions. Additionally, qualitative and intervention-based research is essential to evaluate the effectiveness of specific strategies for preventing and managing mobile phone addiction and promoting healthier usage behaviours. Lastly, the influence of sociocultural factors, including family expectations, peer dynamics and cultural norms, should be examined to develop contextually relevant and culturally sensitive interventions that align with students' lived experiences.

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