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Mobile gaming and physical activity of the students in the public secondary schools of Balicuatro Area, Northern Samar, Philippines

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Abstract

This study investigated the extent of mobile gaming and its relationship with physical activity among junior and senior high school students in rural public schools in the Balicuatro Area of Northern Samar, Philippines, a region often underrepresented in empirical research. With most existing literature focused on urban or international populations, this study addresses a critical gap by exploring the behaviors and patterns of students in a localized, rural context. Utilizing a descriptive-correlational research design, the study aimed to determine the extent of mobile game usage and the level of student engagement in four domains of physical activity: occupational, recreational, fitness, and sports. Findings revealed that students engaged in mobile gaming to a moderate extent, particularly during free time and periods of boredom. Conversely, low engagement was observed during structured activities such as mealtimes and class hours. In terms of physical activity, students demonstrated higher involvement in occupational and recreational activities while showing limited participation in fitness-related routines and organized sports. Correlation analysis indicated that all four physical activity domains were positively and significantly associated with mobile gaming. These results suggest that mobile gaming among rural students is generally non-disruptive and may coexist with various forms of physical activity. The findings underscore the importance of context-specific data in designing culturally responsive and developmentally appropriate interventions and policies within the Philippine educational system, particularly in rural and underserved communities.

Keywords: mobile gaming, physical activity, learning, rural communities, post-pandemic intervention

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1. Introduction

In earlier years, children often gathered in the streets where they would engage in singing, dancing, and playing games like *taguan*, *habulan*, and *patintero* with their childhood neighbors. Some would venture into the mountains to search for fruits, climb and hang from trees, look for spiders to use in friendly battles, or swim and play under the heat of the sun. These simple, yet active forms of play helped strengthen physical health, develop social skills, and shape cultural identity. However, these dynamic forms of play have gradually changed as the digital age reshapes how children spend their leisure time. With the fast-paced evolution of computer technology, mobile gaming has become a more popular leisure activity among children and adolescents in recent years due to its convenience and appeal. People find it more exciting, challenging, and enjoyable to play because of its free and easy access across various platforms. Moreover, it not only offers gaming experiences but also enables users to connect with others around the world, making it more diverse and socially engaging.

Mobile games are not necessarily pertaining to the games that are played in mobile phones like smartphones or feature phones. Technically, these are games designed for mobile devices such as pocket PCs, Personal Digital Assistants (PDA), tablet PCs and portable media players or even personal computers could be considered "mobile" today because of the popularity of small and lightweight laptop computers (Mayra, 2015). The classification of mobile games into distinct genres is pivotal for understanding user engagement and preferences. DaCosta and Seok (2023) conducted a study involving 1,950 South Korean students, identifying popular mobile game genres such as action, arcade, sports, adventure, puzzle, board, simulation, and strategy. Their research highlighted that mobile gameplay is often a situational activity, engaged in during idle times, and that genre preferences are influenced by factors like age, gender, and academic performance.

One particular influence on children's physical activity and health related behavior that has received substantial media and scientific scrutiny is computer and video-game play. Amongst sports, science and health practitioners, media-based sedentary behaviors like TV viewing and leisure-time computer use are believed to compete for time that might otherwise be spent in physical activity, which might lead to obesity (Kiraly, 2014). Moreover, children today are often described as less active, less athletically skilled, less interested in physical activity, less self-disciplined, and more addicted to technology. According to a study by McDougall and Duncan (2008), which explored the relationship between children, video games, and physical activity, gaming significantly influences children's engagement in physical activity. Each participant in the study was interviewed individually following a week of extended active video game play. The interviews revisited themes identified in earlier sessions to assess any shifts in the participants' perceptions of games and health. The findings revealed that while students responded positively to the experience and found it enjoyable, many expressed a decreased motivation to engage in traditional physical activities. Some felt that physical activity was already embedded in video games, thus reducing the perceived need to play outside. Others reported feeling tired and unmotivated to participate in physical activities after gaming.

During COVID-19 Pandemic, students were mostly in modular and online modes of learning thus increasing their exposure and time of using gadgets which may possibly increase the extent of their mobile gaming. The adoption of multiple learning delivery methods, including but not limited to face-to-face, blended learning, and distant learning, is mandated for both public and private schools (Manila Bulletin, 2020). Online gamers spend more time gaming than those who play offline games mostly because of the social nature of these games. They find online games more pleasant and satisfying than offline games and sometimes prefer playing games to real-life activities. Moreover, there are reported gender differences in a game mode-online and offline. Males are more to be drawn towards online than females.

In the Philippines, a news report from Manila Bulletin in 2020 indicated that approximately 52.8 million people spend at least two to three hours daily playing online games, and this number is expected to increase as opportunities in the country's video gaming industry continue to expand (Arcalas & Reyes, 2021). A qualitative study conducted at Universidad de Manila found that video game engagement among young adults was primarily driven by perceived benefits such as enhanced strategic thinking, improved analytical skills, and greater technological literacy (Belmonte et al., 2019). In addition, Filipino streamers and professional eSports players are now earning income through video gaming platforms (Statista, 2023). In a study conducted by Parra-González et al. (2023), it was revealed that mobile gaming is a frequent activity among learners. According to the study, 38% of respondents reported playing games almost daily, 26.94% played once a week, and 30.56% played once or twice a month. These findings suggest that mobile games are a consistent part of students' weekly routines, which is indicative of their increasing role in leisure activities and digital engagement.

Despite the various advantages of video gaming, its excessive use can negatively impact health, physical activity levels, and social relationships (Alshehri & Mohamed, 2019). The World Health Organization (WHO, 2020) included gaming disorder in the 2018 draft of the 11th Revision of the International Classification of Diseases (ICD-11), formally recognizing that uncontrollable gaming may increase the risk of health complications. These include psychological distress, eye problems, increased body mass index due to sedentary behavior, and impaired eating patterns (Alshehri & Mohamed, 2019; Claesdotter-Knutsson et al., 2022). Moreover, excessive gaming has been associated with higher levels of depression, lower academic performance, and deteriorating mental health. Extended gaming durations have also been found to elevate the risks of stress, anxiety, and depression (Alshehri & Mohamed, 2019; Labana et al., 2020).

Several studies support the classification of physical activities into occupational, recreational, fitness, and sports categories. According to Ainsworth et al. (2011), physical activity can be organized based on the context in which it occurs, such as during work (occupational), leisure time (recreational), exercise programs (fitness), or organized sports (sports activities). Their Compendium of Physical Activities provides standardized codes and intensity values for activities across these domains. A study conducted by Kellstedt et al. (2021) explored youth sport participation in rural communities and emphasized that rural youth face significant barriers to participation, including limited availability of sports programs, inadequate facilities, and unequal access to equipment. These constraints are especially pronounced among children from lower-income families, who are less likely to participate due to financial or logistical challenges. Structural inequities in rural settings play a major role in shaping youth engagement in physical activities, particularly in organized sports.

Research on video gaming and its effects is often derived from urban or international populations, resulting in the underrepresentation of localized areas such as the Balicuatro area in Northern Samar. The absence of region-specific data may hinder the development of culturally relevant, inclusive, and contextually appropriate school-based interventions and educational policies. few studies explore this interplay within the Philippine education system, particularly outside of major urban. This research sought to address that gap by investigating mobile game usage and physical activity among junior high school and senior high school students in rural public schools. With the growing concerns about the improper use of mobile technologies and the misconception that computer games such as sports, adventure, and other mobile game genres can serve as a substitute for physical activity, the researcher was prompted to conduct this study.

Research Objectives - This study aimed to determine the effect of mobile gaming to the physical activity of the students in the public secondary schools of Balicuatro Area, Division of Northern Samar. Specifically, it aimed to:

- Measure the extent of mobile gaming among student-respondents;
- Determine the level of involvement in physical activities of the student-respondents as classified according to occupational, recreational, fitness, and sports; and

- Determine if there is significant relationship between extent of mobile gaming of the student-respondents and the student's physical activity.

2. Methodology

Research Design - This study utilized the descriptive-correlational method of research. The descriptive design provided a comprehensive overview of the problem by detailing the characteristics and features of the variables involved. It also aimed to determine the extent of mobile gaming and the respondents' levels of physical activity, categorized into occupational, recreational, fitness, and sports domains.

Research Locale - The study focused on the Balicuatro Area, located in the northwestern part of Samar Island. This area includes both island municipalities such as San Antonio, Capul, Biri, and San Vicente, and mainland municipalities, including Allen, Lavezares, San Isidro, Rosario, and Victoria. Furthermore, the survey was conducted in nine public secondary schools in the Balicuatro Area, namely: Allen National High School, Biri National High School, Capul Agro-Industrial School, Basilio B. Chan Memorial Agricultural and Industrial School, Rosario National High School, San Antonio Agricultural and Vocational School, San Isidro Agro-Industrial High School, San Vicente School of Fisheries, and Victoria National High School. These schools were selected based on their locations, which have access to network and internet connections which are factors that played a key role in the mobile gaming habits of the students.

Research Participants - A total of 10,468 students comprised the population from nine public secondary schools, representing the nine municipalities of the Balicuatro Area, Northern Samar. Of this population, 6,865 were enrolled in public junior high schools, and 3,603 were enrolled in public senior high schools. Using Slovin's formula, the sample size was determined to be 253 junior high school students and 132 senior high school students. Furthermore, proportionate sampling was used to determine the number of samples taken from each of the nine schools. The actual respondents of the study were 237 junior high school students and 117 senior high school students across all grade levels, specifically from Grades 7 to 12, from the selected public secondary schools in the Balicuatro Area. Moreover, the respondents were randomly selected regardless of their interest in or participation in mobile gaming and physical activity.

Research Instrument - This study utilized a modified survey questionnaire served as the main tool for gathering the respondents' profiles, determining the extent of mobile gaming and assessing the level of physical activity involvement among the students. In this study, the instrument employed was modified to suit the local context and the comprehension level of junior and senior high school students. The adaptation involved simplifying item wording and contextualizing content to reflect culturally relevant gaming experiences. The tool used to assess the extent of mobile gaming was adapted from the instrument developed by Urbán et al. (2016), which is based on the Problematic Online Gaming Questionnaire (POGQ) by Demetrovics et al. (2012).

Consent and Ethical Consideration - Permission to conduct the study was secured from the Department of Education Regional Office and the Office of the Schools Division Superintendent. When the approval was secured, endorsement letters were distributed to the principals or school heads to inform school personnel, teachers, and students about the research activity. The study was conducted in compliance with established ethical standards. Participation was entirely voluntary, and all information provided by participants was treated with strict confidentiality. Individuals were clearly informed of their freedom to discontinue involvement at any point without facing any negative repercussions. Furthermore, the data gathered were solely utilized for scholarly purposes, and no participant experienced any form of harm during the research.

3. Results and Discussions

3.1 Extent of mobile gaming of students

Table 1 shows the extent of mobile gaming among the student-respondents.

Table 1
Extent of mobile gaming of students

Statement	Mean	Interpretation
I play mobile games when I am bored.	4.04	High extent
I play mobile games during my free time.	3.92	High extent
I download new mobile games to try out.	3.61	High extent
I feel relaxed and satisfied when I play mobile games.	3.47	High extent
I am challenged when I play mobile games.	3.38	Moderate extent
I play mobile games for more than 30 minutes in one session.	3.25	Moderate extent
I think about playing mobile games.	3.19	Moderate extent
I play various types of mobile games.	3.18	Moderate extent
I play mobile games before going to bed.	3.17	Moderate extent
I spend money purchasing or downloading mobile games.	3.14	Moderate extent
I play and compete mobile games with friends or family members.	3.12	Moderate extent
I play mobile games everyday.	3.07	Moderate extent
I play mobile games for an extended period of time (over an hour).	2.78	Moderate extent
I cannot let an hour pass by without playing mobile games.	2.77	Moderate extent
I update my mobile games when a new version or feature is released.	2.7	Moderate extent
I lose track of time when I play mobile games.	2.61	Moderate extent
I prefer playing mobile games over other forms of entertainment.	2.6	Moderate extent
I am emotionally attached to the characters in mobile games I played.	2.53	Less extent
I play mobile games during my commute or while traveling.	2.41	Less extent
I participate in online groups or communities related to mobile games.	2.39	Less extent
I spend more time playing mobile games than doing household chores.	2.16	Less extent
I prefer playing mobile games than sleeping.	2.14	Less extent
I play mobile games instead of playing physical games.	1.92	Less extent
I play mobile games right after I wake up.	1.94	Less extent
I play mobile games while eating my meal (Breakfast, lunch, Dinner)	1.68	Least extent
I look forward to play mobile games even during class hours.	1.68	Least extent
Average Mean	**2.77**	**Moderate Extent**

Note: 4.20-5.00 = Very High Extent; 3.40-4.19 = High Extent of Playing; 2.60-3.39 = Moderate Extent of Playing; 1.80-2.59 = Less Extent of Playing; 1.0-1.79 = No Extent of Playing

The overall weighted mean of 2.77 indicates a moderate level of mobile gaming among students. Highest engagement was reported when playing out of boredom (M = 4.04), during free time (M = 3.92), and for relaxation (M = 3.47), suggesting that gaming is primarily used for entertainment and stress relief rather than addiction or competition. These findings support Kuss and Griffiths (2015), who noted that mobile gaming is a common, mood-restorative leisure activity among youth. Low engagement during meals and class hours (M = 1.68) suggests that students generally maintain boundaries and avoid gaming during essential routines. This aligns with Andaya et al. (2022), who found Filipino students mostly played during breaks rather than during structured activities. Moderate involvement in daily gaming (M = 3.07), thinking about games (M = 3.19), and playing for extended periods (M = 3.25) indicates gaming is part of students' habits but has not disrupted their responsibilities. While some students engage in competitive or genre-based gaming with friends, emotional attachment to in-game characters and participation in online communities were less common. This supports Teng et al. (2020), who observed that many players relate to mobile games functionally rather than forming strong emotional or social connections.

3.2 Level of Involvement in Physical Activities

Occupational Physical Activities - Table 2 shows the level of involvement in physical activities of the respondents classified as occupational.

Table 2
Level of involvement in physical activities of the respondents classified as occupational

Statement	Mean	Interpretation
I clean the classroom.	3.79	Highly involved
I attend field work such as school campus clean-up or community clean-up.	3.16	Involved
I Walk to school.	3.08	Involved
I carry materials and apparatuses at school, such as books, computers, and sports equipment.	3.02	Involved
I ride a bicycle.	2.21	Less involved
Average Mean	**3.07**	**Involved**

Note: 4.20-5.00 = Very Highly Involved; 3.40-4.19 = Highly Involved; 2.60-3.39 = Involved; 1.80-2.59 = Less Involved; 1.0-1.79 = Not Involved

The overall weighted mean of 3.07 indicates moderate but consistent student participation in physical activities, many of which, though informal, contribute meaningfully to daily movement. The highest involvement was in classroom cleaning (M = 3.79), a routine task embedded in Filipino school culture that promotes discipline and cooperation while offering physical activity through actions like sweeping and organizing. This supports Tanaka et al.'s findings that school cleaning can contribute to moderate-to-vigorous physical activity (MVPA). Other frequently performed tasks include walking to school (M = 3.08), carrying materials (M = 3.02), and participating in fieldwork (M = 3.16), reflecting occupational movements within students' academic routines. These align with WHO (2010) guidelines emphasizing integrated physical activity where structured physical education may be limited. Conversely, biking showed the lowest engagement (M = 2.21), likely due to limited access to bicycles, unsafe infrastructure, and cultural preferences. This is consistent with Sallis et al. (2000), who noted that environmental and social factors strongly influence active transportation behaviors like cycling.

Recreational Physical Activities - Table 3 shows the level of involvement in physical activities of the respondents classified as recreational.

Table 3
Level of involvement in physical activities of the respondents classified as recreational

Statement	Mean	Interpretation
I go hiking or walk outdoors.	2.95	Involved
I go for a picnic.	2.41	Less involved
I dance to my favorite music.	3.31	Involved
I cultivate a garden in my backyard.	2.27	Less involved
I play musical instruments.	2.54	Less involved
I read books.	3.23	Involved
I play electronic games or other forms of games.	2.77	Involved
I do arts and crafts, such as scrapbooking.	2.77	Involved
I play invasion games or *Laro ng Lahi*, like *Tagu-taguan*, *Agawan Base*, *Habulan*, and *Luksong-Tinik*.	2.96	Involved
I chat and eat with friends or family.	3.86	Highly involved
I sing in videoke.	2.71	Involved
I take a boat ride.	2.2	Less involved
I go fishing.	1.92	Less involved
I go camping with family or friends.	2.26	Less involved
I go trekking.	1.94	Less involved
I swim with family or friends.	2.98	Involved
I ride a bicycle.	2.48	Less involved
Average Mean	**2.68**	**Involved**

Note: 4.20-5.00 = Very Highly Involved; 3.40-4.19 = Highly Involved; 2.60-3.39 = Involved; 1.80-2.59 = Less Involved; 1.0-1.79 = Not Involved

Table 3 presents the level of involvement of student respondents in recreational physical activities. With an overall weighted mean of 2.68, students demonstrate a moderate ("involved") level of participation in recreational pursuits. The most commonly engaged activity was chatting and eating with family and friends (M = 3.86), indicating a strong preference for social, family-oriented leisure shaped by the communal values prevalent in rural and coastal communities. This aligns with Bauman et al. (2012), who emphasized that youth are more likely to participate in recreational activities involving peers or family. Other frequently practiced activities

included dancing (M = 3.31), reading (M = 3.23), swimming (M = 2.98), and playing traditional games (M = 2.96), reflecting a mix of physically active and mentally engaging forms of leisure. The rural and island-based setting of the respondents likely contributes to these preferences, as outdoor and culturally rooted activities are more accessible and aligned with the local way of life. Conversely, nature-based activities such as fishing (M = 1.92), trekking (M = 1.94), boat rides (M = 2.20), and camping (M = 2.26) showed the least participation, possibly due to accessibility issues, safety concerns, or lack of resources. Meanwhile, moderate engagement was found in electronic games (M = 2.77) and arts and crafts (M = 2.77), suggesting a balance between digital and creative recreational interests.

Fitness Physical Activities - Table 4 shows the level of involvement in physical activities of the respondents classified as fitness.

Table 4
Level of involvement in physical activities of the respondents classified as fitness

Statement	Mean	Interpretation
I walk for fitness or do brisk walking.	2.93	Involved
I do aerobics or dancercise.	2.25	Less involved
I go to the gym for a strength training session.	1.72	Not involved
I jog around the neighborhood.	2.31	Less involved
I swim in the pool or at the beach.	2.60	Involved
I practice yoga for relaxation.	1.79	Not involved
I do calisthenics for strength.	1.90	Less involved
I take a Zumba fitness class.	1.67	Not involved
I engage in strength training workouts.	2.36	Less involved
Average Mean	**2.17**	**Less Involved**

Note: 4.20-5.00 = Very Highly Involved; 3.40-4.19 = Highly Involved; 2.60-3.39 = Involved; 1.80-2.59 = Less Involved; 1.0-1.79 = Not Involved

Table 4 presents the level of student participation in fitness activities. The overall weighted mean of 2.17 indicates a "Less Involved" classification, suggesting that fitness routines are not regularly practiced by most students. This low level of engagement may be attributed to limited access to facilities, competing academic priorities, or a lack of motivation. Notably, walking for fitness (M = 2.93) and swimming (M = 2.60) fall under the "Involved" category, indicating that these moderate-intensity, environment-friendly activities are more commonly performed. The accessibility of natural features such as beaches and walking paths in the coastal setting of the study likely contributes to this trend. These findings align with research conducted in England, which found that individuals living in coastal areas are more likely to meet physical activity guidelines due to increased opportunities for walking and swimming.

In contrast, structured activities such as going to the gym (M = 1.72), Zumba (M = 1.67), and yoga (M = 1.79) showed the lowest participation, likely due to barriers such as cost, facility access, and lack of guided instruction. Similarly, calisthenics (M = 1.90) and strength training (M = 2.36) also had low engagement, possibly reflecting gaps in fitness education or low self-motivation. These trends are consistent with Guthold et al. (2020), who reported that over 80% of adolescents globally fail to meet WHO's physical activity recommendations, particularly in structured fitness domains. Caspersen, Powell, and Christenson (1985) further noted that fitness routines require sustained effort and motivation, which may be difficult to maintain without institutional or peer support.

Sports as Physical Activity - Table 5 shows the level of involvement in physical activities of the respondents classified as sports.

Table 5 presents the level of student involvement in sports activities. The overall weighted mean of 1.69 falls within the "Not Involved" category, indicating that most students do not actively participate in sports. While a few sports such as badminton (M = 2.59), basketball (M = 2.27), and volleyball (M = 2.25) show slightly higher engagement, they still fall within the "Less Involved" range. This suggests that organized sports are not a regular part of students' routines, likely due to limited interest, access, or opportunity. These findings align with global trends reported by The Lancet Child & Adolescent Health, which noted that 81% of adolescents fail to

meet the World Health Organization's recommendation of at least one hour of moderate to vigorous physical activity per day. Participation in formal sports, particularly those requiring equipment, facilities, or structured programs—such as taekwondo, gymnastics, sepak takraw, and softball—was especially low. Consistent with the study of Kellstedt et al. (2021), students in rural communities often face barriers such as the lack of sports programs, inadequate facilities, and limited access to trained instructors. These structural challenges contribute to reduced opportunities for organized sports and help explain the minimal participation observed in this study.

Table 5
Level of involvement in physical activities of the respondents classified as sports

Statement	Mean	Interpretation
I play volleyball.	2.25	Less involved
I play badminton.	2.59	Less involved
I play basketball.	2.27	Less involved
I play table tennis.	1.51	Not involved
I play lawn tennis.	1.26	Not involved
I play futsal.	1.29	Not involved
I play softball.	1.30	Not involved
I play soccer.	1.63	Not involved
I practice taekwondo.	1.55	Not involved
I play sepak takraw.	1.39	Not involved
I compete in swimming.	1.70	Not involved
I compete in dance sports.	1.58	Not involved
I practice gymnastics.	1.70	Not involved
Average Mean	**1.69**	**Not Involved**

Note: 4.20-5.00 = Very Highly Involved; 3.40-4.19 = Highly Involved; 2.60-3.39 = Involved; 1.80-2.59 = Less Involved; 1.0-1.79 = Not Involved

3.3 Relationship of Mobile Gaming and Physical Activities

Table 6 shows the relationship between mobile gaming and students' physical activity levels across occupational, recreational, fitness, and sports activities.

Table 6
Relationship between extent of mobile gaming of the student-respondents and the student's physical activity

Physical Activity	Extent of Mobile Gaming	Correlation	Decision
Occupational		.199**	Significant
Recreational		.299**	Significant
Fitness		.248**	Significant
Sports		.273**	Significant

Note: **. Correlation is significant at the 0.01 level (2-tailed).

Table 6 shows a positive and significant relationship between mobile gaming and students' physical activity levels across occupational, recreational, fitness, and sports activities. This means that as students spend more time gaming, their participation in these physical activities also tends to increase, though the level of increase varies. This finding is supported by Biddle et al. (2019), who noted that technology use, including mobile gaming, does not necessarily replace physical activity and that many adolescents balance screen time with active lifestyles. Similarly, Staiano and Calvert (2011) suggested that certain types of interactive gaming can encourage movement and physical engagement, helping maintain or even boost physical activity levels among youth.

For occupational physical activity, a weak but significant positive correlation was found ($r = 0.199$, $p < 0.01$). This suggests that students who engage more frequently in mobile gaming may also engage in more occupational or academic-related physical tasks. While the relationship is not strong, it implies that mobile gaming does not hinder participation in physically demanding academic or occupational activities. Recreational physical activity yielded the highest correlation ($r = 0.299$, $p < 0.01$), indicating a moderate positive relationship. This may suggest that students who are active mobile gamers are also more likely to participate in leisure-time activities that involve physical movement, such as walking, dancing, or other non-competitive physical engagements. Similarly, fitness-related activities demonstrated a moderate positive correlation with mobile gaming ($r = 0.248$, $p < 0.01$). This implies that student-respondents who engage in mobile gaming also report

involvement in structured fitness routines, such as workouts or exercise programs.

Lastly, sports-related physical activity was also positively associated with mobile gaming ($r = 0.273$, $p < 0.01$). This correlation suggests that gaming does not necessarily replace time for competitive or team sports and that students who frequently play mobile games may still actively participate in sports. The positive correlations observed between mobile gaming and various forms of physical activity suggest that mobile gaming does not inherently promote sedentary behavior among students. Rather, it appears to coexist with, and in some cases may even encourage, engagement in physical pursuits. This supports the findings of Salmensalo et al. (2024), who reported a positive association between digital gaming behavior and physical activity levels. Their study emphasized that gaming, particularly in its more interactive or socially engaging formats, does not necessarily lead to physical inactivity. Instead, it may align with active lifestyles, especially when students are able to manage their time effectively or engage with games that involve movement or physical interaction. These findings challenge the widespread perception that mobile gaming is a barrier to physical activity and instead point to the potential of integrating gaming elements into interventions and programs aimed at promoting physical engagement among youth.

4. Recommendations

To address the growing influence of mobile gaming, reinforcement of responsible gaming practices through targeted awareness campaigns and school-based guidelines must also be established. These should highlight the importance of prioritizing academic responsibilities and avoiding excessive screen time on mobile by the students. Additionally, schools and parents can work together to set clear expectations about appropriate gaming, encouraging students to view mobile gaming as a rewarding leisure activity rather than a constant habit. Schools may incorporate time management skills and digital literacy education into the curriculum which can further support students in developing a balanced approach to mobile gaming.

5. Conclusion

The study revealed that students engage in mobile gaming to a moderate extent, with the highest frequency occurring during their free time or when feeling bored. In contrast, playing during meals or class hours showed lower engagement. Regarding physical activity, students were most involved in occupational tasks such as walking to school, carrying materials, and classroom cleaning. Recreational activities, particularly social interactions like chatting and eating with family or friends, also had high levels of participation. However, involvement in fitness-related activities—such as aerobics or gym workouts—was generally low, indicating limited engagement in structured exercise routines. Similarly, participation in sports was minimal, with low involvement reported even in common sports such as volleyball and basketball. The findings on the relationship between mobile gaming and physical activity showed that all correlation coefficients were positive and statistically significant. A weak but significant positive correlation was found between mobile gaming and occupational physical activity. Recreational activities had the strongest correlation with gaming, followed by a moderate positive correlation with fitness-related activities. Sports participation also showed a positive, albeit weaker, association with mobile gaming.

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