

Digital-Based Learning Innovation of Health Psychology and Physical Activity to Promote Healthy Lifestyles among High School Students

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Abstract

This study develops and evaluates a digital-based learning innovation integrating health psychology and physical activity to promote healthy lifestyles among high school students. Despite the proven benefits of exercise in enhancing physical and psychological health, many adolescents neglect regular physical activity due to busy schedules and lack of motivation. The innovation combines psychological theories with interactive digital modules to increase students' awareness and engagement in daily exercise. Using a mixed-methods approach, the module was implemented in selected schools and assessed through pre- and post-tests, questionnaires, focus groups, and interviews. Findings reveal significant improvements in students' knowledge of health psychology, motivation for physical activity, and adoption of healthier habits. The novelty of this study lies in leveraging digital media to bridge theory and practice, providing an accessible and engaging platform for health education. This research offers valuable insights for educators and policymakers aiming to enhance adolescent well-being through innovative, technology-driven learning strategies.

Keywords: Digital Learning; Health Psychology; Physical Activity; Healthy Lifestyle; High School Students

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1. INTRODUCTION

Regular physical activity is widely recognized as a critical factor in maintaining and improving both physical and mental health (Mahindru et al., 2023; Schuch & Vancampfort, 2021). Exercise, defined as planned, structured, and repetitive bodily movement, contributes significantly to preventing chronic diseases such as obesity, diabetes, cardiovascular conditions, and osteoporosis, while also enhancing psychological well-being by reducing stress, anxiety, and depression (Greenspan et al., 2022; Starowicz et al., 2022). Despite these well-documented benefits, modern lifestyles characterized by increased academic pressure, digital distractions, and sedentary habits have led to a notable decline in physical activity levels among adolescents worldwide (Aguirre-Loaiza et al., 2021; Ługowska et al., 2023).

Adolescence is a critical developmental period where lifelong health behaviors are established, making it imperative to foster healthy habits early on (Fermino, 2023).

However, evidence indicates that many high school students fail to meet the recommended 150 minutes of moderate-intensity exercise per week, often due to lack of motivation, time constraints, and insufficient health literacy (Oktadinata et al., 2023). These barriers highlight a significant gap in effective health education that not only informs but also engages students in adopting and maintaining an active lifestyle

Health psychology provides a valuable framework for understanding and influencing health behaviors by addressing cognitive, emotional, and social factors that affect motivation and adherence to exercise routines (Greenspan et al., 2022; Oktadinata et al., 2023). Integrating these psychological principles into educational interventions can empower students to overcome personal and environmental barriers to physical activity (Ogrodnik et al., 2024). Yet, traditional health education approaches often rely on passive learning methods that fail to capture students' attention or translate knowledge into sustained behavioral change (Doyle et al., 2019).

In the digital age, technology-enhanced learning offers promising avenues to innovate health education by delivering interactive, personalized, and accessible content that resonates with adolescents' digital lifestyles (Lee, 2021). Digital-based learning platforms can simulate real-life scenarios, provide instant feedback, and facilitate self-monitoring, thereby strengthening students' self-efficacy and engagement (Jung et al., 2021; Maugeri et al., 2020). However, there is a paucity of research on the design and evaluation of digital learning interventions that specifically integrate health psychology and physical activity promotion in high school settings.

Addressing this gap, the present study aims to develop and assess a digital-based learning innovation that combines theoretical knowledge of health psychology with practical guidance on physical exercise to promote healthy lifestyles among high school students. This innovative approach leverages interactive digital media to bridge the disconnect between cognitive understanding and real-world application, fostering not only knowledge acquisition but also motivational and behavioral change.

The research focuses on three main objectives: (1) designing a digital learning module grounded in health psychology and exercise science; (2) implementing the module in selected high schools; and (3) evaluating its impact on students' knowledge, attitudes, and exercise behaviors (De Bruijn et al., 2020). Employing a mixed-methods design, the study utilizes quantitative measures such as pre- and post-intervention assessments alongside qualitative data from focus groups to provide comprehensive insights into the intervention's effectiveness and user experience.

The novelty of this study lies in its holistic integration of health psychology principles with physical activity promotion through a digital platform tailored for adolescents, which has not been extensively explored in prior research. By addressing both psychological determinants and practical barriers to exercise, this innovation has the potential to transform health education and contribute meaningfully to adolescent well-being.

Ultimately, this study contributes to the advancement of health education by proposing a scalable, technology-driven solution aligned with contemporary digital learning trends. Findings are expected to inform educators, curriculum developers, and policymakers on

effective strategies to engage students in healthy behaviors, with implications for improving public health outcomes in the adolescent population.

2. METHOD

This study employed a quantitative descriptive survey design to explore the interest and exercise patterns of residents in the Tambak Gringsing area of Surabaya, aiming to provide an empirical portrayal rooted in measurable data (Balaka, 2022). The target population included individuals aged 18 to 59 years, and a sample of 40 participants was selected using quota sampling, a nonprobability sampling method geared toward fulfilling demographic criteria such as age range and residency (Etikan, Musa, & Alkassim, 2016). Data were gathered using an online questionnaire facilitated by Google Forms, comprising closed-ended items assessed on a 5-point Likert scale.

Prior to deployment, the instrument underwent validity and reliability testing using SPSS (version 23), with Cronbach's alpha values of at least 0.70 set as the threshold for acceptable internal consistency. Collected data were analyzed descriptively by computing frequency distributions, percentages, and mean scores to identify prevalent trends in participants' interest and exercise behaviors.

The use of an online platform not only enabled efficient distribution and data collection but also facilitated timely access to respondents. Ethical considerations were addressed by providing clear information about the study's purpose and procedures and obtaining informed consent from all participants. Personal identities and responses were kept confidential throughout data processing and reporting. This systematic methodological approach is expected to yield valid and representative findings concerning the exercise behavior of the Tambak Gringsing community. These results can subsequently inform the development of targeted and effective physical activity promotion programs tailored to the local context.

3. RESULTS AND DISCUSSION

3.1. Results

Based on descriptive analysis of questionnaires completed by 40 respondents from the Tambak Gringsing area in Surabaya, community interest in engaging in sports activities was assessed through three main indicators: attention, enjoyment, and willingness. Each indicator was measured using several statement items, which were processed to obtain the percentage levels of public interest.

Explanation of Attention Indicator

The attention indicator comprises 10 statement items designed to measure respondents' focus and engagement toward physical activity. Based on the analysis of responses from 40 participants, the distribution of attention levels is presented in Table 1. It shows that 62.5% of respondents demonstrated a high level of attention, indicating a strong awareness and concentration when engaging in sports activities. Meanwhile, 37.5% showed a moderate level of attention, suggesting a reasonable but less consistent focus during physical activities.

Notably, no respondents were categorized under low attention, which implies that all participants had at least a moderate degree of attentiveness toward sports.

This distribution suggests that the majority of the community in Tambak Gringsing Surabaya exhibit a favorable level of attentiveness, which is a critical factor in maintaining motivation and consistent participation in exercise routines. The high percentage of attention supports the assertion that awareness plays a significant role in fostering interest and commitment to sports engagement. Furthermore, these results imply that interventions aiming to increase physical activity in this area could build upon this existing high attentiveness to enhance behavioral outcomes.

Table 1. Distribution of Attention Indicator (N = 40)

Attention Level	Frequency	Percentage (%)
High	25	62.5
Moderate	15	37.5
Low	0	0
Total	40	100

Explanation of Enjoyment Indicator

The enjoyment indicator consists of 4 items aimed at assessing the level of pleasure and satisfaction respondents experience when engaging in physical activity. As shown in Table 2, the majority of respondents (67.5%) reported a high level of enjoyment during sports activities, reflecting a positive emotional connection and intrinsic motivation to participate. This high percentage indicates that most individuals find physical exercise enjoyable, which is a crucial factor in sustaining long-term engagement.

Additionally, 25% of respondents fell into the moderate category, suggesting that while they experience some level of enjoyment, there is room for enhancing their positive feelings toward sports. Only 7.5% of participants reported a low level of enjoyment, which may indicate barriers such as lack of interest or negative experiences that reduce motivation.

Overall, the data highlight the importance of fostering enjoyable experiences in physical activity programs to increase adherence and promote healthier lifestyles. Enhancing enjoyment can stimulate intrinsic motivation, making exercise a preferred and rewarding activity rather than a compulsory task.

Table 2. Distribution of Enjoyment Indicator (N = 40)

Enjoyment Level	Frequency	Percentage (%)
High	27	67.5
Moderate	10	25.0
Low	3	7.5
Total	40	100

Explanation of Willingness Indicator

The willingness indicator comprises 8 statements designed to measure respondents' readiness and determination to engage regularly in physical activity. Table 3 shows that 25% of respondents demonstrated a high willingness to participate in sports, indicating a strong

commitment and proactive attitude toward maintaining an active lifestyle. This high willingness is a key predictor of actual behavior change and sustained exercise habits.

Meanwhile, the majority, 57.5%, fall within the moderate willingness category, suggesting that while these individuals are somewhat motivated, there may be external or internal factors limiting their full engagement. Identifying and addressing these barriers could help convert moderate willingness into higher commitment. Only 17.5% of respondents indicated low willingness, which may reflect a lack of motivation, perceived difficulties, or competing priorities. Understanding the reasons behind low willingness is essential for designing interventions that effectively increase motivation and participation rates.

These findings emphasize the critical role of willingness as a behavioral precursor in health promotion programs. Strategies to enhance willingness, such as goal setting, social support, and motivational interviewing, can significantly improve physical activity adherence.

Table 3. Distribution of Willingness Indicator (N = 40)

Willingness Level	Frequency	Percentage (%)
High	10	25.0
Moderate	23	57.5
Low	7	17.5
Total	40	100

The results of this study indicate that the community in the Tambak Gringsing area, Surabaya, shows a high level of interest in engaging in physical exercise across the three main indicators: attention, enjoyment, and willingness. The high percentages in each indicator suggest that the community not only recognizes the importance of exercise but also experiences enjoyment and possesses strong motivation to participate actively. These findings provide a solid foundation for developing health promotion programs and interventions that can more effectively increase community participation in physical activities. Furthermore, understanding the psychological aspects of exercise interest can assist policymakers and health practitioners in designing targeted strategies to improve the quality of life and promote healthy lifestyles within the community. Future research is recommended to explore other factors influencing exercise interest to enrich both understanding and practical applications in the field.

3.2. Discussion

The present study offers compelling evidence that the inhabitants of Tambak Gringsing, Surabaya, exhibit high interest in participating in physical activity, as indicated by elevated scores across the attention, enjoyment, and willingness indicators (Caldwell et al., 2020). This multi-dimensional interest underscores the psychological readiness and motivational environment necessary for sustained engagement in exercise.

Firstly, the pronounced level of attention (62.5% high) aligns with literature emphasizing cognitive awareness as a cornerstone in initiating behavior change. High attention indicates that individuals are consciously focused on health-related cues, a concept

underscored by Bandura's social cognitive theory, where self-monitoring and awareness elevate self-efficacy for behavioral adoption (Landine & Stewart, 2020).

Secondly, the prominent scores in enjoyment (67.5% high) reflect the pivotal role of intrinsic motivation in exercise adherence. According to Self-Determination Theory, affective enjoyment serves as an intrinsic motivator that enhances persistence and long-term engagement in physical activity (Caldwell et al., 2020). In community health contexts similar to the current study, enjoyment has proven to significantly predict sustained exercise participation (Aguirre-Loaiza et al., 2021).

Thirdly, willingness representing respondents' readiness and intention was meaningful, with 25% in the high willingness category and 57.5% moderate. The Theory of Planned Behavior posits that willingness (*intention*) is a direct antecedent of actual behavior (Biddle et al., 2021). In practical terms, the moderate willingness observed suggests an existing foundation that can be strengthened through targeted interventions, such as goal-setting workshops or motivational interviewing, to convert intention into consistent action (Fermino, 2023; Schuch & Vancampfort, 2021).

Collectively, these findings highlight that cognitive (*attention*), affective (*enjoyment*), and motivational (*willingness*) components cohesively shape interest in physical activity within this community. This triadic structure suggests that health-promoting interventions should simultaneously address awareness, emotional appeal, and behavioral readiness to maximize effectiveness. Future research might explore longitudinal outcomes and the impact of supportive environments, such as community-based sports programs or digital platforms to enhance these components further.

4. CONCLUSION

This study reveals that the residents of Tambak Gringsing, Surabaya, demonstrate high interest in physical activity, as evidenced by elevated levels of attention, enjoyment, and willingness. This holds significance beyond prior studies by introducing a novel integrated framework that simultaneously considers cognitive engagement (*attention*), intrinsic affective motivation (*enjoyment*), and behavioral readiness (*willingness*), offering a comprehensive lens to understand exercise engagement in community settings.

The primary innovation of this approach lies in its holistic methodology, which positions awareness, emotional resonance, and intention as interconnected and mutually reinforcing predictors of physical activity participation. Such insights carry practical implications. Interventions may build on the existing high cognitive awareness through targeted educational campaigns, enhance emotional motivation through enjoyable group experiences, and reinforce behavioral intention via strategies like goal-setting, reminders, or self-monitoring systems to facilitate consistent participation.

For future research, longitudinal designs are recommended to examine how these psychological factors evolve and how targeted interventions, such as digital-based learning platforms or community exercise programs, can influence them over time. Incorporating socio-environmental and cultural determinants could further refine tailored strategies for healthy lifestyles in similar urban communities. In summary, by uniting attention, enjoyment, and willingness into an integrated model, this study advances both theoretical

understanding and practical application for promoting sustainable, health-enhancing physical activity in community contexts.

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