



DIGITAL SELF-REGULATION AND PSYCHOPHYSICAL WELL-BEING IN PHYSICAL CULTURE EDUCATION: AN IMRAD BASED PEDAGOGICAL ANALYSIS

Hikmatova Nigoraxon Hasanboy qizi

Physical Culture, Group 08/24

Phone: +998 91 138 58 98

Abstract

The article examines how digital self-regulation can be integrated into physical culture education to strengthen students' psychophysical well-being, movement motivation, and responsible attitudes toward health in the conditions of a rapidly digitalizing educational environment. The relevance of the study is determined by a visible contradiction: university students live in a media-saturated space that expands access to fitness applications, wearable devices, online training programs and self-monitoring tools, yet the same digital space also intensifies sedentary behaviour, fragmented attention, comparison anxiety and unstable health habits. The purpose of the article is to develop a scientifically grounded pedagogical interpretation of digital self-regulation in physical culture education and to identify the methodological conditions under which digital tools support, rather than replace, conscious motor activity. Methodologically, the article is based on an integrative theoretical analysis of contemporary research on physical activity, sedentary behaviour, mental health, self-determination theory, behaviour-change technologies and university physical education. The analysis shows that the educational value of digital fitness tools does not lie in mechanical counting of steps or calories, but in their ability to support goal setting, feedback literacy, reflective self-assessment, autonomy, competence and social relatedness. The proposed model includes four interdependent blocks: diagnostic orientation, motivational-personal support, activity-programming, and reflective-evaluative correction. The practical significance of the study is that it offers a pedagogical framework for physical culture teachers who aim to use digital resources without



reducing the lesson to technological control. The article concludes that digital self-regulation becomes effective only when it is ethically organized, psychologically safe, culturally adapted and subordinated to the broader aim of forming a stable physical culture of the individual.

Keywords: Physical culture education, digital self-regulation, psychophysical well-being, university students, physical activity, sedentary behaviour, motivation, fitness applications, self-determination theory, health pedagogy.

INTRODUCTION

The development of physical culture education in the twenty-first century is increasingly determined by a complex interaction between bodily activity, psychological adaptation and digital forms of everyday life. For a university student, the body is no longer formed only in the gymnasium, sports ground or traditional classroom; it is also interpreted through screens, mobile notifications, wearable sensors, online challenges, digital fitness communities and algorithmic recommendations. This situation creates a new pedagogical reality in which physical culture cannot be limited to the transmission of motor skills or the fulfilment of normative exercises. It must also teach the student how to understand his or her own body, regulate effort, distinguish useful feedback from manipulative digital stimuli, preserve psychological stability and build a personally meaningful health routine. International public health recommendations emphasize that adults should engage in regular aerobic and muscle-strengthening activity and reduce sedentary time (World Health Organization, 2020; Bull et al., 2020), but in educational practice the problem is not only whether students know these recommendations; the more difficult question is whether they can turn them into durable behaviour under the pressure of academic workload, social media use, irregular sleep, emotional fatigue and low intrinsic motivation. The digital environment makes this problem sharper. On the one hand, mobile applications and wearable devices can give immediate feedback, visualize progress, remind students to move, support goal setting and make health behaviour measurable. On the other hand, the same tools may produce superficial motivation, dependence on external approval, anxiety about



*Modern American Journal of Linguistics,
Education, and Pedagogy*

ISSN (E): 3067-7874

Volume 2, Issue 5, May, 2026

Website: usajournals.org

*This work is Licensed under CC BY 4.0 a Creative Commons Attribution
4.0 International License.*

numbers, unhealthy comparison and a tendency to replace embodied self-awareness with blind trust in metrics. Therefore, digitalization is neither an automatic solution nor a pedagogical enemy; it is a field that requires methodological control, psychological tact and value-oriented interpretation. In physical culture education, digital self-regulation may be understood as the student's ability to use digital tools consciously for planning, performing, monitoring and evaluating physical activity while maintaining autonomy, emotional balance and responsibility for personal well-being. Such self-regulation is not a purely technical skill. It includes motivational, cognitive, behavioural and reflective components: the student defines realistic goals, selects suitable activity, controls intensity, interprets feedback, adjusts behaviour and connects the obtained result with wider life values. The relevance of this topic is also strengthened by the growing mental health burden among university students, for whom physical activity is not only a factor of functional fitness (Rodríguez-Romo et al., 2023; Liu et al., 2025) but also a means of stress reduction, sleep improvement, emotional regulation and social inclusion. In this sense, physical culture education becomes a bridge between health promotion and psychological support. It helps students experience the body not as a passive biological object, but as an active resource of learning, resilience and self-development. However, the pedagogical use of digital technologies in this field remains uneven. Some teachers use digital devices only for attendance control or mechanical testing; others avoid them because they fear distraction or loss of direct pedagogical contact. A scientifically balanced approach should avoid both extremes. Digital tools are useful when they are included in a clear educational logic: they must clarify goals, individualize load, increase reflection, support cooperation and protect the dignity of each student. The central research problem of this article is the lack of an integrated pedagogical model explaining how digital self-regulation can be used in physical culture education to strengthen psychophysical well-being without encouraging technocratic control over the student body. The aim of the article is to substantiate the theoretical and methodological foundations of digital self-regulation in physical culture education and to propose a model that can guide university teachers in organizing health-oriented, psychologically safe and educationally meaningful work. The



*Modern American Journal of Linguistics,
Education, and Pedagogy*

ISSN (E): 3067-7874

Volume 2, Issue 5, May, 2026

Website: usajournals.org

*This work is Licensed under CC BY 4.0 a Creative Commons Attribution
4.0 International License.*

object of the study is the process of physical culture education in higher education, while the subject is the pedagogical conditions for using digital self-regulation tools to improve students' psychophysical well-being. The main tasks are: to clarify the conceptual relationship between physical culture, digital self-regulation and well-being; to analyze the educational potential and risks of digital fitness tools; to identify methodological principles for integrating self-monitoring into physical culture classes; and to formulate a structured model that can be adapted to university practice. The scientific novelty of the article lies in treating digital self-regulation not as an accessory to sport training, but as a pedagogical mechanism that connects physical activity, motivation, mental health and reflective competence. The practical value consists in offering teachers a framework for designing assignments, feedback procedures and reflective tasks that transform digital data into educational meaning.

METHODS

The study was conducted as an integrative theoretical and pedagogical analysis rather than as an experimental measurement of a particular student group, because the purpose was to develop a conceptual model suitable for further empirical verification in physical culture education. This methodological choice is appropriate when the research question concerns the synthesis of several knowledge domains - physical education pedagogy, psychology of motivation, digital health, behavioural self-regulation and student well-being - and when the task is to clarify principles before designing a local intervention. The analytical procedure included four consecutive stages. At the first stage, the key concepts were defined through a comparative reading of pedagogical, psychological and public health sources: physical culture education was interpreted not simply as sports training, but as a systematic process of forming motor competence, health values, bodily awareness and social responsibility; psychophysical well-being was understood as the dynamic unity of physical capacity, emotional stability, adequate self-perception, recovery, sleep, stress resistance and social participation; digital self-regulation was defined as the conscious use of digital resources for planning, monitoring, evaluating and correcting one's own physical activity and health behaviour. At the second stage, research evidence on physical



*Modern American Journal of Linguistics,
Education, and Pedagogy*

ISSN (E): 3067-7874

Volume 2, Issue 5, May, 2026

Website: usajournals.org

*This work is Licensed under CC BY 4.0 a Creative Commons Attribution
4.0 International License.*

activity, sedentary behaviour and university students' mental health was reviewed in order to determine why the issue has pedagogical urgency. This included international recommendations on physical activity, systematic reviews on exercise and mental health, studies on sedentary behaviour, and meta-analytical work concerning digital health interventions among college students (Bi et al., 2024; Barbosa et al., 2024; White et al., 2024). At the third stage, motivational theories were analyzed, with particular attention to self-determination theory (Deci & Ryan, 2000; Ryan & Deci, 2017), because it explains why students are more likely to maintain activity when the educational environment supports autonomy, competence and relatedness rather than relying only on external pressure. This theoretical perspective was combined with the logic of self-monitoring and reflective learning: a fitness application, step counter or online training diary can be pedagogically productive only if the student learns to interpret data, connect it to personal goals and make adaptive decisions. At the fourth stage, the obtained materials were synthesized into a model of digital self-regulation in physical culture education. The model was developed through pedagogical abstraction: repeated ideas from the literature were grouped into functional blocks, each block was connected with a didactic purpose, and each purpose was translated into possible teaching actions. The study did not include fabricated statistical data, because its task was not to report an intervention that had not been conducted, but to formulate a scientifically plausible framework for subsequent application. The criteria for evaluating the model were internal coherence, correspondence to established health and motivation principles, educational applicability, ethical acceptability and adaptability to different student fitness levels. The methodological limitation is that the proposed model requires future empirical testing through mixed methods, including pre- and post-intervention assessment, qualitative interviews, activity logs and psychological well-being indicators. Nevertheless, the theoretical-analytical approach allows one to avoid a narrow technological interpretation of digital fitness and to formulate a broader pedagogical position: digital tools should be used as instruments of reflection and self-management, not as instruments of surveillance, competition or formal reporting.



RESULTS

The theoretical analysis produced four main results that may be used as a basis for organizing digital self-regulation in physical culture education. The first result is conceptual: digital self-regulation should be located at the intersection of bodily activity, psychological motivation and pedagogical feedback. If digital tools are treated only as devices for registering steps, pulse or attendance, they remain external instruments and do not change the student's relation to health. Their educational significance begins when numbers are transformed into reflective questions: What kind of activity makes me feel more energetic? Why does my motivation decrease after academic stress? How does sleep influence my readiness to train? What load is realistic for me this week? Such questions create a movement from technological measurement to personal meaning. The second result is motivational: digital self-regulation must support autonomy, competence and relatedness. Autonomy is supported when students participate in selecting goals and activity formats rather than receiving identical digital tasks for everyone. Competence is supported when feedback is understandable, incremental and connected with realistic progress, not with idealized standards that produce shame. Relatedness is supported when digital interaction encourages cooperation, mutual encouragement and group reflection instead of aggressive ranking. This result is especially important because many fitness applications are designed according to commercial engagement logic, a tendency also discussed in recent reviews of fitness-app adoption and digital health interventions (Angosto et al., 2023; Bi et al., 2024): they reward streaks, badges and comparison, but these elements do not automatically build stable physical culture. A university teacher must reinterpret them pedagogically, using digital motivation as a starting point but gradually shifting students toward internal motives such as health, self-respect, emotional balance and readiness for professional life. The third result is methodological: an effective model of digital self-regulation should include four blocks. The diagnostic-orientational block begins with assessment of students' initial activity habits, sedentary time, motivation, barriers, previous sport experience and psychological readiness. Its purpose is not to label students as strong or weak, but to identify individual starting points and health risks. The motivational-personal block helps students formulate meaningful goals and



*Modern American Journal of Linguistics,
Education, and Pedagogy*

ISSN (E): 3067-7874

Volume 2, Issue 5, May, 2026

Website: usajournals.org

*This work is Licensed under CC BY 4.0 a Creative Commons Attribution
4.0 International License.*

connect physical activity with personal values. For one student, the goal may be endurance and body composition; for another, it may be stress control, better sleep, social communication or confidence in movement. The activity-programming block translates goals into weekly plans that combine aerobic activity, strength exercises, mobility work, recovery and reduction of sedentary periods. Digital tools are used here for reminders, training diaries, pulse zones, step tracking or video feedback, but the teacher remains responsible for methodological safety and adaptation. The reflective-evaluative block requires students to analyze their data, feelings, obstacles and progress at regular intervals. Reflection may be organized through short digital diaries, classroom discussions, individual consultations or portfolio tasks. The fourth result is ethical and psychological: digital self-regulation must be protected from three distortions. The first distortion is surveillance, when students feel that the teacher controls their private life through devices. The second is metric reductionism, when health is reduced to numbers and the subjective experience of the body is ignored. The third is social comparison, when rankings intensify anxiety and discourage those who start from a lower level. To prevent these distortions, data collection should be minimal, transparent and educationally justified; students should know what is measured and why; personal results should not be publicly exposed without consent; and evaluation should emphasize progress, effort, reflection and safety rather than only high performance. The proposed model therefore changes the function of the teacher. The teacher becomes not only an instructor of exercises, but also a moderator of digital health literacy, a consultant in self-regulation and a guardian of psychological safety. In practical terms, the model can be implemented through a semester module. During the first two weeks, students complete a baseline reflection on physical activity and sedentary habits, choose a suitable digital tool or paper alternative, and formulate an individual goal. During weeks three to ten, they follow a flexible activity plan and record selected indicators such as number of active days, perceived exertion, sleep quality or mood after exercise. During weeks eleven to fourteen, they compare the initial and current situation, identify the most effective activity format and prepare a short reflective report. The final evaluation combines participation, safe execution of exercises, individual progress and the quality of reflection. This



*Modern American Journal of Linguistics,
Education, and Pedagogy*

ISSN (E): 3067-7874

Volume 2, Issue 5, May, 2026

Website: usajournals.org

*This work is Licensed under CC BY 4.0 a Creative Commons Attribution
4.0 International License.*

structure is compatible with traditional physical culture lessons because it does not abolish practical training; it adds a layer of conscious self-management. The essential result is that the student learns to see physical activity as a regulated life practice rather than as an episodic requirement of the curriculum.

DISCUSSION

The findings of the theoretical analysis correspond to the broader direction of contemporary health pedagogy, in which physical culture is expected to form not only motor skills but also sustainable health behaviour. The issue is not whether digital technologies should be used in physical education; they are already present in students' lives. The real issue is whether educational institutions can give these technologies a humane, scientifically grounded and psychologically safe form. If this is not done, students will continue to receive health guidance mainly from commercial platforms, influencers and algorithmic trends, where the quality of advice varies and where the body is often represented as an object for comparison rather than as a living basis of well-being. Physical culture education has a corrective function here. It can teach students that digital data are useful but incomplete; that progress should be interpreted in relation to individual health status and life context; that rest and recovery are not signs of weakness; and that the value of movement is broader than appearance or competition. The model proposed in this article is therefore not technocratic. It does not suggest that every student must be tracked continuously or that digital metrics should dominate assessment. On the contrary, it places the teacher's pedagogical judgement above the device and connects self-monitoring with reflection. This point is crucial because the psychological effect of digital tools depends on the meaning attributed to them. A step target can motivate a student who needs structure, but it can discourage another student who already experiences academic pressure and self-criticism. A heart-rate monitor can improve safety and intensity control, but it can also create anxiety if the student does not understand normal physiological variation. A group challenge can increase relatedness, but it can also humiliate students with lower fitness if it is organized as a public ranking. Thus, the same technology can be either educationally useful or harmful depending on the



*Modern American Journal of Linguistics,
Education, and Pedagogy*

ISSN (E): 3067-7874

Volume 2, Issue 5, May, 2026

Website: usajournals.org

*This work is Licensed under CC BY 4.0 a Creative Commons Attribution
4.0 International License.*

pedagogical context. The teacher must create a climate in which digital feedback becomes information for self-improvement, not a verdict on personal worth.

The relationship between digital self-regulation and motivation deserves special attention. In many universities, students participate in physical culture because attendance is obligatory or because final assessment requires certain standards. Such external motivation may be sufficient for short-term compliance, but it rarely produces long-term physical activity after the course ends. Digital tools can either strengthen this external logic or help overcome it. If an application is used only to prove that a student has completed a task, it reproduces control. If it is used to help the student observe patterns, choose strategies and understand personal reactions to movement, it supports autonomy. This distinction is consistent with self-determination theory, which shows that durable motivation depends on the satisfaction of basic psychological needs (Deci & Ryan, 2000; Vasconcellos et al., 2020). In physical culture education, autonomy does not mean that students may ignore the curriculum; it means that within the curriculum they have meaningful choices and can connect assignments with personal aims. Competence does not mean that every student reaches the same sport result; it means that every student can experience progress from his or her starting point. Relatedness does not mean constant competition; it means belonging to a supportive group where effort is recognized. Digital self-regulation can reinforce all three needs when the teacher designs tasks carefully. For example, students may choose between walking, cycling, swimming, team games or strength circuits as long as the chosen activity meets safety and intensity criteria. They may use perceived exertion scales rather than advanced devices if they do not have wearables. They may discuss barriers in small groups, exchange strategies for reducing sedentary time and reflect on emotional changes after activity. Such practices make digitalization inclusive instead of elitist. This is important in societies where students may have unequal access to devices, stable internet or paid fitness platforms. A responsible model must therefore allow low-cost and no-cost alternatives, including simple diaries, pedometers, classroom reflection sheets and teacher-guided observation.

The psychophysical dimension of the model is also significant. University students often separate mental work and bodily activity, considering physical



*Modern American Journal of Linguistics,
Education, and Pedagogy*

ISSN (E): 3067-7874

Volume 2, Issue 5, May, 2026

Website: usajournals.org

*This work is Licensed under CC BY 4.0 a Creative Commons Attribution
4.0 International License.*

culture a secondary discipline compared with specialized academic subjects. This separation is pedagogically harmful because it ignores the role of movement in cognitive performance, emotional regulation and resilience. Physical activity improves circulation, helps regulate arousal, creates breaks from screen-based learning, supports sleep and provides a socially acceptable channel for releasing stress (Liu et al., 2025; White et al., 2024). Digital self-regulation can make these relationships visible if students are asked not only to count activity but also to observe mood, fatigue, concentration and recovery. For instance, a student may discover that moderate evening walking improves sleep more than late-night intense training; another may notice that short mobility breaks during study reduce back discomfort and irritability; another may identify that team games provide social support that individual training lacks. Such insights are more educationally powerful than abstract advice because they arise from personal experience. However, they require reflection. Without reflection, students may collect data without understanding it, like owning a laboratory in the pocket and using it as a kitchen timer. This is where physical culture pedagogy must be stricter than digital fashion: not every measurement is meaningful, and not every notification is wisdom. The teacher should help students select a limited set of indicators that correspond to the educational goal. For beginners, active days per week, perceived exertion, sedentary breaks and well-being after exercise may be more useful than complex physiological metrics. For more advanced students, pulse zones, training volume and recovery markers can be included. The principle is gradual complication, not digital overload.

The proposed model can be integrated into OAK-oriented academic and pedagogical requirements because it has a clear object, subject, aim, tasks, theoretical basis and practical significance. It also opens several directions for future empirical research. First, it would be valuable to conduct a semester-long pedagogical experiment comparing traditional physical culture classes with classes that include structured digital self-regulation. Outcomes could include attendance, physical activity level, motivation type, perceived stress, sleep quality and reflective competence. Second, qualitative interviews could identify how students interpret digital feedback and what barriers prevent them from maintaining activity. Third, comparative research could examine differences



*Modern American Journal of Linguistics,
Education, and Pedagogy*

ISSN (E): 3067-7874

Volume 2, Issue 5, May, 2026

Website: usajournals.org

*This work is Licensed under CC BY 4.0 a Creative Commons Attribution
4.0 International License.*

between students of physical culture and students of non-sport specialities, because their initial motivation and bodily confidence may differ. Fourth, ethical protocols for educational self-monitoring should be developed at the institutional level. These protocols would specify what data may be collected, how confidentiality is protected, how students without digital devices are included and how teachers avoid medical claims outside their competence. Such directions show that the topic is not merely practical; it has theoretical depth and social relevance. In the conditions of digital modernization, physical culture education should not retreat into nostalgia for pre-digital methods, but it should also not surrender to platform logic. Its task is to humanize digital tools, connect them with the culture of movement and protect the student from both inactivity and meaningless technological pressure. A strong physical culture lesson in the digital age is not the one with the largest number of gadgets, but the one in which the student leaves with clearer self-knowledge, safer movement skills and a more stable intention to be active.

CONCLUSION

Digital self-regulation is a promising pedagogical direction for physical culture education because it connects the practical organization of movement with psychological motivation, reflective learning and health-oriented behaviour. The analysis carried out in this article shows that digital tools are effective only when they are subordinated to educational aims and interpreted through the principles of autonomy, competence, relatedness, safety and ethical data use. Fitness applications, wearable devices, online diaries and feedback platforms cannot replace the teacher, the group, the living experience of exercise or the student's own bodily awareness. Their function is auxiliary: they help make activity visible, support planning, remind students of goals and provide material for reflection. The proposed four-block model - diagnostic orientation, motivational-personal support, activity-programming and reflective-evaluative correction - offers a structured way to include digital self-regulation in university physical culture without turning education into surveillance. The model emphasizes individual progress, psychological comfort, realistic load, inclusiveness and the transformation of data into meaning. For students, this approach can strengthen



responsibility for health, reduce passive screen-dominated habits and develop a more stable physical culture of everyday life. For teachers, it provides a methodological basis for combining traditional exercise instruction with digital health literacy. The main conclusion is that the future of physical culture education should not be defined by a conflict between body and technology. It should be defined by their pedagogically reasonable integration, where technology serves the formation of a healthy, reflective and socially responsible individual. Further empirical research is needed to test the model in different universities, measure its effect on students' motivation and well-being, and develop assessment tools that respect both scientific validity and human dignity.

REFERENCES

1. Angosto, S., García-Fernández, J., Valantine, I., & Grimaldi-Puyana, M. (2023). A systematic review of intention to use fitness apps (2020-2023). *Humanities and Social Sciences Communications*, 10, 624. <https://doi.org/10.1057/s41599-023-02011-3>
2. Barbosa, B. C. R., Menezes-Júnior, L. A. A., & Meireles, A. L. (2024). Sedentary behavior is associated with the mental health of university students during the Covid-19 pandemic, and not practicing physical activity accentuates its adverse effects: Cross-sectional study. *BMC Public Health*, 24, 1860. <https://doi.org/10.1186/s12889-024-19345-5>
3. Bi, S., Wang, Y., Jiang, J., Zhou, W., Li, Z., & Li, I. (2024). Effectiveness of digital health interventions in promoting physical activity among college students: Systematic review and meta-analysis. *Journal of Medical Internet Research*, 26, e51714. <https://doi.org/10.2196/51714>
4. Bull, F. C., Al-Ansari, S. S., Biddle, S., Borodulin, K., Buman, M. P., Cardon, G., Carty, C., Chaput, J. P., Chastin, S., Chou, R., Dempsey, P. C., DiPietro, L., Ekelund, U., Firth, J., Friedenreich, C. M., Garcia, L., Gichu, M., Jago, R., Katzmarzyk, P. T., ... Willumsen, J. F. (2020). World Health Organization 2020 guidelines on physical activity and sedentary behaviour. *British Journal of Sports Medicine*, 54(24), 1451-1462. <https://doi.org/10.1136/bjsports-2020-102955>



5. Deci, E. L., & Ryan, R. M. (2000). The what and why of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11(4), 227-268. https://doi.org/10.1207/S15327965PLI1104_01
6. Liu, L., Zhang, Y., Wang, X., & Chen, H. (2025). Effectiveness of physical exercise on mental health among university students: A systematic review and meta-analysis. *Frontiers in Psychology*, 16, 1612408. <https://doi.org/10.3389/fpsyg.2025.1612408>
7. Rodríguez-Romo, G., Acebes-Sánchez, J., García-Merino, S., Garrido-Muñoz, M., Blanco-García, C., Díez-Vega, I., & de la Cámara, M. Á. (2023). Physical activity and mental health in undergraduate students. *International Journal of Environmental Research and Public Health*, 20(1), 195. <https://doi.org/10.3390/ijerph20010195>
8. Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press.
9. Vasconcellos, D., Parker, P. D., Hilland, T., Cinelli, R., Owen, K. B., Kapsal, N., Lee, J., Antczak, D., Ntoumanis, N., Ryan, R. M., & Lonsdale, C. (2020). Self-determination theory applied to physical education: A systematic review and meta-analysis. *Journal of Educational Psychology*, 112(7), 1444-1469. <https://doi.org/10.1037/edu0000420>
10. White, R. L., Bennie, J., Abbott, G., Teychenne, M., & Biddle, S. J. H. (2024). Physical activity and mental health: A systematic review and best-evidence synthesis of mediators and moderators. *International Journal of Behavioral Nutrition and Physical Activity*, 21, 53. <https://doi.org/10.1186/s12966-024-01572-1>
11. World Health Organization. (2020). *WHO guidelines on physical activity and sedentary behaviour*. Geneva: World Health Organization. ISBN 9789240015128.
12. Zhou, Q., Jiang, J., Yin, Z., & Fan, R. (2026). Effect of digital health interventions on college students' lifestyle behaviors: Systematic review. *Journal of Medical Internet Research*, 28, e82192. <https://doi.org/10.2196/82192>