



Physical Education of Schoolchildren as a Managed Learning Process: Theoretical and Methodological Foundations, a Systems Perspective, and Modelling

Olha Ivashchenko^{1ABCD}, Oleg Khudolii^{1ABCD} and Mykola Khudolii^{1ABCD}

¹Kharkiv State Academy of Physical Culture

Authors' Contribution: A – Study design; B – Data collection; C – Statistical analysis; D – Manuscript Preparation; E – Funds Collection

Corresponding Author: Olha Ivashchenko, e-mail: ivashchenko.olha21@gmail.com

Accepted for Publication: February 28, 2026

Published: March 30, 2026

DOI: [10.17309/tmfv.2026.2.01](https://doi.org/10.17309/tmfv.2026.2.01)

Abstract

Objectives. To synthesize contemporary scientific approaches to interpreting physical education of schoolchildren within the logic of a managed learning process and to clarify the role of pedagogical control, modelling, and age-related developmental regularities in shaping learning outcomes.

Materials and Methods. The study was conducted as a narrative review of publications addressing physical education theory, pedagogical control, modelling of the learning process, age-related developmental regularities, and the teaching of physical exercises in general secondary education. The analysis was carried out from systems-based and learning-oriented perspectives on the organisation of physical education.

Results. The review supports interpreting physical education of schoolchildren as a managed learning process in which learning outcomes emerge through the interaction of pedagogical control, modelling, and learners' age-related developmental characteristics. Age-related regularities are best treated as parameters of learning models that define the boundaries for valid interpretation of pedagogical-control results. Pedagogical control acquires a regulatory function only when embedded within a model of the learning process. The synthesis also allows the learning of physical exercises to be interpreted as the formation and dynamics of learning states that can serve as objects of pedagogical control and regulation.

Conclusions. The proposed synthesis enables interpreting outcomes of physical education as consequences of the organisation of the learning process rather than as autonomous normative indicators. This narrative review delineates theoretical and methodological frames for further research aimed at empirically testing models of managed physical education and refining tools of pedagogical control in general secondary education practice.

Keywords: physical education of schoolchildren, managed learning process, pedagogical control, modelling, age-related developmental regularities, learning states.

Introduction

In contemporary educational and public health policy documents, physical education of schoolchildren is positioned as an integral component of general education, aimed at developing motor competence, supporting health, and creating prerequisites for lifelong engagement in physical activity (UNESCO, 2015a; UNESCO, 2015b). At the same time, global epidemiological evidence indicates persistently high levels of insufficient physical activity among children and adolescents, which reinforces concerns

about the effectiveness of school-based physical education programmes and increases demands on the quality of their organisation (Guthold et al., 2020). In this context, World Health Organization guidelines define regular physical activity as a minimum standard for health preservation in young people, thereby establishing an external reference framework for evaluating the aims and expected outcomes of physical education in schools (Bull et al., 2020).

Despite the normative clarity of physical education goals, the practical effectiveness of school-based approaches remains heterogeneous. Findings from recent systematic reviews and meta-analyses indicate that school-oriented physical activity may be positively associated with cognitive and academic outcomes; however, the magnitude and stability

of these effects depend substantially on the type of activity, modes of organisation, and contextual characteristics of programme implementation (Mello et al., 2024). Similarly, evidence from long-term school-based interventions suggests that the influence of physical education on mental well-being and behavioural outcomes is more convincing when programmes are characterised by sufficient duration, structural coherence, and methodologically grounded organisation of the learning process (Viskari et al., 2025). These findings highlight the limitations of approaches focused primarily on formal compliance with curricular requirements and underscore the need for a deeper interpretation of the mechanisms through which learning outcomes are achieved.

For a prolonged period, normative-oriented approaches dominated school physical education practice, with learning outcomes defined mainly through the attainment of prescribed standards and performance norms. However, pedagogical theory and research on educational assessment have demonstrated that such logic inadequately accounts for individual differences among learners and substantially restricts the interpretation of outcomes as consequences of the learning process itself (Black & Wiliam, 2009; Hay & Penney, 2012). When assessment is not integrated into learning, pedagogical control loses its formative potential and is reduced to the recording of final indicators, thereby failing to support regulation of learning activities. Critiques of normativity in physical education align with broader developments in educational sciences that emphasise a shift from controlling outcomes to controlling learning processes through feedback and regulation of learners' activity (Hattie & Timperley, 2007).

An important, yet insufficiently integrated, factor in the organisation of physical education is the role of age-related developmental regularities in children and adolescents. Research on biological maturation and motor development has convincingly demonstrated substantial age-related and inter-individual differences in the development of motor abilities and learning rates (Malina et al., 2004; Lloyd & Oliver, 2012). Nevertheless, within school physical education these regularities are often applied only at the level of general recommendations and are rarely embedded directly into the logic of managing the learning process. Contemporary theories of learning and motor development emphasise that learning effects emerge from the interaction between learners' developmental capacities, learning tasks, and organisational conditions, and therefore cannot be adequately interpreted outside these interrelationships (Newell, 1986; Schmidt & Lee, 2019).

Within modern pedagogical frameworks, pedagogical control is increasingly conceptualised not merely as a means of measuring learning achievements, but as a key mechanism for regulating the learning process by providing feedback and supporting pedagogical decision-making. Research on formative assessment and self-regulated learning consistently shows that learning effectiveness increases when control procedures are integrated into ongoing learning activities rather than isolated at the stage of summative evaluation (Black & Wiliam, 2009; Zimmerman, 2002). In physical education, however, pedagogical control often retains a predominantly measurement-oriented character and is rarely employed as a tool for managing learning processes, which constrains interpretative possibilities and reduces the manageability of learning.

The convergence of normative-oriented practices, fragmented use of age-related developmental regularities, and the reduction of pedagogical control to measurement functions necessitates a rethinking of physical education of schoolchildren as a managed learning process. Learning theories emphasise that manageability is achieved through clearly articulated models that specify interactions among learning goals, tasks, organisational conditions, and control mechanisms, enabling learning outcomes to be interpreted as consequences of specific pedagogical influences (Hattie & Timperley, 2007; Metzler & Colquitt, 2021). It is precisely this logic of integrating modelling, pedagogical control, and age-related developmental regularities that defines the focus of the present narrative review.

Materials and Methods

Study Design

The study was conducted as a theoretical and methodological narrative review aimed at synthesising and conceptually analysing scholarly sources addressing pedagogical control, modelling of the learning process, age-related regularities of motor development, and the teaching of physical exercises in school physical education. The methodological foundations for interpreting physical education as a managed learning process and for using modelling as an analytical tool are grounded in approaches to learning systems developed in previous research (Ivashchenko et al., 2026).

The choice of a narrative review format was determined by the purpose of the study, which was not to quantify the effects of specific pedagogical interventions, but to analyse causal–conceptual relationships and methodological approaches to interpreting physical education as a managed learning process. This format allows for the integration of findings from studies conducted within different theoretical paradigms and employing diverse research methods within a unified framework of systems-based analysis.

Source Base

The analysis encompassed the following groups of sources:

- classical works in the theory of physical culture and sport that substantiate regularities of age-related development of motor abilities, adaptation to physical loads, and principles of pedagogical management;
- scientific publications focusing on pedagogical control and the teaching of motor actions in school physical education;
- studies on modelling of pedagogical and learning processes that examine mechanisms for establishing causal relationships between pedagogical influences and learning outcomes;
- contemporary research in learning theory and educational assessment that conceptualises learning processes as managed systems with feedback;
- analytical reviews and policy documents reflecting the current context of development of school physical education.

These groups of sources include both foundational works that shaped the theoretical and methodological

bases of the problem and contemporary studies addressing pedagogical control, modelling, and interpretation of learning outcomes in physical education. Specific approaches, concepts, and scholarly positions represented within these groups are examined and substantiated in detail in the Results and Discussion sections.

The chronological scope of the analysis covered both seminal publications that established core theoretical propositions and recent studies published between 2018 and 2025, which were necessary to account for current scientific and educational trends.

Analysis Procedure

The analysis of sources was conducted in several consecutive stages.

At the first stage, a preliminary selection of sources was performed based on their thematic relevance to issues of pedagogical control, modelling, and manageability of school physical education.

At the second stage, a theoretical and methodological analysis of the selected publications was carried out in order to identify key concepts, approaches, and regularities describing mechanisms of formation and regulation of learning outcomes in physical education.

At the third stage, the identified propositions were systematised within a systems-based framework, with explicit delineation of interrelationships among pedagogical control, modelling of the learning process, age-related developmental regularities, and the learning of physical exercises.

At the final stage, a conceptual synthesis of the analysis results was undertaken to substantiate the interpretation of physical education of schoolchildren as a managed learning process and to identify methodological preconditions for managing learning outcomes.

Methodological Approaches

The following methodological approaches were employed in the study:

- a systems approach, which enabled physical education of schoolchildren to be considered as an integrated learning process composed of interrelated components;
- theoretical analysis and synthesis, aimed at generalising findings from previous research;

- logical and structural analysis, applied to identify causal relationships between pedagogical influences and learning outcomes.

The narrative review format implies an analytical interpretation of scholarly propositions and does not involve statistical aggregation of results or quantitative estimation of the effects of individual pedagogical interventions.

Results

As a result of the narrative analysis, it was established that physical education of schoolchildren should be interpreted as a managed learning process, in which learning outcomes are formed not in isolation but as a consequence of the interaction between pedagogical control, modelling of learning activity, and age-related developmental regularities. Such an interpretation makes it possible to consider the results of physical education not only as final indicators of physical fitness, but as outcomes of a regulated learning process that has its own internal logic and is subject to pedagogical management. Analysis of the sources showed that the manageability of physical education is ensured by the presence of a structured relationship between learning goals, means of pedagogical influence, and control procedures, which allows changes in learning outcomes to be interpreted as consequences of specific pedagogical decisions rather than as random or solely normatively determined effects (Hattie & Timperley, 2007; Metzler & Colquitt, 2021; Kirk, 2010). The key components of managed physical education of schoolchildren and their functional roles within the learning process are systematised in Table 1.

The results of the analysis indicated that age-related developmental regularities of children and adolescents in physical education research are predominantly considered as descriptive characteristics or background conditions for planning learning influences. At the same time, the generalisation made it possible to establish that age-related characteristics should be interpreted as parameters of learning models that determine the boundaries of correct interpretation of pedagogical control results and the possibilities for comparing them across different groups of pupils. Such an approach allows age-related regularities to be considered not only as a factor in selecting physical loads, but as a structural element of the learning model that limits or adjusts the interpretation of learning outcomes depending on pupils' level of development, maturation rates, and individual capabilities (Malina et al., 2004; Newell, 1986).

Table 1. Components of Managed Physical Education of Schoolchildren

Component	Conceptual interpretation	Function within the learning process
Pedagogical control	System for collecting and interpreting information about the learning process	Provision of feedback and regulation of learning activities
Modelling of the learning process	Formalisation of relationships among learning goals, tasks, conditions, and control	Interpretation of outcomes as consequences of pedagogical influences
Age-related developmental regularities	Parameters defining learners' developmental capacities and constraints	Adjustment of pedagogical decisions and interpretation of control results
Learning states	Dynamic levels of mastery of motor actions and readiness for progression	Objects of pedagogical control and regulation

Note. The components are considered interrelated elements of an integrated managed learning system.

The synthesis of results showed that pedagogical control in physical education acquires a regulatory status only when it is embedded within a model of the learning process. In the absence of such integration, control procedures function mainly as a means of recording final indicators and do not ensure management of the learning process. By contrast, the inclusion of control within the structure of the learning model makes it possible to interpret control data as information for adjusting learning actions and pedagogical decisions. The regulatory function of pedagogical control is realised through the presence of a relationship between learning goals, assessment criteria, and feedback procedures, within which control ceases to be an isolated measurement operation and is transformed into a tool for managing the learning process (Hattie & Timperley, 2007; Zimmerman, 2002). A comparative interpretation of normative-oriented and managed approaches to physical education outcomes is presented in Table 2.

Table 2. Normative-Oriented versus Managed Interpretation of Physical Education Outcomes

Criterion	Normative-oriented approach	Managed learning process
Object of evaluation	Final normative indicators	Dynamics of learning states
Role of pedagogical control	Recording of results	Regulation of the learning process
Consideration of age-related characteristics	General age norms	Parameters of learning models
Interpretation of outcomes	Autonomous performance indicators	Consequences of pedagogical organisation
Managerial potential	Limited	High

Note. The managed interpretation frames physical education outcomes as consequences of pedagogical decisions rather than merely as the attainment of normative standards.

The results of the analysis also demonstrated that modelling of the learning process is a necessary condition for interpreting the results of pedagogical control in physical education. In the absence of a clearly defined learning model, control indicators remain fragmented and do not allow causal relationships to be established between pedagogical influences and changes in learning outcomes (Kirk, 2010). The generalisation made it possible to establish that the learning-process model performs an integrative function by combining learning goals, task-performance conditions, pedagogical influences, and control indicators into a single structured system. It is within such a model that the results of pedagogical control can be interpreted as consequences of the organisation of the learning process rather than as autonomous or normatively determined indicators (Newell, 1986; Metzler & Colquitt, 2021).

In the course of the synthesis, it was established that the process of learning physical exercises should be interpreted as the formation and change of learning states, which reflect the current level of mastery of motor actions, execution stability, and pupils' readiness for increasing the complexity of learning tasks. Such an interpretation makes it possible to consider learning outcomes not only

in the form of final indicators, but as the dynamics of states that change sequentially within the learning process. The analysis showed that learning states may serve as objects of pedagogical control, provided that they are interpreted within a learning model that links control indicators with specific learning tasks and the conditions under which they are performed (Chen & Darst, 2001). Within this logic, control is directed not toward the fixation of individual results, but toward tracking changes in learning states, which creates a basis for regulating the learning process and adapting pedagogical influences (Schmidt & Lee, 2019; Zimmerman, 2002; Chen & Wang, 2017; Ding et al., 2013). The proposed interpretation of learning as a sequence of learning states and the corresponding pedagogical control guidelines are summarised in Table 3.

Table 3. Learning States in Physical Education and Pedagogical Control Guidelines

Learning state	Characteristics	Pedagogical control guidelines
Initial	Unstable performance, high variability	Quality of instruction and feedback
Formation	Increasing stability and awareness	Alignment of tasks with learners' preparedness
Consolidation	Stable execution under standard conditions	Readiness for task complication

Note. Learning states are interpreted as dynamic characteristics of the learning process that may serve as objects of pedagogical control and regulation.

The synthesis of the analysis results made it possible to formulate a structural logic of managed physical education of schoolchildren, within which pedagogical control, modelling of the learning process, age-related developmental regularities, and the dynamics of learning states are considered as interrelated components of a unified system. Within this structure, learning outcomes are interpreted as consequences of the organisation of the learning process rather than as autonomous or normatively determined indicators. The resulting logic establishes a framework for interpreting the results of physical education as a managed learning process in which control and modelling perform a system-forming function, while age-related regularities and learning states define the boundaries of the validity of pedagogical decisions. This constitutes the final outcome of the conducted narrative analysis (Newell, 1986; Metzler & Colquitt, 2021).

Discussion

The generalisations obtained within the narrative review make it possible to interpret physical education of schoolchildren not only as a set of separate pedagogical influences, but as a managed learning process in which learning outcomes are formed through the interaction of pedagogical control, modelling, and age-related developmental regularities. This interpretation is consistent with contemporary views of learning as a regulatory process in which feedback and activity management play a decisive role in achieving learning goals (Zimmerman, 2002; Hattie & Timperley, 2007). Within the field of physical education, this approach also enables general educational theoretical positions to be specified through the

logic of instructional models and the specific characteristics of motor learning (Metzler & Colquitt, 2021).

Previous studies in the theory of physical culture and motor development have convincingly demonstrated the existence of age-related regularities in the development of motor abilities, as well as substantial heterogeneity among schoolchildren in terms of physical fitness levels and learning rates (Malina et al., 2004; Lloyd & Oliver, 2012). However, in a significant proportion of these works, age-related characteristics were treated primarily as background conditions for planning physical loads rather than as an integrated component of managing the learning process. Evidence from contemporary reviews focusing on inclusive physical activity and contextual barriers to participation further indicates that educational outcomes may vary substantially depending on the conditions under which learning is organised, regardless of formally prescribed programmes (Ashadi et al., 2025; Yu et al., 2022). This necessitates considering age-related regularities not only as descriptive characteristics of development, but as parameters of learning models that determine the validity of interpreting pedagogical control results.

In this context, pedagogical control emerges as a key element in managing the learning process. Analysis of the literature shows that, in physical education practice, control is often reduced to measurement functions or summative assessment of pupils' achievements, which limits its regulatory potential (Hay & Penney, 2012; Black & William, 2009). Contemporary theories of formative assessment and self-regulated learning emphasise that control acquires learning-related and regulatory significance only when it is integrated into pedagogical decision-making processes and provides meaningful feedback (Hattie & Timperley, 2007; Zimmerman, 2002). Without such integration, control information remains descriptive and does not support the management of learning-outcome dynamics.

A key methodological condition for interpreting the results of pedagogical control is the modelling of the learning process. Learning theories and motor-learning theories demonstrate that, without a clearly defined model of interaction among tasks, conditions, and pupils' individual capabilities, it is impossible to establish causal relationships between pedagogical influences and learning outcomes (Newell, 1986; Schmidt & Lee, 2019). Accordingly, modelling in physical education should be understood not as a formal description of lesson structure, but as an integrative mechanism that brings together learning goals, means of influence, and pedagogical-control data into a unified logic of a managed process (Metzler & Colquitt, 2021).

Particular attention in this regard should be given to interpreting the learning of physical exercises as a process of forming learning states that change over time under the influence of pedagogical actions. Research in motor learning and self-regulated learning indicates that learning effectiveness is determined not only by final outcomes, but also by the dynamics of intermediate states that reflect task understanding, execution stability, and readiness for increasing learning demands (Zimmerman, 2002; Schmidt & Lee, 2019). From this perspective, pedagogical control in physical education should be oriented toward interpreting changes in learning states within a specific model of the learning process, thereby providing a basis for adaptive lesson organisation and the individualisation of learning

trajectories. The generalisations obtained within the narrative review are consistent with approaches that conceptualise physical education as a learning system, emphasising the role of modelling and feedback in regulating learning outcomes (Ivashchenko et al., 2026).

The results of the narrative review also have limitations determined by the research format itself. Narrative reviews do not involve quantitative assessment of effects or formalised comparison of results from individual studies, which reduces their reproducibility in comparison with systematic reviews. At the same time, methodological works emphasise the appropriateness of this format for analysing conceptual approaches, theoretical models, and the logic of interpreting results in complex interdisciplinary fields (Grant & Booth, 2009; Ferrari, 2015). In this sense, the chosen format corresponds to the purpose of the study, which was not to determine the magnitude of the effects of pedagogical interventions, but to substantiate the methodological logic of managing the learning process in physical education of schoolchildren.

From the perspective of the outlined logic, further research should be directed toward the empirical testing of models of managed physical education in which pedagogical control, modelling of the learning process, and age-related developmental regularities are considered as interrelated components. Promising directions include combining quantitative and qualitative approaches, which would allow learning outcomes to be interpreted not only through final indicators, but also through the dynamics of learning states during the instructional process, in accordance with contemporary views on learning regulation and formative assessment (Hattie & Timperley, 2007; Zimmerman, 2002). Particular attention should be given to the development and validation of pedagogical-control tools capable of ensuring the interpretation of results within specific learning models, thereby strengthening the connection between theoretical and methodological generalisations and the practice of organising physical education in general secondary education institutions (Metzler & Colquitt, 2021).

Conclusions

The conducted narrative review made it possible to уточнить the interpretation of physical education of schoolchildren as a managed learning process, within which learning outcomes are formed through the interaction of pedagogical control, modelling, and age-related developmental regularities. This approach allows physical education to move beyond its reduction to the fulfilment of normative requirements and to be considered as a system subject to purposeful pedagogical regulation.

The synthesis of the results showed that age-related developmental regularities should be interpreted not as background characteristics, but as parameters of learning models that define the boundaries of valid interpretation of pedagogical control results. This creates a basis for a more substantiated analysis of learning achievements and prevents their formal comparison without consideration of pupils' age-related and individual characteristics.

It was established that pedagogical control acquires regulatory significance only when it is embedded within a model of the learning process. Under such integration, control information ceases to perform an exclusively

measurement-oriented function and can be used to adjust pedagogical influences, thereby ensuring the manageability of learning in physical education of schoolchildren.

The analysis demonstrated that modelling of the learning process is a necessary condition for interpreting the results of physical education as consequences of the organisation of learning activity, rather than as autonomous or normatively determined indicators. Within a model, learning goals, task conditions, pedagogical influences, and control results are integrated into a coherent analytical and regulatory framework for managing the learning process.

The generalisations obtained made it possible to interpret the learning of physical exercises as a process involving the formation and dynamics of learning states, which may serve as objects of pedagogical control and regulation. This approach creates methodological prerequisites for moving from unified programmes toward a more flexible organisation of physical education oriented toward the individualisation of schoolchildren's learning processes.

The conclusions drawn do not claim to provide an exhaustive solution to the problem; however, they outline theoretical and methodological frameworks for further research aimed at the empirical testing of models of managed physical education and the refinement of pedagogical control tools. Within this logic, the narrative review functions not as the completion of research, but as a foundation for strengthening the connection between theoretical–methodological generalisations and the practice of organising physical education in general secondary education institutions.

Ethics Approval

Not applicable. This study is a theoretical and methodological narrative review and did not involve human participants, animals, or the collection of personal data. Therefore, ethical approval was not required.

Informed Consent

Not applicable. This study did not involve human participants.

Data Availability Statement

Data are not applicable because no new data were created or analyzed in this study. The article is based exclusively on the analysis and interpretation of previously published sources.

AI Transparency Statement

The author used AI-assisted tools for language editing and formatting support only. The author takes full responsibility for the scientific content, analysis, and conclusions of the manuscript.

Acknowledgements

Not applicable.

Conflicts of Interest

The author declares no conflicts of interest.

References

UNESCO. (2015a). *Quality Physical Education (QPE): Guidelines for policy-makers*. UNESCO.

UNESCO. (2015b). *International Charter of Physical Education, Physical Activity and Sport*. UNESCO.

Guthold, R., Stevens, G.A., Riley, L.M., & Bull, F.C. (2020). Global trends in insufficient physical activity among adolescents: A pooled analysis of 298 population-based surveys with 1.6 million participants. *The Lancet Child & Adolescent Health*, 4(1), 23-35. [https://doi.org/10.1016/S2352-4642\(19\)30323-2](https://doi.org/10.1016/S2352-4642(19)30323-2)

Bull, F.C., Al-Ansari, S.S., Biddle, S., Borodulin, K., Buman, M.P., Cardon, G., ... 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>

Mello, J.B., de Sá, C.S. C., Schuch, F.B., Sadarangani, K.P., & da Silva, R.A. (2024). School ACTIVE, brain active: Effects of school-based physical activity on cognitive performance in children and adolescents: A systematic review with meta-analysis. *Mental Health and Physical Activity*, 26, 100678. <https://doi.org/10.1016/j.mhpa.2024.100678>

Viskari, T., Koivumäki, T., Appelqvist-Schmidlechner, K., Ståhl, T., Ruiz-Ariza, A., & Fröjd, S. (2025). The effectiveness of school-based physical activity promotion on mental health among children and adolescents: A systematic review. *Scandinavian Journal of Medicine & Science in Sports*, 35(10), e70150. <https://doi.org/10.1111/sms.70150>

Black, P., & Wiliam, D. (2009). Developing the theory of formative assessment. *Educational Assessment, Evaluation and Accountability*, 21(1), 5-31. <https://doi.org/10.1007/s11092-008-9068-5>

Hay, P., & Penney, D. (2012). *Assessment in physical education: A sociocultural perspective*. Routledge. <https://doi.org/10.4324/9780203133163>

Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of Educational Research*, 77(1), 81-112. <https://doi.org/10.3102/003465430298487>

Malina, R.M., Bouchard, C., & Bar-Or, O. (2004). *Growth, maturation, and physical activity* (2nd ed.). Human Kinetics.

Lloyd, R.S., & Oliver, J.L. (2012). The youth physical development model: A new approach to long-term athletic development. *Strength & Conditioning Journal*, 34(3), 61-72. <https://doi.org/10.1519/SSC.0b013e31825760ea>

Newell, K.M. (1986). Constraints on the development of coordination. In M.G. Wade & H.T. A. Whiting (Eds.), *Motor development in children: Aspects of coordination and control* (pp. 341-360). Martinus Nijhoff. https://doi.org/10.1007/978-94-009-4460-2_19

Schmidt, R.A., & Lee, T.D. (2019). *Motor learning and performance: From principles to application* (6th ed.). Human Kinetics.

Zimmerman, B.J. (2002). Becoming a self-regulated learner: An overview. *Theory Into Practice*, 41(2), 64-70. https://doi.org/10.1207/s15430421tip4102_2

Metzler, M.W., & Colquitt, G. (2021). *Instructional models for physical education* (4th ed.). Routledge. <https://doi.org/10.4324/9781003081098>

Ivashchenko, O., Khudolii, O., & Khudolii, M. (2026). Modeling physical education as a learning system: Regional and international perspectives. *Journal of Learning Theory and Methodology*, 7(1), 8-16. <https://doi.org/10.17309/jltm.2026.7.1.01>

Kirk, D. (2010). *Physical education futures*. Routledge. <https://doi.org/10.4324/9780203874622>

Chen, A., & Darst, P.W. (2001). Situational interest in physical education: A function of learning task design. *Research*

- Quarterly for Exercise and Sport*, 72(2), 150-164. <https://doi.org/10.1080/02701367.2001.10608945>
- Chen, A., & Wang, Y. (2017). The role of interest in physical education: A review of research evidence. *Journal of Teaching in Physical Education*, 36(3), 313-322. <https://doi.org/10.1123/jtpe.2017-0033>
- Ding, H., Sun, H., & Chen, A. (2013). Expectancy-value and situational interest motivation specificity on engagement and achievement outcomes in physical education. *Journal of Teaching in Physical Education*, 32(3), 253-269. <https://doi.org/10.1123/jtpe.32.3.253>
- Ashadi, K., Ariani, L.P. T., Pulungan, K.A., Womsiwor, D., Sandi, N., & Zolkafi, M.A. A. (2025). Towards inclusive physical activity: A systematic review of Scopus evidence on multidimensional barriers in physical and intellectual disabilities. *Physical Education Theory and Methodology*, 25(4), 983-991. <https://doi.org/10.17309/tmfv.2025.4.28>
- Yu, S., Wang, T., Zhong, T., Qian, Y., & Qi, J. (2022). Barriers and facilitators of physical activity participation among children and adolescents with intellectual disabilities: A scoping review. *Healthcare*, 10(2), 233. <https://doi.org/10.3390/healthcare10020233>
- Grant, M.J., & Booth, A. (2009). A typology of reviews: An analysis of 14 review types and associated methodologies. *Health Information & Libraries Journal*, 26(2), 91-108. <https://doi.org/10.1111/j.1471-1842.2009.00848.x>
- Ferrari, R. (2015). Writing narrative style literature reviews. *Medical Writing*, 24(4), 230-235. <https://doi.org/10.1179/047480615Z.000000000329>

Фізичне виховання школярів як керований навчальний процес: теоретико-методичні засади, системний підхід і моделювання

Ольга Іващенко^{1ABCD}, Олег Худолій^{1ABCD}, Микола Худолій^{1ABCD}

¹Харківська державна академія фізичної культури

Авторський вклад: А – дизайн дослідження; В – збір даних; С – статаналіз; D – підготовка рукопису; Е – збір коштів

Реферат. Стаття: 7 с., 3 табл., 24 джерела.

Мета. Узагальнити сучасні наукові підходи до інтерпретації фізичного виховання школярів у логіці керованого навчального процесу та уточнити роль педагогічного контролю, моделювання і вікових закономірностей у формуванні навчальних результатів.

Матеріали і методи. Дослідження виконано у форматі нарративного огляду наукових публікацій, присвячених теорії фізичного виховання, педагогічному контролю, моделюванню навчального процесу, віковим закономірностям розвитку та навчанню фізичних вправ у закладах загальної середньої освіти. Аналіз здійснювався з позицій системного та навчально-орієнтованого підходів до організації фізичного виховання.

Результати. У результаті аналізу уточнено, що фізичне виховання школярів доцільно розглядати як керований навчальний процес, у межах якого навчальні результати формуються внаслідок взаємодії педагогічного контролю, моделювання та вікових особливостей розвитку учнів. Показано, що вікові закономірності доцільно інтерпретувати як параметри моделей навчання, які визначають межі коректної інтерпретації результатів педагогічного контролю. Встановлено, що педагогічний контроль набуває регуляторного значення лише за умови його включення в модель навчального процесу. Узагальнення дозволило інтерпретувати навчання фізичних вправ як процес формування і динаміки навчальних станів, які можуть бути об'єктом педагогічного контролю і регуляції.

Висновки. Отримані узагальнення дозволяють інтерпретувати результати фізичного виховання як наслідок організації навчального процесу, а не як автономні нормативні показники. Наративний огляд окреслює теоретико-методичні рамки для подальших досліджень, спрямованих на емпіричну перевірку моделей керованого фізичного виховання та уточнення інструментів педагогічного контролю в практиці закладів загальної середньої освіти.

Ключові слова: фізичне виховання школярів; керований навчальний процес; педагогічний контроль; моделювання; вікові закономірності; навчальні стани.

Information about the Authors:

Ivashchenko Olha: ivashchenko.olha21@gmail.com; <https://orcid.org/0000-0002-2708-5636>; Department of Theory and Methods of Physical Education, Kharkiv State Academy of Physical Culture; Klochkivska St, 99, Kharkiv, 61022, Ukraine.

Khudolii Oleg: khudolii.oleg@gmail.com; <https://orcid.org/0000-0002-5605-9939>; Department of Olympic and Professional Sports, Kharkiv State Academy of Physical Culture, Klochkivska St, 99, Kharkiv, 61022, Ukraine.

Khudolii Mykola: khudolii.mykola88@gmail.com; <https://orcid.org/0009-0002-1482-6498>; Kharkiv State Academy of Physical Culture, Klochkivska St, 99, Kharkiv, 61022, Ukraine.

Cite this article as: Ivashchenko, O., Khudolii, O., & Khudolii, M. (2026). Physical Education of Schoolchildren as a Managed Learning Process: Theoretical and Methodological Foundations, a Systems Perspective, and Modelling. *Physical Education Theory and Methodology*, 26(2), 223-229. <https://doi.org/10.17309/tmfv.2026.2.01>

Received: 10.02.2026. Accepted: 28.02.2026. Published: 30.03.2026

This work is licensed under a Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0>)