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Development of key competencies in schoolchildren through track and field

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Abstract: *This article provides a theoretical justification for the role of athletics (running, jumping, throwing, relays and reflex exercises) in the development of pupils' key competences. It reviews official documents (the New Ukrainian School Concept, the Law 'On Education', and the Ministry of Education and Science's educational standards), as well as Ukrainian and international scientific research from the last 10–*



15 years. A comparative analysis of key works has been carried out, and types of research and their results have been identified. A model is proposed in which athletics exercises are combined with reflection and group work to stimulate pupils' cognitive, emotional and social skills. **Objective.** To substantiate the theoretical mechanisms underlying the development of key competences in schoolchildren during physical education lessons through athletics. **Methods.** The study utilised theoretical analysis and a review of scientific and methodological literature, official regulatory and legal documents in the field of education and physical education, as well as a comparative analysis of approaches to the development of key competences in schoolchildren. **Results.** As a result of the study, the interrelationship between athletics, the pedagogical mechanisms of their influence, and the development of key competences in schoolchildren has been theoretically substantiated. A conceptual model has been developed that reflects the sequence of the development of pupils' physical, cognitive-regulatory, psycho-emotional and social skills and their connection with the development of health-preserving, communicative, socio-civic competences, critical thinking and the ability to learn throughout life. **Conclusions.** Athletics, as a teaching and training component of physical education lessons, has significant potential for the development of key competences in schoolchildren, combining the development of physical qualities with the formation of self-control, critical thinking, teamwork, communication and health-promoting behaviour.

Keywords: track and field, physical education, physical training, teacher, health.



**Формування ключових компетентностей школярів засобами
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Анотація: У статті теоретично обґрунтовано роль легкої атлетики (бігу, стрибків, метань, естафет, рефлексивних вправ) у формуванні ключових компетентностей учнів. Було проведено порівняльний аналіз ключових праць, виокремлено типи досліджень і їхні результати. Обґрунтувати теоретичні механізми формування ключових компетентностей школярів на уроках фізичної культури засобами легкої атлетики. **Методи.** У дослідженні використано теоретичний аналіз і узагальнення науково-методичної літератури, офіційних нормативно-правових документів у сфері освіти та фізичної культури, а також порівняльний аналіз підходів до формування ключових компетентностей



школярів. **Результати.** У результаті дослідження теоретично обґрунтовано взаємозв'язок між засобами легкої атлетики, педагогічними механізмами їх впливу та формуванням ключових компетентностей школярів. Розроблено Концептуальна модель взаємозв'язку засобів легкої атлетики та ключових компетентностей школярів. **Висновки.** Легка атлетика як навчально-тренувальний компонент уроків фізичної культури має значний потенціал для формування ключових компетентностей школярів, поєднуючи розвиток фізичних якостей із формуванням навичок самоконтролю, критичного мислення, командної взаємодії, комунікації та здоров'язберезувальної поведінки.

Ключові слова: легка атлетика, фізична культура, фізичне виховання, вчитель, здоров'я.

Problem statement. In the context of the reform of Ukrainian education and the implementation of the New Ukrainian School (NUS) concept, the development of pupils' key competences through physical education is becoming particularly important. Educational reform is clearly focused on developing key competences in schoolchildren: learning skills, critical thinking, communication, a responsible attitude towards health, etc. [1, 5].

According to the State Standard for Basic Secondary Education, every subject area has the potential to develop each of these competences [11]. The "Physical Education" discipline is aimed at strengthening pupils' physical health, fostering a conscious attitude towards physical activity, and developing civic responsibility. Physical education is a key factor in preparing schoolchildren for an active life stance, the ability to defend the state's national interests, and the preservation of the health of future generations of citizens [7].

Athletics, as a fundamental form of physical activity, has significant potential for developing schoolchildren's physical, social, communicative and emotional-volitional qualities [4]. It promotes the development of basic motor skills (running,



jumping, throwing) and is recognised for its educational value. At the same time, the scientific literature lacks systematic theoretical models that would explain exactly how athletics contributes to the development of each of the key competences. The existence of theoretical requirements coupled with a lack of practical guidance highlights the relevance of the issue: the need to integrate a competence-based approach into physical education lessons through the use of athletics exercises. The development and scientific justification of effective methods and approaches aimed at fostering in schoolchildren the competencies of a healthy lifestyle, lifelong learning, the development of critical thinking, communication skills and socialisation remain a pressing issue today and are an important task of modern education.

Analysis of recent research and publications. Athletics is currently enjoying great popularity in Ukraine, and the successes of our athletes highlight the need for effective tools, methods and psychological techniques that will help improve performance, psychological resilience and the development of physical education and sport in particular [10].

The national regulatory framework defines key competences as ‘a dynamic combination of knowledge, skills and values necessary for a student’s self-realisation’ [5].

The NUS concept identifies 10 competences (communication in the state language, communication in foreign languages, mathematical competence, scientific and technological competence, digital and information literacy, lifelong learning, initiative and entrepreneurship, social and civic competence, cultural awareness and self-expression, environmental literacy and healthy living) [9]. The Law “On Education” establishes key and cross-curricular competences as mandatory learning outcomes [3]. UNESCO, in its guiding principles, emphasises that high-quality physical education contributes to the development of 21st-century skills (soft skills) – the ability to solve problems, work in a team and make responsible decisions [16].



Consequently, physical education lessons should actively develop not only physical qualities but also personal competences [2].

Ukrainian studies have highlighted the multifunctional nature of physical education. In her research, N. Moskalenko found that physical education lessons enable the development of all the key competences of the New Ukrainian School (NUS). It is emphasised that each key competence can be “implemented in the physical education of schoolchildren” [9].

O. Momot and O. Kyrylenko proposed a detailed experimental analysis of pupils’ skills. Their study examines the development of critical thinking in schoolchildren through athletics exercises. The results of their study showed that the systematic use of running and jumping exercises contributed to an increase in pupils’ ability to analyse their own actions, plan their workload and monitor their results. There was a statistically significant improvement in indicators of reflection and self-assessment of actions [8].

N. Bazilevich, in collaboration with other researchers, analysed the health-promoting competence of future physical education teachers through running and health-enhancing walking [1].

Ya. Galan, A. Ognysty, and K. Ognysta investigated the development of “soft skills” in future physical education specialists through athletics and other cyclic exercises. It was established that the targeted use of athletics in lessons creates effective conditions for the development of the cognitive, practical, and personal components of soft skills. The authors identified blocks of competencies (cognitive, behavioural, personal) and incorporated skills into them (critical thinking, self-regulation, social skills, etc.). Despite the focus specifically on future specialists, the work highlights the universality of athletics for soft skills [5].

Research abroad focuses on physical literacy and life skills. Research by Chinese scholars Xue & Yin has shown that the development of competences in PE (Physical Education) occurs through a combination of physical activity, teamwork and reflection,



which ensures the development of health-related, social and civic, communicative, entrepreneurial and academic competences in schoolchildren [18].

In its recommendations, UNESCO emphasises that QPE (Quality Physical Education) helps students acquire life skills: “Quality PE contributes to 21st-century education... to learn life skills and develop positive patterns of behaviour” [15].

Research conducted by Bailey, R., Bessa, C., Hastie, P. A., Araújo, R., & Mesquita, I., Hastie, P. A., de Ojeda, D. M., & Luquin, A. C. has found that athletic training is frequently used in formal physical education programmes in Europe / the USA to develop competencies such as teamwork, leadership and self-discipline [12, 13, 14].

At the same time, the following aspects remain insufficiently explored: the integration of competence-based objectives into the lesson structure; methods for developing social, communicative and emotional-volitional competences during athletics activities; tools for assessing the level of competence development; models of pupils’ reflective activity following the completion of motor tasks.

Identification of previously unaddressed aspects of the overall problem. The question of the theoretical justification for the mechanisms by which pupils’ key competences are developed specifically through athletics in physical education lessons remains insufficiently explored.

Formulation of the article’s objectives (statement of the problem). Research objective: to substantiate the theoretical mechanisms for developing key competences in schoolchildren during physical education lessons through athletics.

Research objectives:

1. To analyse official sources and scientific and methodological documents concerning the list of pupils’ key competences and the role of physical education in their development.
2. To identify the key competences that are effectively developed through athletics



3. To theoretically systematise the impact of individual elements of athletics exercises on the development of specific key competences in schoolchildren (health promotion, lifelong learning, critical thinking, communication, and social and civic competences).

4. To develop a conceptual model of the relationship between athletics and pupils' key competences.

Presentation of the main research material. Athletics is a specific group of physical education activities that encompasses fundamental motor skills (running, jumping, throwing). Thanks to the structured nature of athletics exercises and the variety of ways in which sessions are organised, it serves as an integrative means of developing pupils' physical, mental and personal qualities.

Each element of athletics has the potential to develop specific competencies.

Reflection and analysis of results. Incorporating reflective exercises (self-assessment, discussion of tactics) into physical education lessons truly stimulates critical thinking and learning skills. For example, after a throwing exercise, a pupil might write a short report: what went wrong and how to correct their technique. Such “meta-movements” exercises (the ability to control one's own movements) correspond to the blocks of creative and critical skills highlighted in European and global concepts. UNESCO also notes that physical education is an important gateway to learning life skills, and reflection is a key component of this process [16].

The generalised relationship between athletics disciplines, the pedagogical mechanisms through which they exert their influence, the skills developed by pupils, and the key competences of schoolchildren is illustrated in Fig. 1.

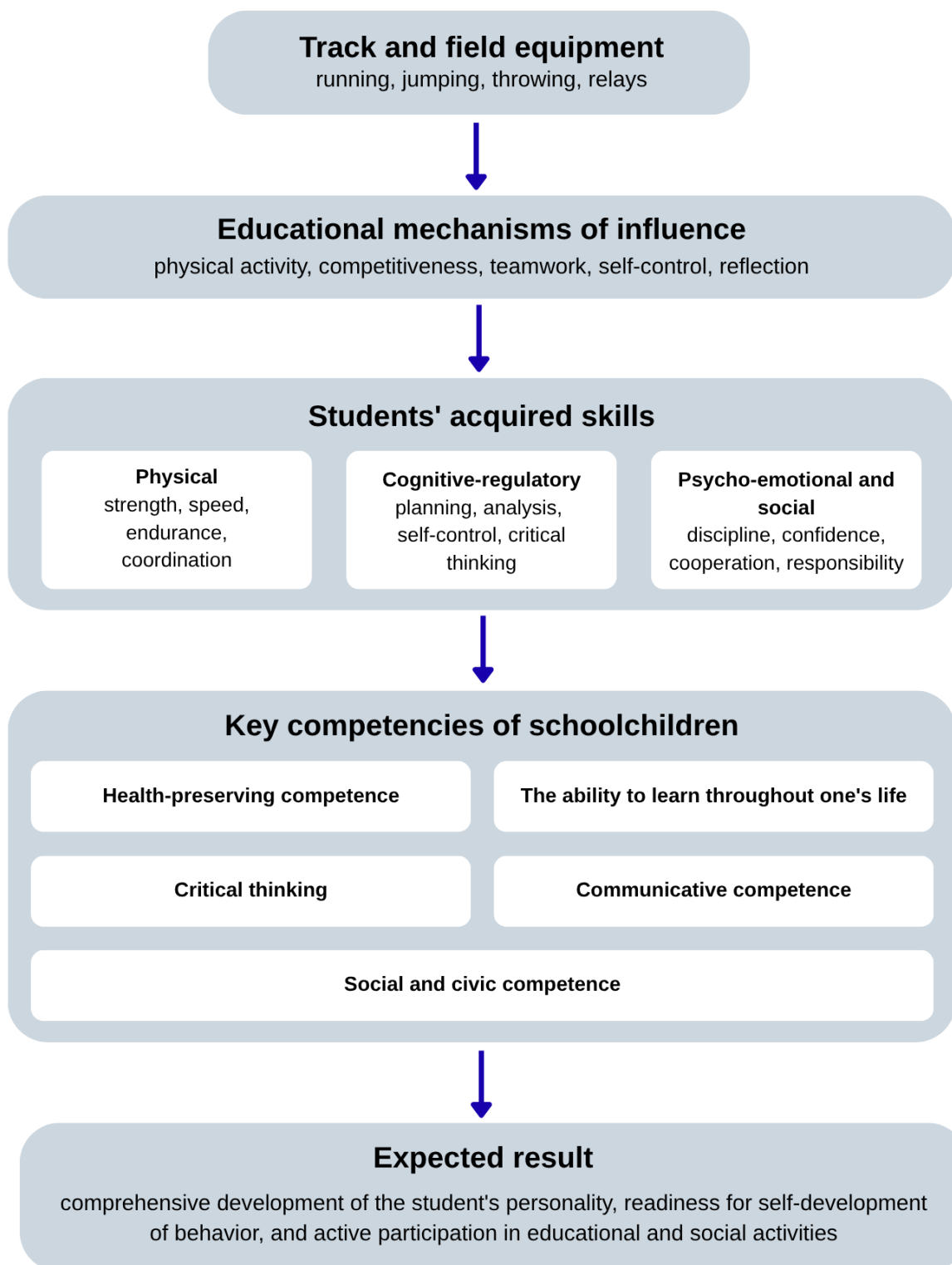


Figure 1.

A conceptual model of the relationship between athletics and key competences in schoolchildren

Source: developed by the author.



Thus, each type of athletics exercise is indirectly linked to several competencies. At the same time, the comprehensive combination of different forms and stages of training (running + throwing + reflection) creates a synergistic effect that ensures the all-round development of the pupil's personality [18].

The integration of athletics into the educational process requires an activity-based, person-centred approach. As methodological developments show, organising games and demonstration performances of recently learnt exercises opens up “unlimited methodological possibilities” for the development of pupils' competencies. For example, a school athletics league could include demonstration races with explanations of the rules, joint discussion of results and analysis of technique, which simultaneously develops pupils' communication and reflective skills [17].

The athletics integration model combines a core component (compulsory sessions on basic exercises) with optional modules (where pupils choose specific sports or forms of physical activity). Within the optional modules, the school may offer athletics as a separate course or as part of broader sports programmes. It is important that the choice of the athletics module is voluntary and accompanied by information for pupils about opportunities for development.

According to the recommendations of the Ministry of Education and Science of Ukraine, the full range of optional modules is rotated quarterly, and pupils choose in advance from several options [6]. This approach allows for a child-centred adaptation of teaching to pupils' interests and motivates them to continue participating.

During lessons and extracurricular activities, it is advisable to establish clear assessment criteria. The content of the session should be designed to demonstrate progress not only in physical fitness indicators, but also in pupils' ability to work as a team, plan individual training sessions and monitor their own condition independently. It is recommended to combine quantitative tests (timed runs, measurements of strength and endurance) with questionnaires, self-assessments and teacher observations. Such methods will allow for the monitoring not only of physical changes but also of the



dynamics of competence development (for example, social and communicative competences – through the analysis of interaction in team exercises; and educational and cognitive competences – through critical thinking tests). The use of a comprehensive assessment is described in the work by Galan and co-authors, where questionnaires and a rating system were used to study the impact of athletics on students' soft skills. Similar procedures can be adapted for upper secondary school students, using observation scales for group activities and reflection tests following athletics exercises [5].

The effectiveness of introducing athletics to develop key competencies can be assessed using the following indicators:

Physical indicators: positive trends in key performance metrics (improvements in endurance, speed and strength). This will demonstrate a genuine improvement in pupils' physical fitness.

Behavioural changes: an increase in the number of group initiatives (pupils' initiative during lessons and competitions), improved communication (calm responses, fewer conflicts within the group during relays), and active participation in the class's sporting life (applications to take part in extracurricular sports projects).

Competence levels: results of standardised questionnaires and tests. For example, tests of critical thinking or social adaptation to school before and after the athletics programme, and results of questionnaires on self-organisation.

Subjective assessments: pupils' self-assessment of their own readiness for physical activity and motivation to participate, as well as the PE teacher's assessment (based on established competence criteria) of pupils' progress in the areas of social and cognitive skills.

Conclusions. Athletics, as a teaching and training component of physical education lessons, demonstrates great potential as a means of developing a range of key competences in schoolchildren. Physical exercises combine the development of motor skills with the acquisition of personal and social skills: planning, self-control,



teamwork, and awareness of a healthy lifestyle. Theoretical analysis confirms that athletics exercises can specifically contribute to the development of social and communication skills (through team competitions and group activities), foster critical thinking and self-organisation (through training planning, technique analysis, and self-control), as well as reinforce health-promoting attitudes (through health-enhancing running exercises).

The targeted inclusion of athletics in the curriculum, with clearly defined competence-based lesson objectives, and the use of interactive teaching methods (competitions, role-play, project-based tasks) provide practical tools for the comprehensive development of pupils' competences.

The introduction of competence-oriented methods for teaching athletics, which involve the integration of physical activity with cognitive, reflective and socio-communicative tasks, helps to increase pupils' motivation to participate in physical education and ensures the practical focus of the educational process.

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