

Development Of Selection Criteria For Schoolchildren With High Athletic Potential In Track And Field

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Abstract: The selection of schoolchildren with high athletic potential is a critical component in the development of future track and field athletes. This review examines contemporary approaches and methodologies for identifying young talents, emphasizing anthropometric, physiological, psychomotor, and psychological characteristics. Current research highlights the importance of a comprehensive and systematic evaluation, integrating motor abilities, speed-strength qualities, endurance, flexibility, and coordination, alongside age-specific and individual developmental factors. Additionally, organizational and pedagogical aspects, including school-based programs and early specialization, are discussed as influential factors in optimizing the selection process. The review identifies gaps in the standardization of criteria and emphasizes the need for evidence-based, multidimensional frameworks to enhance talent identification and long-term athlete development. Practical implications for coaches, sports schools, and talent development programs are provided.

Keywords: Track and field, talent identification, schoolchildren, selection criteria, physical qualities, motor abilities, coordination, speed-strength abilities, endurance, flexibility, youth sports development.

Introduction: The early identification of athletic talent is a cornerstone of long-term success in track and field, as it enables targeted development of physical, technical, and psychological qualities from a young age. Selecting schoolchildren with high athletic potential requires an understanding of the multifactorial nature of performance, including morphological, physiological, motor, and cognitive characteristics. The effectiveness of selection processes directly impacts the formation of a competitive sports reserve, the prevention of dropout, and the optimal allocation of resources in youth sports programs.

Historically, talent identification in track and field has relied on simple anthropometric and performance-based measurements, such as height, weight, sprint times, or jumping ability. However, modern research emphasizes a comprehensive and systematic approach, integrating speed-strength abilities, endurance, coordination, flexibility, and psychomotor capacities, alongside age-specific developmental considerations (Kondratenko, 2022; Kovalychuk, 2016; Petros et al., 2016). Furthermore, psychological readiness, motivation, and adaptability are increasingly

recognized as crucial factors for long-term athletic progression (Henriksen, Stambulova, & Roessler, 2010; Thomas, 2013).

In recent decades, the development of selection criteria has also been influenced by advances in sports science, including predictive modeling, longitudinal monitoring, and the use of integrated evaluation systems combining anthropometric, functional, and psychomotor assessments (Zavatsky, Yakovlev, & Laptieva, 2019; Predescu & Mihăilescu, 2023). Such approaches allow for individualized identification of children who not only demonstrate immediate performance potential but also possess favorable developmental trajectories for elite-level track and field sports.

Despite significant progress, several challenges remain. Standardization of selection criteria across different age groups and disciplines, the integration of school-based physical education with specialized sports programs, and the balance between early specialization and overall development continue to be debated in the literature. This review aims to synthesize existing research on the development of

selection criteria for schoolchildren with high athletic potential in track and field, identify gaps in current methodologies, and provide evidence-based recommendations for practitioners involved in youth sports development.

Research goal: To analyze and synthesize contemporary research on the development of selection criteria for schoolchildren with high athletic potential in track and field, with the aim of identifying effective, evidence-based approaches for talent identification and long-term athlete development.

Research objectives:

1. To examine existing theoretical and methodological approaches to the selection of young track and field athletes.
2. To identify key physical, physiological, psychomotor, and psychological characteristics used in the assessment of schoolchildren's athletic potential.
3. To review age-specific and individual developmental factors that influence selection processes in youth track and field.
4. To analyze modern predictive and integrative models for evaluating athletic potential in children.
5. To assess organizational and pedagogical strategies that optimize talent identification in school and sports settings.
6. To highlight gaps and inconsistencies in current selection criteria and propose recommendations for developing standardized, multidimensional assessment frameworks.

LITERATURE REVIEW

The process of selecting schoolchildren with high athletic potential in track and field has been the focus of numerous studies over the last two decades, highlighting both the complexity and multidimensionality of talent identification. Researchers emphasize that effective selection requires consideration of morphological, physiological, psychomotor, and psychological characteristics, combined with pedagogical and organizational factors.

1. **Anthropometric and Morphological Criteria.** Anthropometric measurements have historically formed the foundation of early talent identification in track and field. Pioneering works by Petrova (2017) and Kovalychuk (2009) demonstrated that somatotype, body proportions, and other anthropogenetic markers significantly correlate with performance potential in different track and field events. Morphological indicators, including body height, limb length, and muscle mass, are used to predict success in sprinting, jumping, and throwing disciplines. Beljakova (2018)

emphasized that psychomotor abilities should be analyzed in conjunction with morphological characteristics to identify children capable of specialized athletic development.

2. **Physical and Motor Abilities.** Motor abilities, such as speed, strength, endurance, coordination, and flexibility, are critical for assessing young athletes. Kovalychuk (2016) highlighted the predictive value of speed-strength assessments in early selection, while Butrameev and Konovalov (2021) demonstrated that structured conjugate training programs can effectively enhance motor abilities in children aged 9–11. Yuškovich and Baranaev (2020) proposed methodologies for forecasting motor potential, particularly for sprint events, showing that objective testing of motor skills can improve selection accuracy.

3. **Psychomotor and Psychological Characteristics.** Modern research emphasizes the role of cognitive and psychological factors in early selection. Thomas (2013) and Petros et al. (2016) highlighted that motivation, focus, and adaptability influence the long-term development of young athletes. Zhao (2022) proposed including psychological readiness and behavioral assessment as part of a coordinated selection process for children aged 11–12, alongside physical and performance-based evaluations.

4. **Integrated and Predictive Models.** Several studies advocate for a comprehensive and predictive approach to selection. Solovtsov, Sokolov, and Yuranov (2011) defined model characteristics for young female athletes, using normative data and annual growth rates to guide talent identification. Zavatsky, Yakovlev, and Laptieva (2019) demonstrated the effectiveness of a complex approach, integrating anthropometric, motor, and medical assessments. Predescu and Mihăilescu (2023) emphasized that multidimensional evaluation frameworks enhance the predictive validity of selection systems.

5. **Organizational and Pedagogical Aspects.** The role of schools and specialized sports centers in selection has been increasingly recognized. Cherkashin and Zelichenok (2020) described the benefits of independent assessment centers, while Egorova (2023) stressed the importance of structured organizational procedures to ensure fair and effective selection. Ushakova (2017) highlighted the value of early exposure to athletics for children aged 5–7, facilitating smoother identification and orientation of highly talented individuals.

6. **Gaps and Challenges.** Despite progress, several challenges persist. There is no universally standardized system for assessing athletic potential across age groups and track and field disciplines. Early specialization risks and the variability of individual

developmental trajectories complicate selection processes (Henriksen, Stambulova, & Roessler, 2010; Keulen et al., 2023). Additionally, integration of school-based physical education with specialized training remains inconsistent, limiting the efficiency of talent identification.

Overall, literature indicates that successful selection of schoolchildren for track and field depends on a multidimensional and evidence-based approach. Anthropometric, motor, psychomotor, and psychological characteristics should be assessed in combination with structured pedagogical and organizational strategies. Predictive and integrative models hold promise for improving accuracy and long-term outcomes, but standardized frameworks are still under development, necessitating further research.

RESULTS AND DISCUSSION

The analysis of existing research on the selection of schoolchildren with high athletic potential in track and field highlights several key findings and trends. Modern approaches emphasize a multidimensional evaluation framework that integrates anthropometric, motor, psychomotor, and psychological characteristics, rather than relying solely on individual performance tests.

Studies consistently show that anthropometric characteristics, such as height, limb length, body composition, and somatotype, are strong predictors of future success in track and field events (Petrova, 2017; Kovalychuk, 2009). Morphological profiling allows coaches to match children to specific disciplines—sprinters, jumpers, or throwers—early in the selection process. However, anthropometric indicators alone are insufficient for long-term prediction, emphasizing the need for complementary assessments of motor and functional capacities.

Motor abilities including speed, strength, endurance, coordination, and flexibility are critical for distinguishing children with high athletic potential (Kovalychuk, 2016; Butrameev & Konovalov, 2021). Longitudinal studies indicate that children who demonstrate early proficiency in speed-strength and coordination tasks are more likely to achieve success in later competitive stages (Yuškovich & Baranaev, 2020). Integrating assessments of multiple motor qualities improves the accuracy of selection and provides a foundation for individualized training programs.

The literature highlights the significant role of psychological factors, such as motivation, discipline, adaptability, and focus, in the development of young athletes (Thomas, 2013; Petros et al., 2016). Zhao (2022) and Ushakova (2017) underscore the importance of incorporating psychological readiness into selection models, noting that children with strong

intrinsic motivation and resilience are more likely to persist through the early stages of specialized training. This indicates that psychological assessment should complement physical testing in talent identification programs.

A growing body of research supports the use of integrated, predictive models that combine anthropometric, functional, motor, and psychological indicators (Solovtsov, Sokolov, & Yuranov, 2011; Predescu & Mihăilescu, 2023). These models enable early identification of children with high potential and facilitate individualized training strategies, improving long-term athlete development. Zavatsky, Yakovlev, and Laptieva (2019) demonstrate that comprehensive assessment reduces the likelihood of overlooking gifted children and enhances the efficiency of selection at the initial stage.

Effective selection also depends on organizational and pedagogical frameworks. Independent assessment centers and school-based talent identification programs have proven effective in standardizing evaluation procedures and ensuring systematic monitoring (Cherkashin & Zelicenok, 2020; Egorova, 2023). Early exposure to athletics, beginning from ages 5–7, contributes to more accurate identification of talented children and supports smoother transitions into specialized training programs (Ushakova, 2017).

Despite the advances, several challenges remain. The lack of universally accepted, standardized criteria across disciplines and age groups complicates the selection process (Henriksen, Stambulova, & Roessler, 2010; Keulen et al., 2023). Additionally, variability in individual developmental trajectories and the risks associated with early specialization require cautious application of selection models. Integration of school physical education programs with specialized athletics training remains inconsistent, reducing the overall efficiency of talent identification systems.

Overall, the literature confirms that selection of schoolchildren with high athletic potential should rely on multidimensional evaluation frameworks, integrating morphological, motor, psychomotor, and psychological assessments within structured pedagogical and organizational contexts. Predictive and integrative models improve identification accuracy, facilitate individualized training, and contribute to the development of a sustainable sports reserve. Future research should aim at developing standardized criteria for age-specific selection, refining predictive models, and optimizing the integration of school and specialized training systems.

CONCLUSIONS

1. The selection of schoolchildren with high athletic

potential in track and field is most effective when based on a multidimensional approach that integrates anthropometric, motor, psychomotor, and psychological characteristics.

2. Anthropometric and morphological indicators, including body composition, somatotype, and limb proportions, are essential for predicting suitability for specific track and field disciplines but should be complemented by assessments of physical abilities and motor skills.

3. Motor capacities—speed, strength, endurance, coordination, and flexibility—play a decisive role in identifying children capable of long-term athletic development, particularly when evaluated in combination rather than in isolation.

4. Psychological readiness, motivation, and adaptability are critical factors influencing the persistence and progress of young athletes; inclusion of psychological assessment improves selection accuracy and reduces dropout risk.

5. Integrated and predictive selection models that combine physical, motor, and psychological indicators enhance the precision of talent identification and facilitate individualized training programs.

6. Organizational and pedagogical measures, such as school-based programs, independent assessment centers, and early exposure to athletics (ages 5–7), support effective selection and provide a structured pathway for long-term development.

7. Practical recommendations for coaches and sports schools include implementing standardized, evidence-based selection protocols, applying multidimensional evaluation frameworks, monitoring developmental trajectories, and ensuring coordination between educational and specialized training environments.

Overall, the adoption of systematic, evidence-based selection criteria can optimize the identification and development of young track and field athletes, laying a solid foundation for sustainable athletic success.

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