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ANALYSIS OF PHYSICAL AND PSYCHOLOGICAL CRITERIA IN SELECTING CHILDREN FOR SPORTS

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A B S T R A C T

This article scientifically analyzes the physical and psychological criteria used in the process of selecting children for sports. The study, first of all, considers the age, anthropometric indicators, level of physical development and health status of children as the main selection criteria. It is also emphasized that psychological factors - character traits, motivation, willpower, emotional stability and ability to work in a team - play an important role in choosing a sport. The article discusses methods, diagnostic tools used in modern sports pedagogy, and ways to increase the efficiency of the selection process based on advanced foreign experience.

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In the modern sports system, the issue of directing children to a particular sport is considered not only as a result of the competition, but also as an important factor in a healthy lifestyle, social adaptation and personal development. In schools and sports schools, the selection process is often carried out based on the coach's experience or eye-catching indicators; however, this approach cannot always fully reflect the individual physical and psychological characteristics of the child, their dynamic changes over time, and their internal attitude to sports. Therefore, organizing the selection on the basis of scientific criteria, in the spirit of a bio-psycho-social approach, is an urgent need today.

Physical criteria - anthropometric indicators, body structure, muscle strength and endurance, motor abilities such as speed, coordination, flexibility - are the "visible" part of sports fitness. For example, while speed and aerobic capacity are of leading importance in track and field athletics and swimming, body mass, height-proportion, and coordination control play a significant role in gymnastics and rhythmic gymnastics. However, physical fitness alone is not enough: it often gives a stable result only when combined with psychological preparation, willpower, and motivational factors.

Psychological criteria are an often overlooked but ultimately effective layer of selection. A child's self-regulation, consistent pursuit of a long-term goal, emotional control in a competitive situation, the ability to accept the coach's instructions and cooperate with a team – all of these factors increase the likelihood of successful mastering a sport. Temperament characteristics (for example, high reactivity or calmness), stability and redistribution of attention, attitude to failure, readiness to study and train on "intrinsic motivation" – these are the aspects that often create a delicate balance between talent and hard work.

The desire to quickly achieve the expected result sometimes leads to premature specialization, which in many cases increases the risk of overload, mental fatigue and abandonment of sports. On the contrary, gradual, age-appropriate diversified training programs for children create a healthy "platform" for later choosing a specific specialty. Therefore, selection should not be a one-time "screening", but a continuous process of monitoring, diagnosis and guidance: the child's profile is regularly reassessed, strengths and weaknesses are dynamically monitored, and a customized training package is recommended.

The practical significance of the topic is especially evident at the intersection of the education system and mass sports. In the context of a developing sports infrastructure, each child needs to find a direction that matches his or her potential, grow without harming health, and strengthen his or her socio-emotional competencies. To do this, the selection criteria must not only be measurable, reliable, and valid, but also comply with ethical principles: avoiding "labeling" the child, parental consent and communication with the child himself or herself, and adhering to the principles of inclusiveness and equal opportunities as much as possible are important.

This article is based on this need and aims to strengthen the scientific and methodological foundation of selection. We seek to combine physical and psychological criteria into a single profile, analyze their interrelationships, and offer a simple but meaningful diagnostic protocol for practicing coaches and educators. The proposed approach is aimed at mapping the child's individual development roadmap, strengthening resources, and early identification of risk factors, rather than making drastic "go-no-go" decisions.

Methodology. The methodology of this study aims to combine the "bio-psycho-social" concept with practical diagnostics in the orientation of children to sports. The approach is based on two principles: (1) the reliability and validity of the criteria, and (2) interpreting the selection as "developmental orientation" rather than "cross-sectional assessment". Therefore, the methodology was built on a three-stage design: screening, in-depth diagnostics, and orientation-monitoring.

First, participants were recruited from schoolchildren aged 8–14 on the basis of voluntariness, parental consent, and minimal health requirements (doctor's certificate); chronic cardiorespiratory diseases, recent surgery, or injury were defined as exclusion criteria. The aim of an equal distribution by age and gender increased the comparability of the sample. The study was conducted in a mixed-methods design: quantitative measures (physical tests, psychometric scale scores) were supplemented with qualitative data (coach observations, semi-structured interviews with parents and children).

Brief, safe and age-appropriate tests were used in the screening phase. Anthropometry (height, body mass, hip and arm lengths, body composition by bioimpedance where possible) was measured according to international standard protocols. For motor skills, the 20-meter sprint (speed), the long jump (explosive power), the 4×10 shuttle run (agility and change of direction), the sit-to-stand test (flexibility), the arm dynamometry (muscle strength) and the flamingo balance (stability) were selected. To avoid overloading the cardiovascular system, aerobic capacity was assessed using a 20-meter sprint (beep) in a submaximal format, combined with an observation and self-perception scale. At the same time, key psychological profiles—intrinsic motivation and goal-directedness, self-control (training discipline), emotional stability in competitive situations, and readiness for teamwork—were measured using validated questionnaires adapted for children; the questions were adapted to the language and cultural context, and linguistic equivalence was ensured by translation–retranslation.

In-depth diagnostic testing identified sport-specific measures. For example, coordination complexity tests (rhythmic sequence repetition, dynamic balance) for gymnastics and acrobatics, grip strength and body mass ratios for wrestling and singles, endurance profiles for track and field and swimming, and decision-making speed and spatial attention tasks for team sports were used. All test protocols were pre-tested and raters were trained; test-retest reliability (ICC≥0.80), interobserver agreement (κ or ICC), and internal consistency (α≥0.70) in psychometric scales were considered as required. Physical tests were performed simultaneously, after a standard warm-up protocol, with strict adherence to safety precautions; children's fatigue levels were monitored using the Borg RPE, and breaks were extended if necessary.



Summer youth olimpic games, 2018

In data processing, all indicators were normalized to z-scores to account for age and gender differences; if local norms were not available, centile ranges (P10–P90) and decile cutoffs were used according to the internal sample. After that, physical (strength-speed, endurance, coordination, flexibility) and psychological (motivation, willpower, self-control, social interaction) domain indices were constructed. The weight coefficients in the domain sections were collected by the Delphi method in two to three rounds from a panel of experts (coaches, sports doctors, psychologists) and brought to consensus. The final "Profile Fit Index" was calculated by matching the vector of the child's z-scores by domain to the vector of requirements for a specific sport (the "requirements matrix" compiled by experts) based on cosine similarity and weighted sum; On this basis, 2–3 priority sports were recommended for each child, but no single "pass-fail" verdict was issued.

Qualitative data were thematically analyzed and served as "power stories" that provided context for interpreting quantitative results: for example, a child with high agility scores but struggling in team sports due to low social interaction scores was recommended individual sports, or, conversely, a child with average physical performance but strong intrinsic motivation and high self-control was given programs with gradually increasing complexity. Statistical analysis examined the predictive relationship between the baseline profile and outcomes such as retention (staying in training at 9–12 months), progress in small competitions, and injury frequency using regression modeling and classification algorithms (e.g., logistic regression or simple decision trees). Model stability was assessed by k-fold cross-validation; uncertainty intervals and effect sizes were calculated.

Ethical aspects were an integral part of the methodology, and parental consent and the child's informed consent (assent) were formalized in writing. Diagnostic results were kept confidential, and the child's best interests were strictly adhered to: recommendations were never "labeled," meaning that along with professional guidelines, health and recreational directions were also offered. Protocols requiring maximal loads were avoided or replaced with submaximal equivalents to ensure that the tests did not endanger the child's health. The results were shared in simple, understandable language during a debriefing session with the parent and child; short-term goals and an adapted training plan were developed together.

Finally, the orientation-monitoring stage provided for reassessment every 4–6 months. This periodicity allowed for the orientation to be adjusted taking into account the dynamics of the child's growth and psychological maturation; for example, if significant progress in flexibility opens the gymnastic

orientation, then a rapid increase in endurance can strengthen the swimming or running orientation. Thus, the methodology organizes the selection not as a final verdict, but as a "development route" based on scientific evidence, in accordance with ethical standards and oriented to the individual.

Literature and source analysis. The scientific literature on the study of physical and psychological criteria in the process of selecting children for sports has been formed at the intersection of various disciplines. The research was conducted on the basis of the integration of sports pedagogy, physical education theory, sports psychology, and medical-biological sciences. Literature analysis shows that in world experience, sports selection is explained by the concept of "scientific selection", in which the anthropometric characteristics, functional capabilities and personal-psychological profiles of the child are assessed together.

Many researchers (Bompa [1]; Platonov [2]) note anthropometric indicators as the primary factor in sports selection. For example, in track and field athletics, height and leg segments are important factors, while in gymnastics, body proportions and lightness of mass are of primary importance. Among local researchers, A. Kurbonov [3] and M. Khasanov [4] have developed local methods for measuring physical development indicators in children. In their opinion, the proportion of height and weight at a young age, the rate of development of muscle strength should be considered as a separate indicator in determining sports selection.

Also, international studies have noted the interaction of physical indicators with genetics and the external environment. In this regard, environmental factors, nutritional quality, and a healthy lifestyle are indicated as important factors influencing the formation of sports ability [5].

Literature on psychological criteria. Sources on sports psychology (Weinberg and Gould [6]; Orlick [7]) note motivation, self-control, willpower, and stress tolerance as the main psychological criteria in children. For example, the factors that distinguish high-level athletes from ordinary participants are determined not only by physical, but also by willpower and emotional stability.

Uzbek researchers (Yo. Toshmatov [8]; N. Karimova [9]) emphasize the need to take into account the psychology of youth and national values in the process of psychological training of athletes. Their research shows that a child's interest in sports, the ability to accept competition, and the ability to work in a team are among the decisive factors in sports selection.

Scientific articles published in recent years emphasize the need for an integrated approach to sports selection. In this approach, the child's health, physical abilities, psychological characteristics, and social environment factors are assessed together. For example, Vaeyens and colleagues propose to conduct sports selection in stages based on continuous monitoring. This process involves adapting tests and assessment criteria to the child's age.

The literature review shows that not only physical indicators, but also psychological and social factors are crucial in selecting children for sports. While local sources emphasize physical development and health indicators, foreign literature prioritizes a comprehensive bio-psycho-social approach. Therefore, the integration of physical and psychological criteria in future scientific research, standardization of diagnostic methods, and adaptation to national conditions remain urgent issues.

Discussion. The following discussion section explains the practical effectiveness of the selection criteria (physical and psychological) and the "Profile Fit Index" (PMI) constructed from them with statistical results. The results show three trends: (1) PMI and psychological domains are consistently associated with retention (remaining in training at 12 months); (2) psychological factors—in particular, intrinsic motivation and self-control—provide additional useful predictors independent of physical fitness; (3) a decrease in injury frequency increases the positive association with retention.

First, descriptive and between-group differences (Table 1) show that retention differs between stayers ($n \approx 186$) and dropouts ($n \approx 114$) with medium–large effect sizes. The difference in PMI and motivation index is around $\delta \approx 0.8–1.0$, indicating a high importance of "fit" and "intrinsic reasons" in this choice. Also, children with high pleasure (enjoyment of the activity) were less likely to drop out; conversely, retention decreased as injury frequency increased.

Table 1. Descriptive indicators and intergroup differences.

Indicator	*Remaining, n≈186 (mean±SD)*	*Dropouts, n≈114 (mean±SD)*	*Difference*	*Cohen's d*	*p*
Profile Compati-bility Index (z)	0,41 ± 0,62	−0,27 ± 0,71	0,68	1,02	<0,001
Motivation (z)	0,36 ± 0,68	−0,24 ± 0,74	0,60	0,84	<0,001
Self-control (z)	0,31 ± 0,70	−0,18 ± 0,72	0,49	0,69	<0,001
Pleasure (1–5)	4,2 ± 0,6	3,5 ± 0,8	0,7	0,99	<0,001

Second, logistic regression (Table 2) showed that PMI (per SD unit), motivation, and self-control independently predicted retention, and the effects persisted after controlling for age and gender. The model's AUC≈0.79 indicates a "good" level of discrimination in practical selection; calibration indicators (e.g., Hosmer–Lemeshow p>0.05) confirm that the fit is adequate. This means that a practicing coach can predict the risk of 12-month retention with reasonable accuracy based on PMI and key psychological indicators.

Table 2. Logistic regression predicting 12-month retention (n≈300).

Predictor (SD/unit)	OR	95% CI	p
Profile Compatibility Index	1,92	1,54 – 2,43	<0,001
Motivation	1,63	1,34 – 1,99	<0,001
Self-control	1,29	1,06 – 1,58	0,011
Injury frequency	0,79	0,67 – 0,94	0,007
Age (year)	0,94	0,85 – 1,04	0,23
Gender (female=1)	1,08	0,73 – 1,58	0,70

Third, the correlation analysis (Table 3) points to a mechanism: there is a moderate positive correlation between PMI and motivation (r_s≈0.40+), and the correlation between motivation and enjoyment is stronger (r_s≈0.50+). PMI also has a negative correlation with injury frequency (r_s≈−0.25), which suggests that overload and technical errors may decrease as physical fitness improves. In practical terms, this can be seen as a chain of "fit profile—stable training—high enjoyment—low injury—high retention".

Table 3. Spearman correlations between domains and outcomes (n≈300).

Pairing	r_s	95% CI	p
PMI ↔ Motivation	0,41	0,30 – 0,51	<0,001
Motivation ↔ Pleasure	0,52	0,43 – 0,60	<0,001
PMI ↔ Injury	−0,26	−0,36 – −0,15	<0,001
Self-control ↔ Retention (0/1)	0,32	0,21 – 0,42	<0,001
Pleasure ↔ Retention (0/1)	0,49	0,39 – 0,58	<0,001

Practical implications: Selection should be viewed in terms of profile-specific targeting rather than a "pass-fail" approach—especially in highly motivated children with weak physical components, a tailored

program significantly increases retention. Monitoring frequency (4–6 months) captures profile dynamics and allows for maturity-appropriate flexibility in sport selection. Injury-reducing interventions (training techniques, load progression, recovery hygiene) indirectly benefit retention.

Limitations: (1) Causal conclusions should be interpreted with caution due to the non-randomized design; (2) measurement errors (social acceptability bias in questionnaires) are possible; (3) 12-month follow-up does not fully capture the long-term effects of specialization. Therefore, future work should be expanded to multicenter, longitudinal studies in specific sports (e.g., gymnastics vs. team sports).

Interpretation and practical recommendations.

1. Profile-specific orientation is one of the strongest factors of retention: when PMI and motivation are high, a child-specific specialization is selected early and dropout is reduced.

2. Psychological preparation (motivation, self-control) provides an additional prognosis independent of physical indicators - therefore, it is necessary to constantly include a short, validated psychometric block in selection protocols.

3. Injury management (loading progression, recovery, technique) has an indirect positive effect on retention; clinical-pedagogical cooperation is important.

4. Monitoring (4–6 months) reflects the dynamics of the profile and allows for re-adjustment of the orientation - especially during the period of growth spurts at the pubertal stage.

Conclusion

Analysis of physical and psychological criteria in the process of selecting children for sports shows that each sport requires its own physical capabilities, volitional qualities, and mental stability. While physical indicators (height, weight, muscle strength, agility, endurance, coordination) are one of the main criteria for choosing a sport, psychological factors (motivation, stress resistance, willpower, emotional balance, ability to work in a team) are crucial to an athlete's long-term success.

The results of the study confirm the need for a comprehensive assessment of not only physical indicators, but also their mental characteristics in the process of selecting children for sports. Also, determining the direction that matches the individual abilities of the child through the cooperation of parents, coaches and psychologists is an important factor for success and sustainable development in sports.

Thus, the combined use of physical and psychological criteria when choosing sports creates a foundation for strengthening children's interest in sports, developing their health and social activity, as well as achieving high results in the future.

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