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CHARACTERISTICS OF MOTOR ABILITIES OF YOUNG ATHLETES OF SELECTED SPORTS DURING SPORT TRAINING

Key words: sport of children and adolescents, sport disciplines, testing, general fitness.

ABSTRACT

The goal of the present study was to determine the structure of motor preparation of young athletes of selected sports in the context of their sport-specific training. The research material comprised results of investigations carried out among members of the Wielkopolska Province junior sport teams (canoeing, cycling, basketball, athletics, handball, volleyball, triathlon, rugby, rowing). The study encompassed 300 boys aged 15-16. The International Physical Fitness Tests and trials determining selected components of general physical preparation were used as the basic research tools. The study revealed that the structure of motor ability and its level often indicate premature effects of sport specialization, at the expense of comprehensive, well-balanced motor preparation.

INTRODUCTION

Sport training of children and adolescents is one of the most important period determining practicing of a given sport by adult competitors in the future. General physical preparation essentially affects coaching efficiency and improvement of technical skills and has a considerable impact on the tactics and current psychological predispositions of athletes [2, 11, 14, 16].

The type and level of general physical preparation is determined by cumulative effects of development of individual motor abilities. This does not mean a simple total of values but a specific functional model conditioned by the requirements of competitive exertion and development principles [2, 4, 13].

Competitive exertion typically imposes specific requirements, not only on one's motor potential (physical preparation) but also on one's abilities to perform particular movements (particular sport techniques) and on the whole range of personality traits, with motivation as the most important one [1].

Therefore, technical preparation is a process oriented towards learning and improving sport abilities which allow athletes to show their motor potential in complex conditions of sport competition. This mainly depends on the level of motor abilities and skills [10, 12].

Manifestation of technical skills is connected with the level of motor abilities. It is difficult to explicitly state whether it is possible to separate in tests one's advanced movement technique from motor predispositions [5, 17, 20].

Thus, while using a variety of tests for evaluation of technical preparation, one should take into consideration that what is tested are in fact sport-specific skills are, e.g. basketball educationalists would refer to them as game

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elements such as dribbling, catching, passing the ball.

The model of motor preparation for children and adolescents has undergone essential transitions in the past decades. The main factors determining changes in motor concepts included development of knowledge of functional adaptation of the human body to physical exercise and motor development in ontogenesis. Technological requirements imposed on the body have also a great impact on different sports [6, 7, 11, 12].

Modern science and sport practice point to the need of verification of training methodology in the early stages of sport development. The stage of 'comprehensive physical preparation', promoted until recently, seems to be outdated due to non-specific effects of training stimuli (in general), specificity of development of individual abilities and inconsistency with the natural dynamics of organic changes. Training exercises never affect the body in general, but always involve particular motor mechanisms, leading to specific rather than general adaptive changes [3, 11].

The abovementioned considerations evoke the question of what relationships should occur between the principle of comprehensive development and sport training specificity. It seems that in many cases, the principle of comprehensiveness is treated marginally since the problems which arise among trainers include focusing on development of individual motor abilities and relatively low efficiency of comprehensive measures. It is easier to employ the principle of specificity, which is mainly perceived as specialized training. All the same, a reference system should comprise training stages and their assumptions about implementation of training tasks, which would determine the relationships between comprehensiveness and specificity of training [8, 17].

In this context, consistent attempts should be made to assign multidimensional stage-related goals, specific for the assumed relationships between individual (biological) development and the area of additional (program-based) sport physical activity. The question is whether this concept can be empirically verified allowing for creation of at least general rational premises for long-term planning of athletes' careers?

The aim of the present study was to determine the structure of motor preparation of young athletes of selected sports in the context of stage tasks of sport-specific training, whose main objective is to develop recognized predispositions and to profile motor potential as a functional basis for forecasting of sport specialization.

METHODS

The research material comprised the results of studies carried out in June and October 2008 among members of the Wielkopolskie Province junior sport teams (canoeing, cycling, basketball, athletics, handball, volleyball, triathlon, rugby, rowing). The study encompassing 300 boys aged 15-16 focused on the evaluation of the their structure of motor abilities.

The following research tools were employed:

- International Physical Fitness Test [9]: 1000 m run, 50 m run, standing broad jump, hand grip, sits-ups, pull-ups; flexibility and agility; 4x10 m shuttle run;
- trials determining selected elements of general physical preparation [19]: 5 m run, simple movement time, time of simple response to visual stimuli, jump and reach, medicine ball throw, maximal strength in static conditions, Master's two-step test, eight shaped run, Dufour apparatus.

RESULTS

The results have been subjected to normalization of arithmetic means and standard deviations for all respondents and were presented in the graphic form, illustrating physical fitness profiles in the studied sport teams (Figure 1-9).

DISCUSSION

In many sports a great amount of training time is spent on improvement of technique and tactics. The development of motor skills (abilities) is typically attained as a 'side effect' of specific training. However, the level of general fitness lays a foundation for development of technique and tactics, thus separate training is needed to improve motor abilities [18].

An adequately high level of comprehensive physical fitness comprises the basis for efficiency of sport activities. This is clearly reflected by the division of the training process into stages.

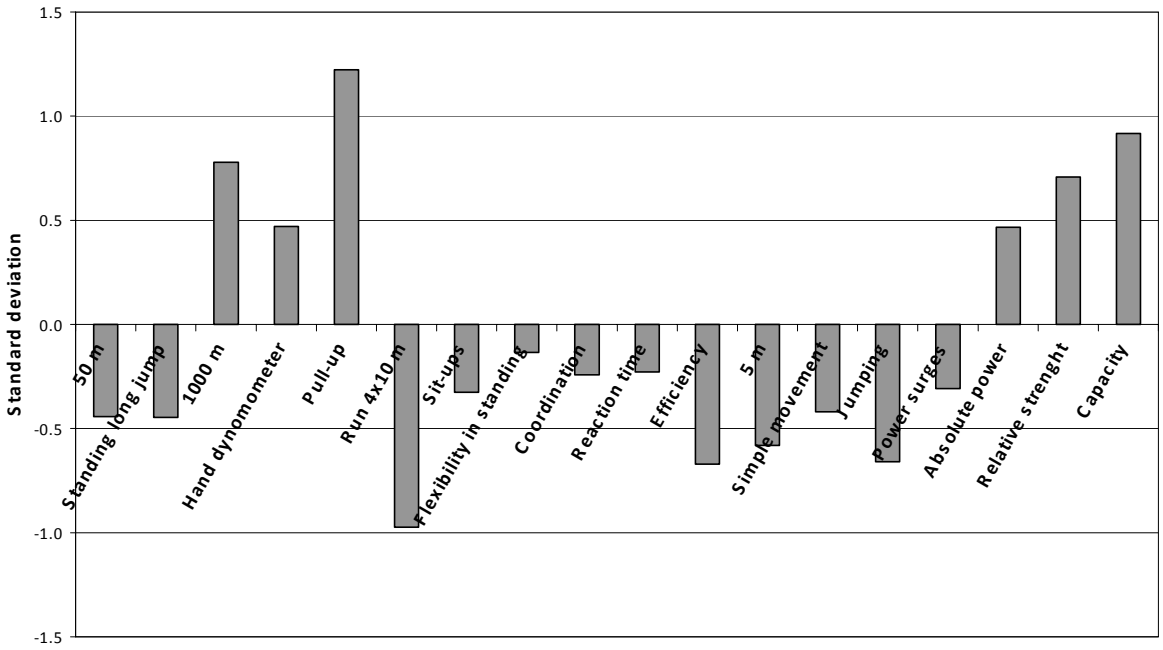

Figure 1. Canoeing – normalized results

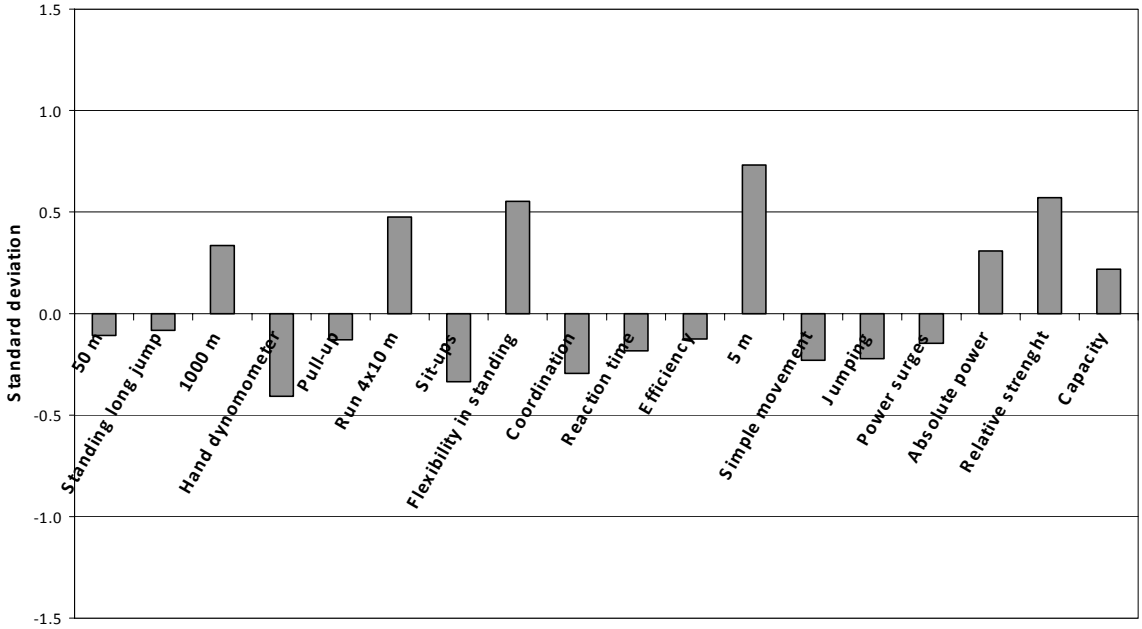

Figure 2. Cycling – normalized results

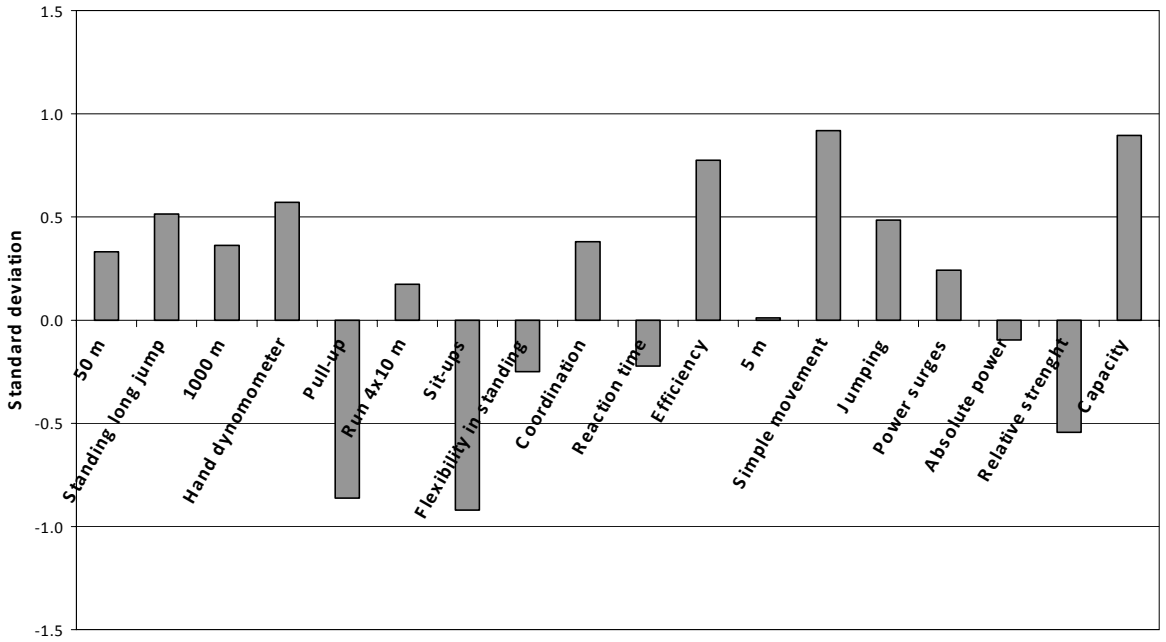

Figure 3. Basketball – normalized results

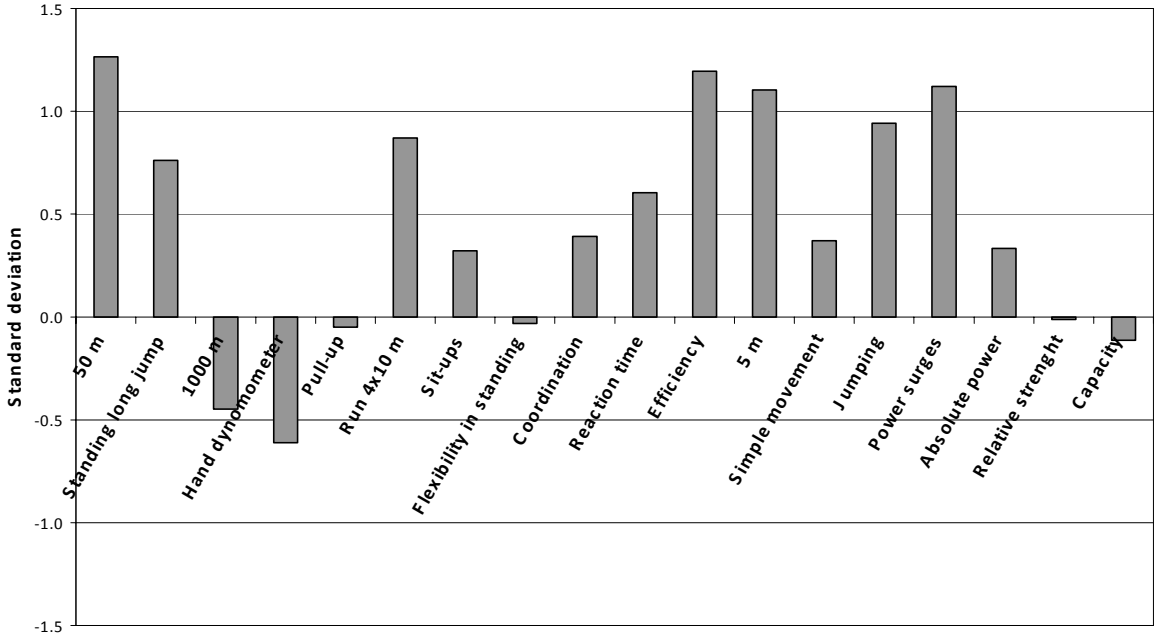

Figure 4. Athletics – normalized results

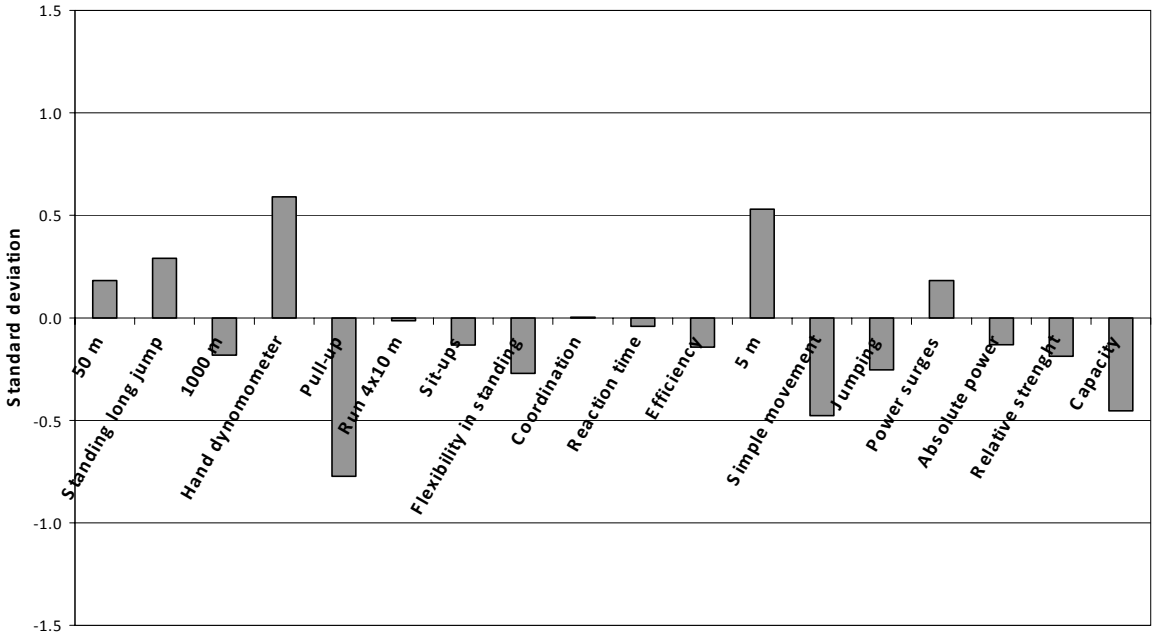

Figure 5. Handball – normalized results

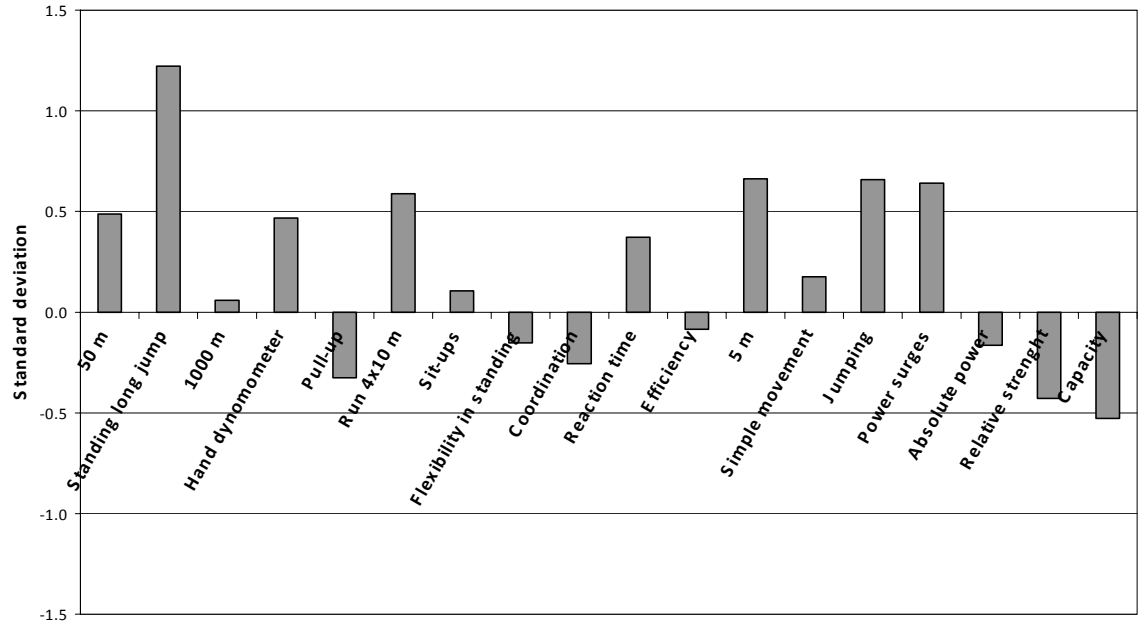

Figure 6. Volleyball – normalized results

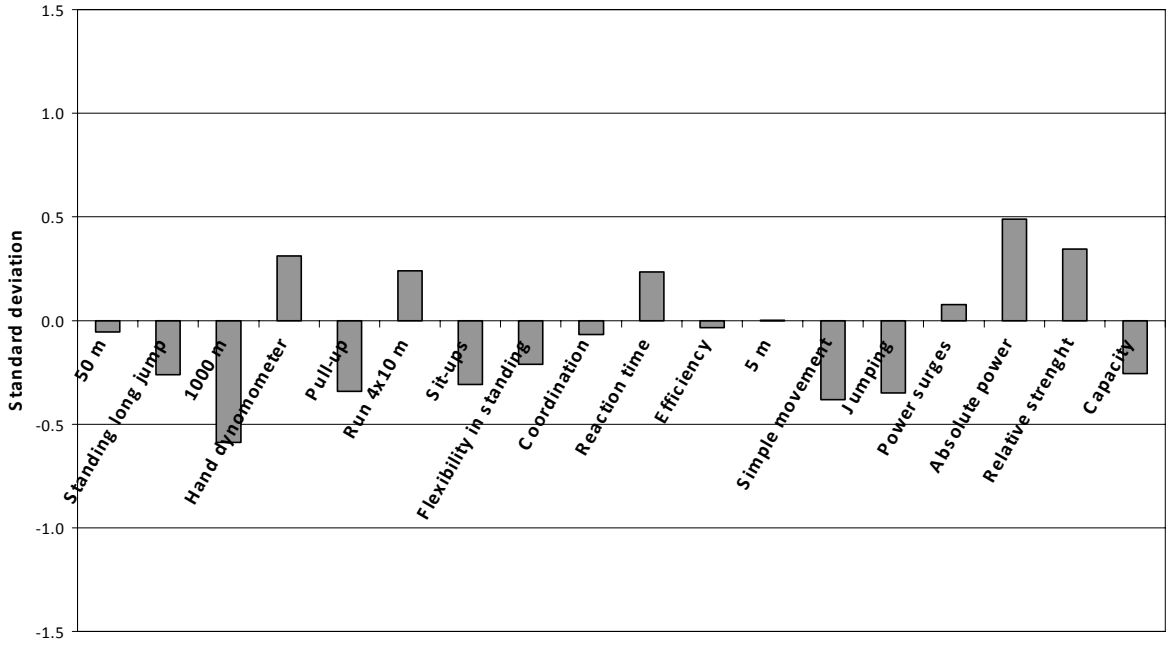

Figure 7. Rugby – normalized results

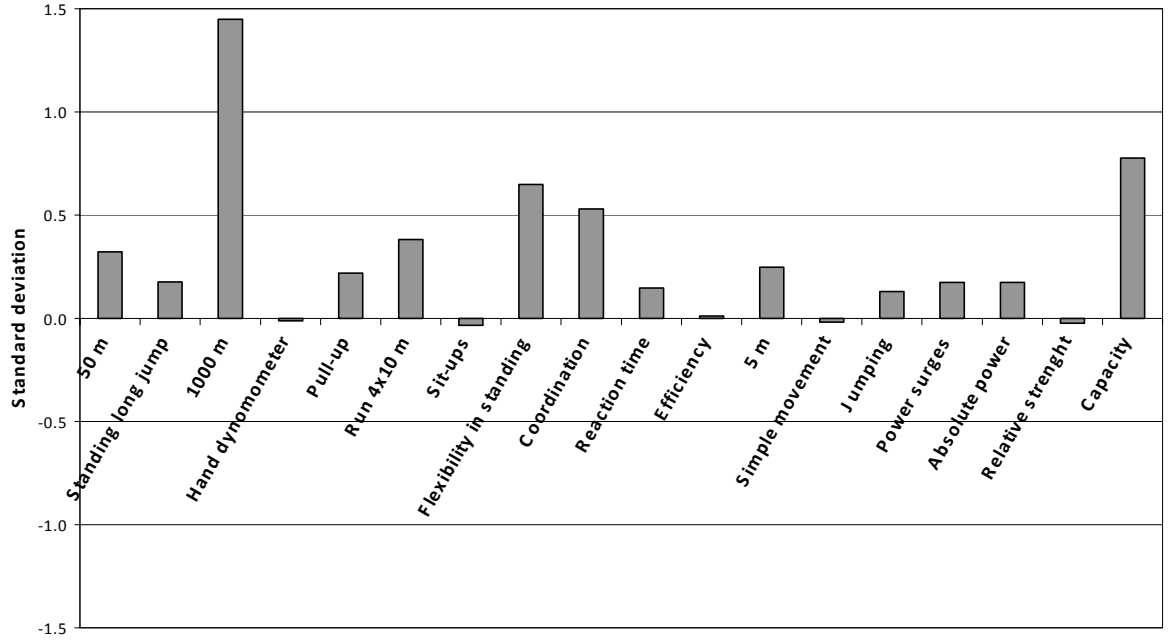

Figure 8. Triathlon – normalized results

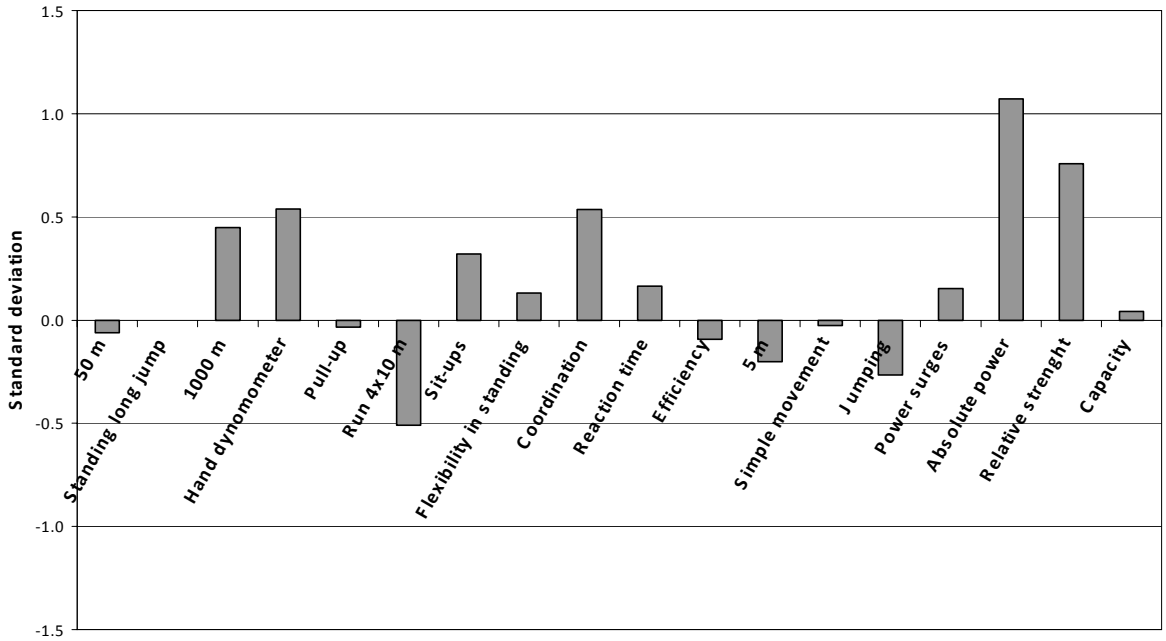

Figure 9. Rowing – normalized results

The goals of training at the stage of specific preparation include sport-oriented development of physical fitness, formation and recognition of special interests and predispositions, profiling motor potential as a functional basis for the forecast sport specialization and also equipping the trainee with considerable resources of motor skills [2, 15]. This period is specific and converges with high body sensitiveness to external stimuli. It is impossible to develop skills in young people through training based on the methods used among adults, neglecting the postulate of comprehensiveness which ensures long-term sport development as it involves exceeding of adaptive capabilities. From the biological standpoint, the used training loads must be adapted to the trainee's developmental age. It is remarkable that if the employed training load is not based on the principle of individualization (whose main postulate is choosing training loads adequately to competitor's abilities) its advantageous impact is weakened and, if used systematically, it can cause developmental disorders and becomes a traumatogenic factor leading to overtraining and exhaustion. Therefore, excessive (specific) exercise regimes imposed at a young age can not be justified. Although the use of such stimuli leads to quick adaptation to them, the adaptation mechanisms in the growing body are depleted which, in consequence, may lead to the premature departure of talented individuals from sport due to numerous injuries [3, 8, 15].

The realization of the sport training process among children and adolescents must take into consideration developmental factors. They determine, along with sport goals, selection of content, methods and direction of actions [4, 14]. The essence of the problem consists in formation of such a model of training and competitiveness which would bring temporary benefits in terms of motor preparation and also optimal effects of target impact.

The obtained study results show that the structure of motor abilities and their level often indicate premature effects of sport specialization, at the cost of comprehensive, well-balanced motor preparation. This might suggest that the applied training loads were not of progressive character but merely oriented towards realization of current sport-related goals. On the other hand, such a specialization might result from purposefully chosen selection criteria in particular sports.

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