MODERN MEDICINE AND PRACTICE
http://innovatus.es/index.php/ejmmp
EUROPEAN JOURNAL OF MODERN MEDICINE AND PRACTICE
Vol. 4 No. 4 (Apr - 2024) EJMMP ISSN: 2795-921X

Advantages of physical development indicators of children 10-14 years old involved in team sports.

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Annotation: The ages of 10 to 14 years are an important period for children's physical development, and there are many team sports that can be beneficial to their development by preparing them for high athletic performance later on. It is important to choose a sport that is suitable for a particular child. The child must enjoy the sport in order to be motivated and continue to develop. Although the physical development of non-athlete children is well documented, a comprehensive understanding of the development of adolescent athletes, including the potential effects of team sport participation and training load, is lacking.

Key words: sport, children, team sports, advantage, training load.

It is important to note that each child develops individually and the rate of development may vary. Regular training, proper nutrition and adequate rest play an important role in supporting the physical development of children involved in team sports.

Team sports are typically characterized by frequent repetitions of low to maximal intensity efforts. Therefore, athletes must be able to generate large amounts of strength and power to jump, sprint, accelerate, change direction, and perform sudden actions such as kicking and throwing. Research shows that elite players outperform their competitors in several physical dimensions. Due to the ever-increasing physical demands in sports, it is important that athletes have well-developed physical indicators in order to achieve high results in their future sports life. Therefore, physical performance is highly valued and widely used as selection criteria for program selection of the best in team sports.

To support adolescent athletes in their long-term development process, knowledge of typical developmental trends in physical performance during adolescence is critical. This knowledge will support the monitoring and evaluation of adolescent athletes' progress, facilitating the identification of their strengths and weaknesses, optimizing the development of effective training programs, and evaluating training interventions. Understanding the various factors that influence development can better tailor training programs to optimize development in adolescent athletes.

During this period, growth and development are not the main driving forces for the development of physical indicators. Increases in body weight and height, differentiation of fiber types, resting levels of adenosine triphosphate and creatine phosphate, increased androgen concentrations, and architectural

development of musculotendinous fibers all contribute to the development of various physical qualities. However, specific evidence for aspects related to training load remains unclear in this group of children.

Adaptations to training have been studied extensively in adults, both in the context of physical performance development and injury prevention. Insufficient attention has been paid to understanding the unique responses of young athletes to training stimuli, highlighting the need for further research in this area.

Despite extensive research on the physical performance of boys during adolescence, there is currently no systematic review that comprehensively summarizes the literature on team sport athletes, specifically covering both boys and girls. This knowledge gap is significant given that studies conducted on children who do not participate in sports consistently demonstrate marked developmental differences between the sexes in early and late stages of adolescence. Research among children who do not participate in sports shows that boys tend to show greater improvement in physical performance during adolescence, while girls often achieve better performance soon after puberty; usually between the ages of 13–15. These differences may be explained, among other things, by longer and more extensive developmental and maturational processes affecting the physical development of boys. However, it remains unclear whether these patterns hold true for team sport athletes. If team sport athletes follow similar developmental trajectories, their natural development may slow during late adolescence. This may highlight the need for a more targeted physical training program to adequately prepare them for the demands of senior management. Therefore, the primary objective of this systematic review was to examine the development of physical performance during adolescence in both male and female team sport athletes.

The influence of training load on the development of physical qualities was also studied. Independently, conditions were assessed by two primary reviewers using the National Heart, Lung, and Blood Institute's “Quality Assessment Tool for Observational Cohort and Cross-sectional Studies” (NHLB, 2021).

Some questions were changed and some were not included due to lack of relevance. Discrepancies or conflicts were resolved either through discussion or by involving a third reviewer if agreement was not met. Because both cross-sectional and longitudinal studies were included, it is worth noting that some questions (7 and 13) were relevant only to longitudinal studies. This difference resulted in potential scoring, up to seven points for cross-sectional studies and up to nine points for longitudinal studies.

All data were analyzed using descriptive statistics and presented as yearly differences between age groups (i.e. either the average for an age range [12–16 years] or between two consecutive age groups [e.g. 13–14 years]) . The following tests for each physical characteristic were selected for analysis because they are the most commonly used:

• Sprint: 10 and 30 m.

• Vertical jump: jump against the direction of movement.

• Intermittent endurance; The YYIR tests are a simple method of testing an athlete's ability to perform repetitive, high-intensity exercise and a multi-stage 20m test.

• Change of direction ability: agility - 10 x 5 m shuttle run and 5 x 10 m shuttle run.

• Upper body strength: grip.

• Lower body strength: The wide variety of lower body strength tests in the included studies led to the need to include several different tests.

Interestingly, although girls who do not participate in sports typically show a decline in their maximum exercise oxygen uptake rate (VO2 max) at around 14 to 15 years of age, results from one study show that

intermittent endurance continues to improve until age 16, similar to boys. This is consistent with the observations made by Tønnessen et al. [2015], who reported improvements in girls' 800 m athletics performance even up to age 18.

This may be due to differences in the tests performed. A recent study by Landgraff et al demonstrated developmental differences

between maximal exercise oxygen consumption rate (VO2-max) and endurance performance in adolescence, when there was an improvement in performance but no change in maximal exercise oxygen consumption rate (VO2-max).
Given that the YYIR1 and multistage fitness test analyzed in this review are performance-based (i.e., dependent on multiple physical measures), this may help explain the observed difference between VO2-max development in non-athlete children and endurance performance in athletes in this review. This means that performance is influenced not only by VO2-max, but also by other factors, such as specific muscle adaptations that may be more responsive to training.

This review noted gradual improvements in most physical performance indicators during adolescence in both girls and boys in team sports, which are largely dependent on growth and development. In early adolescence, development is stable and rapid, but appears to slow down towards late adolescence. Girls develop more slowly than boys, which may be explained by differences in maturation between the sexes, with boys benefiting more from greater increases in testosterone and limb length. Although the groups in this review were structured by chronological age, examining development based on biological age would add interesting information to better understand the role of maturation in the physical development of adolescent athletes. Future research is encouraged to include measures of maturation to provide a more precise understanding of the impact of changes in maturation on the longitudinal development of physical performance in team sport athletes. Because there is limited research on the effects of training load and team sport participation on long-term physical development, it is difficult to definitively establish their effects during this period.

To improve our understanding of this topic, future studies should include different measures of training load when examining changes in physical performance in adolescent team sport athletes.

References:

1. https://scholar.google.com/citations?user=kqgchN8AAAAJ&hl=ru&oi=ao

2. Ziv G., Lidor R. Physical characteristics, physiological characteristics and behavior of handball players on the court: a review. Eur J Sport Sci. 2009;9(6):375–86. [Google Scholar].

3. Loturco I, Bishop S, Freitas TT, Pereira LA, Jeffries I. Vertical force production in football: mechanical aspects and applied training strategies. Strength Cond J 2020;42(2):6–15. [Google Scholar]

4. Wen N., Dalbo V.J., Burgos B., Pine D.B., Scanlan A.T. Strength testing in basketball: Current practice and future recommendations. J Force Cond Res. 2018;32(9):2677–91. doi: 10.1519/JSC.0000000000002459 [PubMed] [CrossRef] [Google Scholar]

5. Baena-Raia A., Soriano-Maldonado A., Rodriguez-Perez M.A., Garcia-De-Alcaraz A., Ortega-Becerra M., Jimenez-Reyes P. et al. The force-velocity profile as a determinant factor of serve and serve speed in top-level male volleyball players. PLOS One. 2021;16(4):249612. doi: 10.1371/journal.pone.0249612 [PMC free article] [PubMed] [Crossref] [Google Scholar]

6. Rebelo A., Brito J., Maia J., Coelho-E-Silva M.J., Figueiredo A.J., Bangsbo J. et al. Anthropometric characteristics, physical fitness and technical characteristics of football players under 19 years of age depending on competitive level and position on the field. Int J Sports Med. 2013;34(4):312–7. doi: 10.1055/s-0032-1323729 [PubMed] [CrossRef] [Google Scholar]

7. Saward K, Hulse M, Morris JG, Goto H, Sunderland K, Neville ME. Longitudinal physical development of future male professional soccer players: Implications for talent identification and development? Front Sports Act Living. 2020;2. [PMC free article] [PubMed] [Google Scholar]

8. Despres D, Fransen J, Lenoir M, Philippaerts R, Weyens R. A retrospective study of anthropometric characteristics, physical fitness and motor coordination that influence attrition, contract status and first-team playing time in high-level football players in age. eight to eighteen years. J Force Cond Res. 2015;29(6):1692–704. doi: 10.1519/JSC.0000000000000806 [PubMed] [CrossRef] [Google Scholar

8. Burkhanova G., Kim O. Assessment of physical performance of young athletes with increased physical activity // Journal of the Doctor's Bulletin. – 2018. – T. 1. – No. 2. – pp. 25-28.

10. Kamalova E. Studying the temperament of athletes involved in football and basketball // Journal of Biomedicine and Practice. – 2021. – T. 1. – No. 1. – pp. 276-280.

11. Matmurodov R. Zh., Umirova S. M. Coronavirus infection sining diabetic polyneuropathy rivozhlanishidagi roles va uning complement tizimiga tasiri //Tashkent-2021. Biomedicine va amaliyot journals. – T. 6.

12. Yokuthon K. FEATURES OF NUTRITIONAL STATUS IN ADOLESCENTS ENGAGED IN VARIOUS TYPES OF SPORTS ACTIVITIES // JOURNAL OF BIOMEDICINE AND PRACTICE. – 2022. – T. 7. – No. 5.

13. Baratova S., Kim O., Mavlyanova Z. Assessment of anthropometric indicators and harmony of physical development of female athletes // Journal of the Doctor's Bulletin. – 2019. – T. 1. – No. 4. – pp. 40-42.

14. Burkhanova G., Mavlyanova Z., Kim O. The influence of sports nutrition on the physical development of children and adolescents with increased physical activity // Journal of Problems of Biology and Medicine. – 2017. – No. 4 (97). – pp. 24-26.

15. Matmurodov R. Zh., Umirova S. M. Results of the use of combilepene tabsa in the treatment of diabetic polyneuropathy in young people // Journal of cardiorespiratory research. No. SI-1. – 2021.

16. Mamasharifovich M. S. FUNCTIONAL STATE OF THE CARDIORESPIRATORY SYSTEM OF SWIMMING ATHLETES //YANGI UZBEKISTONDA

MILLIY TARAKKIET VA INNOVASIYALAR. – 2022. – P. 313-317.

17. Kamilova R. T. et al. Assessment of the influence of systematic volleyball training on the somatotypological characteristics of the body // Bulletin of the Kazakh National Medical University. – 2016. – No. 4. – pp. 212-218.

18. Mavlyanova Z. F., Makhmudov S. M., Tokhtiev Zh. B. Morphofunctional status and dynamics of physical fitness of persons involved in the national sport of kurash // Journal of Biomedicine and Practice. – 2022. – T. 7. – No. 1.

19. Khudoikulova F.V. et al. Structure, age-related features and functions of hormones. Educator, 1 (5), 681-688. – 2023.

20. Irbutaeva L.T. Features of Physical Development of Children 10-14 Years Old, Involved and Not Involved in Sports BEST JOURNAL OF INNOVATION IN SCIENCE, RESEARCH AND DEVELOPMENT, 3 (2), 247-251.- 2024.