YOUTH SPORTS
GROWTH, MATURATION AND TALENT

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2.ª EDIÇÃO

IMPRENSA DA UNIVERSIDADE DE COIMBRA
COIMBRA UNIVERSITY PRESS

Versão integral disponível em digitalis.uc.pt
CHAPTER 8: PHYSIOLOGICAL AND FUNCTIONAL CHARACTERISTICS OF ADOLESCENT ATHLETES IN SEVERAL SPORTS: implications for talent identification

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INTRODUCTION

The body size and composition of adolescent athletes receive considerable attention in discussions of adolescent athletes in a variety of sports. Of equal and perhaps more importance are functional and physiological characteristics associated with, on one hand, muscular strength, power and endurance, and on the other hand, aerobic and anaerobic capacities. These characteristics are often included in inventories aimed at identifying potentially talented young athletes in many sports. The identification process is influenced, of course, by the course of normal growth and maturation which are highly individual processes. As a result, there is considerably inter-individual variation, especially during the adolescent growth spurt. Likewise, there is considerable variation in the responsiveness to training, i.e., trainability, during adolescence. In later adolescence, adult size is almost attained, whereas functional variables continue to develop. Hence, it is appropriate to consider the physiological characteristics of late adolescent athletes. This paper thus presents a profile of the body size, composition and physiological characteristics of elite late adolescent athletes in a variety of sports.

METHODS

The subjects were top Czech athletes of both sexes, 249 males and 146 females, in nine sports: triathlon, long and middle distance running, cross-country skiing, cycling, soccer, basketball, canoeing, swimming. All subjects trained at least 6 days a week and had been engaged in high-intensity training for at least 5 years. The mean time spent in intensive training was about two hours per session. The best of the athletes competed regularly at international events and were successful in European and/or World junior Championships. As a group, the sample can be labelled as including the best, young Czech athletes.

Height and weight were measured. Body composition was estimated with whole-body impedance using a commercially available bio-impedance system (BIA 2000-M). A tetrapolar electrode configuration with the subject in