

# About the Secular Growth Trend

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## ABSTRACT

Secular trend represents a progressive tendency of changes in the consecutive generations, mostly observed in bodily development and maturation, during growth period or in adult sizes, and also in functional and psychological variables. The magnitude of the differences could depend on the genetic traits of the population and the environmental factors, especially on the level of socio-economical standards. Secular trend changes are characterized by decades, expressed e.g. in cm for body height, in kg for body weight, or month for menarcheal age, etc. to compare changes in different populations.

**Keywords:** Secular trend; Bodily changes; Genetic factors; Environmental conditions

## Introduction

Secular trend is a biological phenomenon in which, the long-term effects of the genetic and environmental factors play roles, by many international publications [1-15]. In the modern societies, from mostly the 1900s, anthropometric measurements showed an increasing tendency of body sizes, especially in adult body height and weight of the population and in the growth and maturation spurt shifted to earlier timing. It is supposed that better nutrition, considering both higher caloric and protein intake, the improving hygienic conditions and other socio-economic factors act on those varied changes. It could also refer to the health status of a population with mostly positive, progressive tendencies of changes [16-18]. Only in a few unfavourable effects could lead to negative consequences, such as wars, famine, worsening of the hygienic conditions, the psychological impacts or even the modern way of living with disadvantageous body changes [19], such as the increasing body fat content, as one of the results of civilizational effects.

In Hungary, the secular trend is thoroughly studied, even since the second half of the nineteenth century we have comparative data on the stature of the recruits [20,21], in university students, and also in athletic and non-athletic samples of youth [13,15,22-24,25-34]. Two nationwide studies also showed us the changes of the growth trends [25,35]. The anthropometric studies over Hungary demonstrate the regional differences in growth and developmental patterns and in the magnitude of body measurements' trend [36-37].

Secular trend could be followed up in the performance level, as well, as structural development of the body and the accelerated maturation could help with improving physical capacity [38]. We also have some published [39,40] and unpublished experience about the existence of positive secular trend among Hungarian athletic children e.g. in basketball, where the body height is the key component in the selection. Even in American major league baseball a positive secular trend was observed [41]. However, secular growth changes are supposed come to an end, in a period of time in some of the populations [4,42]. Even in Hungary the trend was varying as the result of the socio-economic changes [15,18,26] but not yet stopped.

In highly civilized societies, e.g. in the Northern European countries and in Japan, the secular changes are slowing down or levelling off [14,43] or stabilized at a certain body height and in menarcheal age, while in other countries e.g. in Brasil and in Hungary it is yet going on [15,44]. There are some further objectives about the secular trend, since we have to understand something concerning the practical use of the knowledge, i.e. when in a younger age child reach a higher level of physical growth and developmental level of the bone system, the balanced growth and the level of coordination could be disturbed. So, they could be exposed to higher incidence of injuries. We have to remember it when planning workload and the evaluation of the performance should be judged by the above-mentioned aspects. At the same time, some further aspects could be aroused,

e.g. with the earlier biological maturation no parallel changes in the mental, social and psychological maturation would take place. That could have an influence on the pedagogical methodology and the conflict management, as well.

## Conclusion

Secular trend mostly felt as though it would be just a theoretical case to speak and learn more about in respect of the different populations. However, it is a complex phenomenon with multiple causes to be occurred, manifested itself mostly in more rapid growth and maturation – characterized by the earlier menarche and the increased size of the body. One of the main reasons is thought to be the better nutrition and the better socio-economical environmental factors. Nevertheless, it could have a significant impact on many other areas of our everyday life.

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