

## **Secular Trend in Height Mirrors Socio-economic Changes: A Study of Adolescent Population From Zagreb, Croatia**

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**KEYWORDS** Body Height. Secular Trend. Adolescence. Socio-economic Factors. War. Zagreb. Croatia

**ABSTRACT** The aim of this study was to examine the height in adolescent population of Zagreb (15-19 years) and to evaluate possible impact of war on secular changes from 1990 to 2010. Randomly selected adolescents of both sexes were surveyed three times in that period, in 1990, 1997 and in 2010. Mean heights were compared between sexes as well as between surveys using the One-way ANOVA. ANOVA Tukey HSD post hoc test was used to determine which survey differed from the others. A trend of decline in height was present in all five female age groups. However, the differences were significant only for 15-year-olds, when comparing 1990 to 2010 survey ( $p=0.007$ ). The total mean height in girls, over the 20-year-period, decreased by 17.4 mm ( $p<0.001$ ). In contrast to that, boys' height did not change in a 20-year period. When put in a broader socio-economic context, the decline in height detected in 1997 might be a result of the worsening of living conditions during and after the Croatian War of Independence (1991-1995). However, regardless of economic stability that was established after the war, the mean age-at-menarche in 2010 declined in comparison to both 1990 and 1997, causing an earlier halt in the growth of long bones and shorter stature. These results are in concordance with recent hypothesis (Dubois et al. 2012) that the influence of the environment on height is less evident in boys than in girls.