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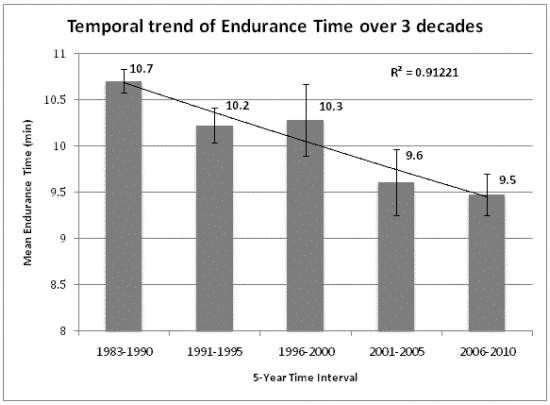
Trend in endurance level in healthy inner city children over a three decade period

Serratto M., Jamil O. (1), Morales Demori R.C. (2), Doukky, R. (3)
University of Illinois in Chicago, Chicago USA (1) Baylor College of Medicine, Houston USA (2)Rush University Medical Center, Chicago USA (3)

Introduction: With the increasing incidence of obesity and type II diabetes amongst youth in the past three decades, it is unclear how physical fitness and endurance has correlated with these trends. Understand how mean endurance time, a proxy for physical fitness, has changed in healthy individuals in the past 3 decades.

Methods: We reviewed the health records of consecutive apparently healthy Chicago city children who underwent an endurance test (Bruce Protocol) from 1983 – 2010. Patients with known cardiovascular conditions were excluded. Patients were divided in 5 groups in 5 year intervals based on the date of testing **[figure1]**. Endurance time, gender, race, age, and body mass index (BMI) data were collected.



Results: We identified 436 children (mean age 12.6 ± 3.2 yrs, 57% male). There was a significant difference in the mean endurance time between groups of 5-year intervals (P<0.001) with endurance time being shorter at later testing years **[figure1]**. The endurance time was inversely correlated with the year of testing (Spearman's r =–0.274; P<0.001). In contrast, there was no significant difference in the distribution of BMI between testing date 5-year intervals (P=0.205). Multivariate linear regression model demonstrated that the date of testing, in 5 year intervals, was independently predictive of endurance time adjusting for BMI, race and gender and age (P<0.001). BMI was the strongest independent predictor of endurance time (P<0.001), followed by race (P<0.001), age (P=0.001), and gender (P=0.01).

Conclusions: There is a downward trend in endurance time over the 27 years period among inner city kids. Temporal decline in endurance time was independent of factors known to be associated with endurance time such as BMI, age, gender, and race. BMI alone cannot fully explain the downward trending exercise time. Thus, factors such as deconditioning due to sedentary lifestyle and lack of motivation to endure on the treadmill among later generations may play a role in such decline.