Physical Medicine-2013
OMICS Group Conferences
Accelerating Scientific Discovery
International Conference and Exhibition on
Physical Medicine & Rehabilitation
August 19-21, 2013 Embassy Suites Las Vegas, USA

Physiological differences between Ethiopian and Caucasian distance runners and their effects on 10km running performance

Omri Inbar

Zinman College, Wingate Institute, Israel

Abstract

Objective: Ethiopian athletes currently dominate long distance running events in Israel. In an attempt to explain the apparently superior running ability of Israeli Ethiopian athletes at distances > 5 km, we compared anatomical and physiological measurements in the fastest 21 Israeli Caucasian (CA) and 22 Israeli Ethiopian (ET) long distance runners with similar mean age, years of training, and weekly volume of training.

Methods: Two to six months prior to or following official 10 km track race, subjects underwent an incremental maximal and sub-maximal exercise testing in an attempt to identify which of the measured anatomical and/or physiological variable/s explain best the success of the of Israeli Ethiopian long distance runners. Results: The ET runners were significantly shorter and lighter and possessed a lower BMI than the CA runners. Whereas mean $\dot{V}O_{2\,peak}$ (ml/kg/min) was 10.3% lower in the Ethiopian runners ($p=0.007$), their mean 10,000 m run time was 6.2% faster than their Caucasian counterparts ($p<0.001$). Although anaerobic threshold-related variables were similar in the two ethnic groups, the Ethiopians' running economy (cost) was significantly higher than that of the (CA $\dot{V}O_2$ sub = 40.3 vs. 45.5 ml/kg/min in the ET and CA respectively) ($p>0.001$).

Conclusions: The results suggest that factors associated with running cost, independent of body size, play a crucial role in the performance of 10km running. The results also suggest, though indirectly, that genetic and early life phenotypic factors are more dominant than later-life environmental factors (including training) at the 10km performance level.

inbar@wincol.ac.il