

Open letter to all authorities and institutions involved in managing curricula of physical education in Brazil

Ladies and gentlemen,
Dear editors and readers of EIR

Brazil is just about to experience a unique moment in its history, as greatest sports events worldwide (i.e., the World Cup Football-2014 and the Olympic Games-2016) will be carried out here. These events could be a sort of free advertisement making possible a significant dissemination of physical exercise among the population, which may improve the Brazilians' health. The Brazilian government, by launching the program "Academia da Saúde" (Health Fitness Center) in 2011, pointed out that regular physical exercise is going to be promoted as a tool to fight many diseases, among them type 2 Diabetes Mellitus (DM-2), cancer, obesity and high blood pressure. To complete this whole positive scenario, the first Brazilian Symposium of Sport Immunology has happened in the beginning of 2013. In this perspective, Physical Education curriculums may be outdated concerning exercise immunology.

In history, the Brazilian curriculum of Physical Education always has been influenced by socio-political-economical aspects. While Exercise Immunology, since its emergence as new discipline more than 20 years ago has been drawing ever growing attention and recognition worldwide, it has failed to make its way into the teaching programs of our physical education students. In a recent survey we found less than 0.6% (4/695) of all relevant curricula to include Exercise Immunology. Given the enormous role Exercise Immunology has in exploring the beneficial effects of exercise in prevention and therapy of epidemical diseases like DM-2 or others, we think that this situation needs to change fundamentally and that the moment to propagate entering Exercise Immunology into the curricula of the relevant institutions in Brazil is just now.

Let's not forget that lack of exercise in patients having one or more of the above mentioned exercise responsive diseases is associated with enormous direct and indirect costs for patients, insurances and government and with drastically reduced quality of life.

Epidemiological studies carried out in projects involving humans, as well as animal models, point out relevant findings, as the production of different interleukins during physical exercise (aerobic and or anaerobic) by the skeletal muscle. Also, there is an increase in the efficiency of antigen presentation by dendritic cells and macrophages, increasing the production of IL-12 (2) and expression of MHC-II (3). At the same time, lymphocytes and macrophages from aerobic exercised mice improve their efficiency by producing more pro-inflammatory cytokines (e.g.: IFN- γ , IL-12, TNF- α) when stimulated by LPS and/or *Leishmania* major (2). Concerning cancer studies related to physical exercise, it was verified that, after performing two weeks training of moderate aerobic physical exer-

cise and inoculation with Ehrlich tumor cells, mice presented lower weight and volume of the tumor and less macrophage infiltration and neutrophil accumulation than animals that did not perform any kind of physical exercise and/or performed high intensity physical exercise (1).

These immunological features acquired in consequence of physical exercise give the organism considerable power to improve physiological mechanisms against cancer cell and pathogen susceptibility.

Thus, in Brazil we see the necessity to increase research and detailed teaching of the benefits of regular exercise in promoting health and protective immunological responses. This should enable and encourage physical education students to drive this knowledge to their practices. In this context, the inclusion of Exercise Immunology as subject into the curriculum of Physical Education students seems mandatory, especially for those enrolled in bachelor programs.

Sincerely,

Miguel J.S. Bortolini
 Ismair T. Reis
 José R. Mineo

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