



Physical Inactivity: The Lethargy of the Genetic Modifications and the Speed of the Socio Cultural Transformations

Álvaro Adolfo Duarte Alberto¹, Sarah Karolina Mendonça Lamarão¹, Dirley Cardoso Moreira¹,
Andreia Pinheiro de Carvalho¹, Diego Felipe de Oliveira Assis¹, Anariene de Brito da Silva¹,
Aylton José Figueira Júnior²

¹Federal University of Amapá, Brazil

²University São Judas, Brazil

***Corresponding Author:** Álvaro Adolfo Duarte Alberto, Department of Education, Federal University of Amapá, Brazil.

Abstract: *In the primitive societies the physical movement, which today can be called physical activity, was always present in the man's daily practices. However, the discovery of the agriculture and, more recently, of the industrial and technological revolution, they brought multiple and complex consequences at the social, demographic and economical level and, consequently, a growing increase of the non-communicable diseases, a phenomenon that can be associated to the growth of a physically inactive way of life. Before this scenery, there appear interventions of regular practice of physical activities. However, these intervention strategies don't seem to be very efficient because they consider only the biological biomechanical or psychological variables, so other factors of different dimensions like intrapeople, interpeople, social, cultural, economical and environmental, are associated to active behaviors physically. So, the objective of this paper is to discuss the different factors that might explain the adherence to the practice of regular physical activity in urban contexts to direct behavior changes for an active life. So, the current human being is a sort of unplanned hunter-collector, moved to a different built society of that for which his genetic constitution was planned.*

Keywords: Ancestral Man, Physical activity, Genetic constitution Current society.

1. INTRODUCTION

In the primitive societies the physical movement, which at present is possible to call of physical activity, was always present in the Man's daily practices. His survival was associated to his physical capacities in getting food, water and shelter, which made it a very active being [1].

Progressively, with the discovery of the agriculture and, more recently, the industrial and technological revolution, they mark moments of sudden alterations, with multiple and complex consequences at the social, demographic and economical level and, consequently, of health. These dynamic news of the socio urban context turned in growing increase of the non-communicable diseases, a phenomenon associated to the growth of a physically inactive way of life that characterizes the modern cities, it has been constituting one of the great preoccupations in public health in the present. When the *Homo sapiens* is a species genetically drawn for an active life, the technological revolution and the town planning combined are too recent to have provoked any genetic adaptation.

When the physical inactivity was considered as an abnormal behavior for a genetic constitution planned for a physically active life and that the transformations cultural happen in the quite accented form, the modifications of the active behaviors to inactive apply for the understanding of the nature and of the individuality of the human being. This leads to believe in the necessity of explanations of the effects that the different genetic factors and cultural they have to add about the adoption of healthy behaviors on the current days.

So, the objective of the present test is to discuss the different factors that might explain the adhesion to the practice of regular physical activity in urbane form contexts to direct behavior changes for an active life.

2. THE EVOLUTION OF THE PHYSICAL INACTIVITY AND THE DECLINATION OF THE ENERGETIC EXPENDITURE

The change from an active to an inactive life of the Homo sapiens took place approximately about 10 thousand years ago, due to climatic transformation allowing, like so, the beginning of the food production, replacing the nomadic way of life for the sedentarism. Informations of several areas of the knowledge, as of the Anthropology, Geology, Climatology, among others, allows to affirm that the evolution in the direction of the physical inactivity prosecutes in function of an association of factors with consequences determinative for the human sort [2].

The introduction of the agriculture and of the animal domestication is deeply associated to the only transformation in the human societies that, up to that time, were essentially nomadic. These evolutionary transformations mark progressively the desertion of a subsistence based on plants, seeds, fruits and roots, with low fat and very rich in fiber and protein, for the increase of the consumption of meat [3].

Approximately 500.000 years ago, mankind dominated the controlled use of fire, considered essential in the evolution of the species, since with the benefit of the cooking the food became safer, with the elimination of many microorganisms, besides perfecting and creating tastes and increasing, drastically, the quantity of available energy for the human body.

With the possibility of producing of food with less effort for the animal use, in substitution of the human force, for the handling of the foods with the use of the fire, the physical inactivity was asserting itself to the active life of an ancestral Man, coming across in reduction of the energetic expenditure. For the ancestral nomadic Man, the search, selection and preparation of foods and clothes, which gave him low caloric ingestion and a high energetic expense. In the case of the modern Man, there's high ingestion of hypercaloric foods and also levels of daily stress against low levels of physical activity [4].

The dynamics of the socio urban context that took place from the last quarter of the XX century caused a sudden fall in the energetic expenditure with consequences in the increase of the predominance of the chronic non-communicable diseases like the cardiovasculars, colon cancer in women, gallbladder disease, metabolic syndromes and obesity, reducing the life expectancy, being straightly linked to nearly 9% of the premature deaths [5].

Therefore, it is suitable to point out that the effect of the urbanization on the way of life, in evolutionary scale not accompanied by genetic and physiologic changes, seems to have promoted similar results in different countries. The alterations in the habits of physical activity and of food, probably, are the great promoters of chronic diseases.

3. THE GENETIC CONSTITUTION PLANNED FOR THE PHYSICAL ACTIVITY

The hominids' history shows what the human genome haven't changed much, in other words, the tax of spontaneous change is low, being of approximately 1×10^5 for the Homo sapiens and 1×10^6 for the modern Man [3]. What in fact is changing there are the habits and way of life of the modern Man. Since the genome of the human being was planned for the regular practice of physical activity, the physical inactivity, nevertheless, is able to bring an abnormal genetic expression. It would appear like the million years of the hominids' existence and the ten thousands of years of the Homo sapiens, adapted to intense daily physical activity, were not sufficient to accompany the significant alterations in the way of life of the modern societies.

Being the evolutionary process characterized by a combination of the continuous production of small random changes and of natural selection of the variants better adjusted to his environment to the human race, through natural selection it optimizes the genetic constitutions better suited to the local environmental conditions that are maintained stable during a considerable period. However, as the way of life was altered quicker than the biological evolution would be able of accompanying, these circumstances include losses of ancestral properties and profit of behaviors and realizations usually included in the culture. These evolutionary consequences, in the cultural extent, deeply altered the balance between the way of life and the environment. These modifications that happened straightly in the physical activities patterns, in the health and morbidity of the human populations [6].

In spite of the fact that there is a considerable hereditary component in the determination of the risk of diseases of the contemporary societies like Type 2 diabetes, obesity and high blood pressure, which are genetically determined and can even justify differences of predominance between populations, the body's response to the physical inactivity has evidenced that the transition is epidemiological, not genetic [7].

Therefore, the physical inactivity can be explained by its association to the risk factors of diseases like cardiovasculars, diabetes, hyperlipidaemia, coronary disease, several heart valve disease and strokes. Thus, when it is taken into account that the cultural changes that occurred in the current societies were quick enough to provoke an imbalance between the genetic constitution and the environment, the only way of recapturing the lost balance is adopting behaviors that allow the human physiology and metabolism to have, nowadays, the adaptive value that it had for our ancestors.

4. PHYSICAL ACTIVITY: THE RECONQUEST OF MOVING OF THE ANCESTRAL MAN

The role of the physical activity consists of the reconquest of our adaptive normality for the variety of physiologic, anatomical and behavioral parameters that maximize the survival of the individuals in certain environmental contexts. Although the physical activity benefits the preservation and reintegration of the human health, a biological necessity of the human being, the low levels of physical activity of the modern times can be explained by the effects of the urbanization, resulting from the enjoyment of new technologies, which brought other aspects to the way of life, resulting in the increase of the population and in the reduction of the free spaces [2]. These two phenomena were associated to the mechanization of the work and of the leisure and contributed to the establishment of an essentially sedentary, hypokinetic and obese society. This group of factors is responsible for the designated diseases of the modern society.

Since the bodies of the human beings are not genetically modified by themselves, the reduction of the risks to the health seems to be the adoption of way of life that increases the levels of physical activity significantly. To face this scenario, intervention strategies appear in order to decrease the risk behaviors. However, these strategies are turned mainly on models and theories that hardly describe the influence of the biological, biomechanical or psychological variables on behavior, since interventions based on these models have minor and short-term effects, in addition to reaching relatively few persons, which interventions obstruct in population levels.

Since the physical activity practice is a complex behavior that requires a multi and interdisciplinary understanding and an absorption of informations originating from several areas of the scientific knowledge, arises the necessity not only of identifying, just as of classifying the different variables and complexity that can influence the regular practice of physical activity.

In the attempt to determine behaviors that could enhance healthy life habits it is possible that factors like age, sex, level of health, self-efficacy and motivation, as well as the knowledge of theoretical approaches that use a comprehensive framework to explain that the individual, social, environmental and politic determinants are related to the physical activity [8].

Considering that the biological, social, psychosocial and environmental factors are not isolated and have a strong link with the level of population physical activity, Sallis et al., [9] propose the Ecological Model in order to explain the complexity levels of behaviors, from institutional individual and social factors, from the community, the environment and political factors. According to Florindo and Hallal [10], a particularity found in the ecological models regarding the other is the identification of the physical, social and cultural factors of the environment that along with intrapersonal factors, can influence the behaviors regarding the health, like the physical activity, food and preventive conducts.

Through this model one understands that the different determinants levels (individual, interpersonal, environmental, regional, national and global politics) and the interaction between them they are responsible for the adoption of active behaviors physically [8].

The individual variables understand the characteristics of the biological factors like age, sex, the ethnicity and the genetic predisposition that aim to understand the dynamic relation between these

factors and the environmental and their influence in health. These factors are not changeable, therefore, are not susceptible to prevention. Regarding the interpersonal variables, like level of analysis, they are determined by the social support that is characterized by family, friends, work and cultural standards of organization, responsible for the stratification of the groups according to the levels of income, schooling, profession, place of dwelling and other factors that influence the perceptions and ways of life of the people [11].

Regarding the environmental, these variables consider the social support (public security, vehicles traffic); the built environment (sidewalks, public transport, parks and recreational structures, walking sites, pedestrians security) and; natural environment (topography, climate, national parks, trails, routes to walk) like determinants in the adoption of healthy behaviors. Therewith it is possible to point out that the interaction of the person with the environment does not follow the tight form of analysis, they are interconnected and are prosecuted in the physical, social and cultural dimensions and of its influence on the behavior. And the variables related to the regional, national and global politics refer to the urban projection and architecture; leisure and sport parks and; policies of health, education and usual practice of physical activity. Thus, the effectiveness of the interventions to promote people to be more physically active depends on an actions strategy with the intention of investments in the reduction of the social exclusion and to make cities susceptible of living in with comfort, pleasure and security.

Therefore, the effects of the political, economic and sociocultural structure of adaptation to the environment can be predicted, identified and interpreted in the more intense form in the relation with the behaviors and healthy ways of life. However, the personal variables depend on the physiologic adaptation, on the beliefs and on the motivation in the projection of the actions, expressed in terms of the behavior of the people in front of a specific situation.

5. FINAL CONSIDERATIONS

Current urban societies present a discrepancy between the levels of physical activity and food abundance, just the opposite of the ancestral communities of hunters and collectors where the food shortage was recurrent and the physical activity was constant.

The evolutionary process from a way ancestral of life, characterized by genetic constitutions well-adjusted for the intense physical activity, in the standards of consumption of the current societies, brought to the modern Man behaviors and ways of life prone to a strong growth of the morbidity associated to non-infectious diseases and chronic degenerative diseases.

Considering the lethargy of the genetic alterations and the speed of the sociocultural transformations, it is possible to point out that the only way to recapture the adaptative normality is the adoption of ways of life that restore the balance between the current habits and the evolutionary past. This reconquest applies for the understanding of the nature and of the individuality of the human being and the explanation of the effects that the different genetic, environmental and sociocultural factors they have to add knowledge about the adoption of healthy behaviors on the current days. Ergo, the current human being is a displaced hunter-collector moved for a different built-up society of that for which his genetic constitution was planned.

REFERENCES

- [1] Couto, M. A. S. (2011). O recreio escolar como promotor de atividade física: um estudo com crianças do 1º ciclo do ensino básico. 123 f. Dissertação (Mestrado em Estudos da Criança) - Instituto de Educação, Universidade do Minho, Portugal.
- [2] Prista, A. (2012). Sedentarismo, urbanização e transição epidemiológica. *Revista Científica da UEM*, 1, (1), 28-38.
- [3] Teles, K. I., Belo, L. A., and Silva, H. M. (2017). Efeitos da alimentação na evolução humana: uma revisão, *Conexão Ciência*, 12 (3), 93-105.
- [4] Gottlieb, M. G. V., Cruz, I. B. M., and Bodanese, L. C. (2008). Origem da síndrome metabólica: aspectos genético-evolutivos e nutricionais. *Scientia Medica*, 18 (1), 31-38.
- [5] Lee, I. M., et al. (2012). Effect of physical inactivity on major non communicable diseases worldwide: an analysis of burden of disease and life expectancy. *The lancet*, 380 (9838). 219-229.

- [6] Gottlieb, M. G. V., Morassutti, A. L. M., and Cruz, I. B. M. (2011). Transição epidemiológica, estresse oxidativo e doenças crônicas não transmissíveis sob uma perspectiva evolutiva. *Scientia Médica*, 21(2), 69-80.
- [7] Souza, E. R., Nascimento, J. V., Azevedo, E. S., and Pereira, B. O. (2015). Educação física, lazer e saúde: interfaces ao desenvolvimento humano. Florianópolis: UDESC.
- [8] Bauman, A. E., Reis, R. S., Sallis, J. F., Wells, J. C., Loos, R. J., and Martin, B.W. (2012). Correlates of physical activity: why are some people physically active and others not? *The Lancet*, 380 (9838), 258-271.
- [9] Sallis, J. F., et al. (2006). An ecological approach to creating active living communities. *Annual Review of Public Health*, 27 (1), 297-322.
- [10] Florindo, A. A., and Hallal, P. C. (2011). *Epidemiologia da Atividade Física*. São Paulo: Atheneu.
- [11] Geib, L. T. C. (2012). Determinantes sociais da saúde do idoso. *Ciência & Saúde Coletiva*, 17 (1), 123-133.

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