PHYSICAL ACTIVITY v/s CHRONIC DISEASES

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ABSTRACT

Now a days, the diseases are influencing everybody's daily life which definitely hampering the joy and happiness among family and societal life. It has been widely observed that the diseases and unhappiness in life are mainly due to inactive lifestyle. The regular physical activity enhances the span of life with happiness. Therefore, it is said that Physical Activity Adds Years to the Life but also Adds to the Life. The Physical Activity changes the Physiological Potential and also improves the Metabolism. The other serious part of Inactive lifestyle is developing of diseases and at the later stages; these may be converted to the chronic stage/s. The regular physical activity improves are sorts of performances and decreases the illness and deformities.

Introduction

Have you ever heard about the expression: "Use it or lose it"? It's true! If you don't use your body, you will surely lose it. Physical inactivity is an upcoming and drastically growing public health problem which contributes to a variety of chronic diseases and health complications. Our society is currently at war against the ominous enemy of chronic disease. Chronic disease presents a heavy burden to society, in terms of both medical costs and human suffering. Exercise intervention is a vital and potentially effective weapon in the war on chronic disease. But, unfortunately exercise appears to be the least used weapons as much of the medical community under-practices primary prevention as it pertains to appropriate levels of physical activity for health and much of the research community under values the importance of understanding the cellular, molecular, and genetic bases of diseases caused by physical inactivity.

For many, exercise is viewed solely as a research or diagnostic tool and not as a true weapon against chronic disease. In reality, however, exercise attacks the roots of chronic disease, that is, physical inactivity. For us to follow a common battle plan there is an apparent need to convince the medical community that chronic disease is rooted in physical inactivity.

All that we can do, is to keep steadily in mind that each organic being is striving… that each at some period of its life, during some season of the year, during each generation or at intervals, has to struggle for life and to suffer great destruction. When we reflect on this struggle, we may console ourselves with the full belief that the war on nature is not incessant, that no fear is felt, that death is generally prompt, and that the vigorous, the healthy, and the happy survive and multiply. (Charles Darwin, the Origin of Species)

From Darwin's work, we have now accrued the scientific basis for the notion of how environmental forces directly modify the fates of genes and how in turn that inextricable connection remains intertwined and integrated with our day-to-day existence. Modern *Homo sapiens* are still genetically adapted to a pre-agricultural hunter-gatherer lifestyle because the overall genetic makeup of *Homo sapiens* has changed little during the past 10,000 years . Hunter-gatherer societies likely had to undertake moderate physical activity for more than 30 min each day to provide basic necessities, such as food, water, shelter, materials for warmth, and so forth, to survive. One can speculate, although not prove, that any phenotype preventing a hunter-gatherer from engaging in physical activity would increase the likelihood of the random elimination of this organism or its offspring at some time. On the other hand, a phenotype that would support moderate physical activity by allowing a greater capacity for flux of substrates for Adenosines Tri – Phosphate (ATP) production to fuel physical work would have been more likely to survive, and its gene pool would be transferred to future generations. In essence,

we are extending Darwinian thought to include a concept that random elimination is less likely to occur during the hunter-gatherer era for phenotypes that had a high capacity to support increased metabolic rates during moderate physical work. Thus it is likely that many metabolic features of modern humans evolved as an adaptation to a physically active lifestyle, coupled with a diet high in protein and low in fat, interspersed with frequent periods of famine.

The weekly activity pattern of hunter-gatherers in this century followed what has been called a Palaeolithic rhythm of days of fairly intense physical activity that alternated with days of rest and light activity: men commonly hunted from 1–4 non-consecutive days a week with intervening days of rest and women routinely gathered every 2 or 3 days. Other activities involving physical labour included tool making, butchering and other food preparation, preparing clothing, carrying firewood and water, and moving to new campsites . Dances (often lasting hours) were a major recreational activity in many cultures, often taking place several nights per week. Skeletal remains from pre-agricultural hunter-gatherers showed that they had habitual activity that made them more muscular and stronger than post-agricultural society. Today, most humans are quite weak relative to our ancestors, possibly contributing to the premature onset of physical disability.

The estimated caloric expenditure of daily physical activity is much less today than in the hunter-gatherer society. Cordain et al. wrote that the current level of physical activity is "very likely, below the level of physical exertion for which our genetically-determined physiology and biochemistry have been programmed through evolution."

Adults in the present society have Late Palaeolithic pre-agricultural hunter-gatherer genes but live in a sedentary, food-abundant society whose appearance as a culture is less than 200 years old. Eaton et al. contend that there is now a mismatch between our ancient, genetically controlled biology and certain aspects of our daily lives. The thrifty phenotype is now disadvantageous in sedentary individuals who are allowed free access to food. They store fat in anticipation of a famine that does not come because food is available on demand. Some of those who develop obesity and Type 2 diabetes likely have the thrifty phenotype. Eaton et al. maintain that this discordance promotes chronic degenerative disorders that have their main clinical expression in the post-reproductive period and account for ~75% of deaths in the United States. We would also like to extend the concept of the maladaptation of the "thrifty phenotype" to the maladaptation of the "activity phenotype." Metabolic processes in the body have evolved to support physical activity. When physical inactivity is present during states of continuous feeding, there is a down regulation of the activity phenotype with the maintenance of the evolutionarily conserved thrifty phenotype. This would allow for a manifestation of metabolic dysfunction in the form of insulin resistance, which is an underlying part of syndrome X [the metabolic or insulin resistance syndrome of atherosclerosis, hypertension, and Type 2 diabetes.

The condition of physical inactivity often extends beyond a benign metabolic dysfunction to a pathophysiological condition. Human cells are maladapted to an inactive lifestyle. . Extrapolating from the Late Palaeolithic culture, one might reason that perhaps evolution has programmed phenotypes to undertake a quantity of metabolic fluxes to support a physically active lifestyle. During periods of inactivity, some metabolic processes involved in the oxidation of substrates could become underused with a consequent dysfunction in metabolic processes related to energy storage. Thus, the often-perceived notion that being sedentary has no adverse clinical effect has no biological basis to it and hence is false. However, it is likely that humans have an intrinsic biological requirement for a certain threshold of physical activity, with a sedentary lifestyle being a disruption of the normal homeostatic mechanisms programmed for proper metabolic flux needed to maintain health. Neel describes this process with the concept of "syndromes of failed genetic homeostasis" by increased periods of physical inactivity, which offsets the

necessary homoeostatic balance governing energy input and utilization and perhaps could ultimately lead to the chronic metabolic syndrome manifested as syndrome X. Thus it behoves the health of modern society to alter their environmental influences such that they maximize their "positive selection" and minimize "random elimination."

Conclusions

1. The realisation of the importance of Physical Activity definitely decreases the impact and negative effect on health status of every human being, irrespective of the cast, creed or resident of any climatic or geographic location.
2. Definitely, the understanding of importance and philosophy of physical activity, it also endorses the understanding about the individual differences. It should be considered while prescribing the loading of physical activity to a particular individual, in reference to his/her age, gender, and existing physical and mental health.
3. Chronic disease is an advance stage of any illness which may be rescued from the proper selection and implementation of physical activity, proven scientifically.
4. The regular practice of physical activity improves the quality of life to live happily.
5. The adoption of regular and suitable physical activity improves the active lifestyle and decreases the possibility of illness and diseases.
6. The practice of regular physical activity improves the happiness among the family and later on society.

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