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The Effects of Exercise, Physical Activity and Sport on the Immune System

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ABSTRACT

Physical activity is considered to be the most effective tool for promoting health and warding off many ailments. Humans are exposed to a variety of microorganisms during their lifetime, including parasites, malignant cells, including bacteria, fungus, and viruses. This exposure gives the immune system the capacity to distinguish between substances that the human body may accept or reject, which is in turn governed by antigens and antibodies. While antibodies are B-cell proteins responsible for recognizing and identifying the invader agent (i.e., antigen) to be neutralized or destroyed by the immune system, antigens are any material that the human immune system may recognize to stimulate an immunological response

Keywords: Physical activity, Immune system, Physical fitness, Physiological diseases, Health benefits

INTRODUCTION

Physical activity is considered to be the most effective tool for promoting health and warding off many ailments. Humans are exposed to a variety of microorganisms during their lifetime, including parasites, malignant cells, including bacteria, fungus, and viruses. This exposure gives the immune system the capacity to distinguish between substances that the human body may accept or reject, which is in turn governed by antigens and antibodies. While antibodies are B-cell proteins responsible for recognizing and identifying the invader agent (i.e., antigen) to be neutralized or destroyed by the immune system, antigens are any material that the human immune system may recognize to stimulate an immunological response. There are two possible effects of exposure to various pathogenic agents: either an improvement in immunological resistance or an escalation of the inflammatory response. The human immune system's responsiveness will be significantly influenced by lifestyle as we age. Higher fat levels are a natural consequence of inactivity and excessive consumption of hyper caloric energy. A number of linked disorders, including as cancer, diabetes, cholesterol, hypertension, cardiovascular and respiratory conditions, and other conditions are also more likely to develop throughout the course of a person's lifetime. This will be a concern for the public's health because the human body's decreased ability to elicit a powerful immune response is linked to health issues. Exercise-based therapies serve to strengthen the immune system by lowering oxidative stress linked to inflammatory-marker levels and strengthening the immune system's response. These treatments also enhance physical fitness, and they are recognized as critical therapeutic adjuvants in a variety of disorders. Additionally, there is a link between health, immune response, and physical exercise.

Age, physical activity, and immune system

Exercise and physical activity have a well-known positive impact on elderly people's independence and overall wellbeing. But as people age, they experience a number of changes, including a decline in functional fitness, alterations in body composition (such as an increase in fat mass and a decrease in lean body mass), the emergence of physiological diseases (such as the metabolic syndrome and its risk factors), and biochemical alterations (higher inflammatory levels). It's crucial to understand that ageing's physiological effects will compromise the immune system. Immuno senescence, or the steady reduction in immunological function brought on by the normal ageing process, is typically linked to the ageing process. Immunosenescence is complex and frequently results from exposure to several infections during one's lifetime.

Benefits of Physical activity

1. Management of Weight: Routines of physical activity and eating habits are both crucial to managing weight. When you consume more calories through food and drink than you burn, including calories burned through physical activity, you acquire weight.

2. Lower the Health Risk:

Condition of the Heart

The two main killers in the US are heart disease and stroke. You may have a lower chance of developing these diseases if you engage in at least 150 minutes of moderate physical activity each week. Further physical activity will help you lower your risk even more. Along with lowering blood pressure and raising cholesterol, regular exercise has other health benefits. Some cancers

Being physically active reduces your risk of getting numerous prevalent malignancies. Adults who engage in more physical acti vity had lower cancer risk.

Metabolic syndrome and Type 2 Diabetes

Your risk of metabolic syndrome and type 2 diabetes can be lowered by engaging in regular physical activity. A combination of having too much body fat around the waist, high blood pressure, low HDL cholesterol, high triglycerides, or excessive blood sugar is known as metabolic syndrome.

3. Boost Your Muscles and Bones' Strength: It's crucial to safeguard your bones, joints, and muscles as you age since they support your body and facilitate movement. Maintaining strong bones, joints, and muscles might make it easier for you to carry out daily tasks and engage in physical activity.

4. Boost Your Daily Activity Capability and Avoid Falls: Climbing stairs, doing the grocery shopping, or playing with your grandchildren are examples of daily activities. Functional limitations are conditions that prevent someone from performing routine tasks. Adults, who are physically active, whether they are middle-aged or older, are less likely to experience functional restrictions.

Strategies for diet, behaviour, lifestyle and hygiene

Avoid close contact with infected people in crowded, enclosed settings and refrain from sharing eating or drinking utensils to reduce pathogen exposure. Exercise should not be done in clubs or gyms with poor ventilation. Infected athletes should be kept apart by the medical professionals.

Limit hand-to-face contact (also known as self-inoculation) and thoroughly wash your hands often. The medical professionals should instruct the athletes to reduce the spread of pathogens to other people (e.g., sneezing and coughing into the crook of the elbow).

Adhere to additional sanitary rules to lower your risk of contracting any illnesses, such as condom use, safe sex, wearing open-toed shoes in public restrooms to prevent skin infections, applying insect repellents, and covering your arms and legs with clothing at dawn or dusk.

Keep up with annual influenza vaccinations and other necessary vaccinations for domestic and international travel.

Adopt practices that promote frequent, high-quality sleep.

Refrain from drinking too much alcohol.

Eat a nutritious, energy-dense diet to maintain a healthy weight, with a concentration on grains, fruits, and vegetables to supply enough carbohydrate and polyphenols to lower exercise-induced inflammation and enhance virus protection.