

The importance of nutrition and exercise in the management of chronic diseases: a critical analysis

La importancia de la nutrición y el ejercicio en el manejo de las enfermedades crónicas: un análisis crítico

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Abstract

Engaging in appropriate nutrition and physical exercise are two key factors in the prevention and management of various chronic diseases. Some of these diseases, such as cancer, diabetes and fibromyalgia, result in high mortality rates and high healthcare costs. The mechanisms of action and the optimal prescription of diet and exercise needed to obtain benefits remain elusive. A lot of information is available regarding the extensive benefits provided by these two aspects, however, current lifestyles (characterized by high levels of stress, easy access to ultra-processed food and new advances in technology) mean that it is a constant struggle to opt to lead a healthy life as this is often contrary to a social and busy life. In addition, individuals suffering from these types of diseases are reluctant to follow an exercise program because they deem it to be counterproductive for the improvement of their symptoms. For this reason, this critical view serves as a call to give more importance to nutrition and physical activity management in the fight against various chronic diseases.

Keywords: physical activity, cancer, diabetes, healthy lifestyle, fibromyalgia, obesity.

Resumen

El control de una correcta nutrición, así como la realización de ejercicio físico pueden ser dos factores clave en la prevención y en la lucha para el manejo de diversas enfermedades crónicas. Algunas de estas enfermedades como son el cáncer, la diabetes y la fibromialgia, derivan en altas tasas de mortalidad y suponen grandes costes sanitarios. Los mecanismos de acción y la prescripción óptima de dieta y ejercicio necesarios para obtener beneficios siguen siendo difíciles de alcanzar. Existe mucha información acerca de los grandes beneficios que estas dos vertientes generan, sin embargo, los estilos de vida actuales (altos niveles de estrés, fácil acceso a la comida ultra procesada y los nuevos avances en las tecnologías), hacen que todo este proceso hacia una vida saludable se vuelva en una lucha constante y un enemigo de nuestra vida social y caótica. Además, las personas que padecen este tipo de enfermedades son reacias a llevar a cabo un programa de ejercicio ya que piensan que será contraproducente para la mejora de sus síntomas. Es por ello que se hace un llamamiento a través de esta visión crítica de la importancia del manejo de la nutrición y la actividad física en la lucha contra diversas enfermedades crónicas.

Palabras clave: actividad física, cáncer, diabetes, estilo de vida saludable, fibromialgia.



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The importance of nutrition and exercise in cancer

Cancer is a major cause of mortality worldwide, accounting for 1 in 6 deaths, the most frequent being: breast, lung, colon and rectum, prostate, skin and stomach cancer. However, existing evidence-based prevention strategies (Marshall et al., 2019) highlight that physical exercise and proper nutrition provide two major approaches for prevention and the improvement of quality of life in cancer patients.

One of the primary battlefronts in the fight against cancer with regards to adjuvant treatment pertains to professional dietary advice. There is a quest for methods that can aid in boosting or at least maintaining energy levels and protein consumption as primary outcomes. Cancer cachexia, which is characterized by muscle protein depletion, is a serious medical condition frequently seen in cancer patients, and can be linked to insufficient nutritional intake. This condition can significantly affect patient quality of life, in addition to their ability to tolerate treatment and their physical function (Arends et al., 2017).

Individualized plans based on individual patients and the type of cancer will have highly positive outcomes regarding quality of life.

Exercise is generally well tolerated and safe for cancer patients, regardless of disease stage, in the same sense as it is for those who are able and willing to participate in physical activity (Lowe et al., 2009; Oldervoll et al., 2011). Recommended plans consist of three sessions per week of 10-60 minutes of moderate intensity exercise for under supervision or at home (50-75% of basal maximal heart rate or aerobic capacity). Physical activity improves cancer patients' ability to maintain or increase their aerobic fitness, muscle strength, health-related quality of life and self-esteem and, possibly, reduces fatigue and worry (Muscaritoli et al., 2021).

The importance of nutrition and exercise in diabetes

According to the American Diabetes Association (Association, 2004), high amounts of glucose or sugar in the blood are the hallmark of the chronic condition known as diabetes, which can have detrimental effects on one's health. Diabetes is divided into several categories, the most common being type 1 and type 2 diabetes, as well as gestational diabetes, which can develop during pregnancy. Diabetes prevention is one of the main strategies for its control and management, and maintaining a healthy lifestyle through nutrition and exercise are key measures to prevent the onset of this disease.

Research suggests that, even in the absence of meaningful weight loss, aerobic and resistance exercise can produce beneficial changes in skeletal muscle, adipose tissue and the liver to enhance insulin action (Colberg

et al., 2016). Similarly to the way in which low-volume training (with a weekly caloric expenditure of only 400 kcal) can improve insulin action in previously sedentary adults, regular aerobic exercise can increase muscle insulin sensitivity in people with prediabetes and type 2 diabetes, with increasing benefits seen with increasing volume (Dubé et al., 2011).

Nutritional management is critical in people with diabetes, as an appropriate diet can help prevent serious complications and maintain stable blood glucose levels. Nutritional therapy and continuous monitoring of carbohydrate intake are key strategies for maintaining healthy blood glucose levels, which can reduce the risk of complications such as heart disease, nerve damage and vision problems. It is important for people with diabetes to work closely with a healthcare professional to design an appropriate nutrition plan, alongside the right physical activity plan, tailored to their condition.

The importance of nutrition and exercise in fibromyalgia

Fibromyalgia (FM) is a chronic tissue disease that causes general skeletal muscle pain. In addition, other symptoms include fatigue, pain, depression, sleep disorders and anxiety (Wolfe et al., 2016). This has implications for physical and mental strength. At the present time, there is no cure for fibromyalgia (Borchers & Gershwin, 2015). Treatments to temporarily relieve pain are, therefore, of huge importance.

In addition, fibromyalgia patients often use a wide variety of medications, from antidepressants, selective serotonin reuptake inhibitors and serotonin-norepinephrine reuptake inhibitors, to morphine and other potent analgesics, as methods of brief pain relief (Harris & Clauw, 2008). However, strength training and physical activity are other palliative treatment methods that have been explored more recently.

Numerous studies have indicated that strength training has positive physical and psychological effects in patients with FM. Such effects include decreased pain, fatigue, depression and anxiety, as well as improved sleep quality, muscle strength, functional capacity and quality of life (Andrade et al., 2019; Bañuelos-Terés et al., 2022; Larsson et al., 2015).

In addition, nutrition plays a key role in the management of this disease. Despite this, no specific nutritional guidelines exist for the treatment and/or prevention of this disease. Some proposals focus on reducing inflammation through the restriction of various foods, as well as the inclusion of various food supplements with potential for alleviating symptoms, such as the intake of Vitamin D (Yang et al., 2023), probiotics (Cardona et al., 2021), following a vegetarian or vegan diet (Nadal-Nicolás et al., 2021), antioxidant supplementation (Mehrabani et al., 2019),

following a gluten-free diet (Slim et al., 2017) and the use of synbiotics (Hinchado et al., 2023).

When it comes to reflecting on and conducting a critical analysis of the present state of the issue, few studies exist that have analyzed nutrition and the optimal type of exercise for tackling this type of chronic disease. This may be due to the diverse and individual nature and symptoms of patients. Nonetheless, prevention is in our hands through education, nutrition and the inclusion of a physical activity program capable of reducing the emergence of this type of disease, whilst also promoting the health and physical and mental well-being of individuals.

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