



Types of physical exercise based on the side effects of each oncological patient


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Dear Editor:

There are numerous treatments for cancer, although the most common are surgery, radiotherapy, chemotherapy and target therapies such as immunotherapy or endocrine treatment (Casla-Barrio, 2018).

Each type of therapy acts in a specific way against the tumour and affects each patient differently. This explains the variability of side effects. In addition, their accumulation or the previous health status of each patient also affects the type and degree of side effects of each patient (Casla-Barrio, 2018).

We can find numerous side effects, although we divide them into different groups (Schmitz, 2010). There are different physiological changes that affect how the body functions, in which we find metabolic alterations, increased inflammation, decreased functionality of the immune system or hormonal alterations (Casla, 2015; Kroschinsky, 2017).

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Among the most important physical changes is the impact on functionality, the decrease in cardiovascular capacity or changes in body composition, highlighting the loss of muscle mass, the increase in fat or the decrease in the amount of bone mass (Casla-Barrio, 2018).

We also see other side effects such as peripheral neural damage, memory loss such as chemo brain, increased risk of cardiovascular diseases, and decreased mood. These side effects are affected by the impact that cancer has on the economic, social and family level (Casla, 2015; Casla-Barrio, 2018).

Different types of exercise have been shown to be effective in reducing the side effects of treatments. This is because exercise acts in different ways, improving the health levels of patients after treatments. They stand out among them (Friedenreich, 2012; Pollán, 2020):

- Regulating surrounding oestrogen levels by reducing fat levels
- Increased sensitivity to insulin which reduces the levels of growth factors associated with this hormone.
- The increase in mitochondrial biogenesis, which improves the functionality and metabolic activity of the muscle, preventing it from degrading, and protecting the central and peripheral nervous system.
- Reduces oxidative levels and protects the structures that provide stability to the genome.
- Improves the activity of the immune system and reduces overall inflammation in the body.
- Improves cardiac functionality.
- Improves peripheral irrigation and improves the functionality and structure of the cardiac pump, which directly reduces the risk of long-term cardiovascular problems.

This means that exercise helps to recover patients' health and quality of life during and after treatments (McTiernan, 2019; Doyle, 2021).

We already know that the ACSM has established a minimum recommended dose for cancer patients that consists of combining cardiovascular exercise, 3 days a week, 30 minutes of moderate intensity (between 70 and 85% of the maximum heart rate), with strength exercise 2 days a week, including 2 blocks of global exercises that include between 8 and 15 repetitions at 60% of maximum resistance. The circuits must contain different types of exercises for the large muscle groups and their number must be adapted to the level of each patient (Campbell, 2019).

In this sense, it is recommended that exercise programs also contain neural, proprioceptive and balance exercises as a basis for the regeneration of peripheral neural activation (Pollán, 2020).

Finally, high metabolic intensity must be included, since it is essential to regenerate the number of mitochondria, reduce body fat or improve the functionality of the cardiac pump (Saber, 2017).

In addition to all this, we must take into account the initial situation of each patient. In the review published by the Spanish Society of Medical Oncology, recommendations for initial intensity are established depending on the stage of the disease in which each person is. This intensity should be adapted as the patients evolve or the physical, physiological or emotional situation of each one (Pollán, 2020).

Knowing the pathophysiological characteristics of side effects and cancer are essential to be able to implement quality oncological exercise programs that truly impact the patient's health. We already know that

doing “*something*” is not enough, just as we must try to do exercise adapted to the needs of each patient (Schmitz, 2019).

However, another essential challenge is to be able to implement these programs and help patients through appropriate structures and objectives to maintain motivation in exercise, in order to ensure that patients remain active in the long term (Schmitz, 2019).

Keywords: Physical exercise, Physical activity, Exercise, Cancer, Cancer prevention, Cancer treatments, Cancer survivors, Psychology, Sport medicine.

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