

## Role of physical activity program in the tertiary prevention of female breast cancer: a pilot study

Mirca Marini<sup>1</sup>, Daniela Mirandola<sup>2</sup>, Guido Miccinesi<sup>3</sup>, Maria Grazia Muraca<sup>3</sup>, Eleonora Sgambati<sup>4</sup>, Marco Monaci<sup>1</sup>

<sup>1</sup> Department of Anatomy Histology and Forensic Medicine, University of Florence, Florence, Italy.

<sup>2</sup> Lega Italiana per la Lotta contro i Tumori (LILT), Florence, Italy.

<sup>3</sup> Cancer Research and Prevention Institute (ISPO), Florence, Italy.

<sup>4</sup> Department of Sciences and Technologies for Environment, University of Molise, Pesche, Italy.

Physical activity is recognised internationally as a key factor in breast cancer prevention that is worldwide the major cause of cancer incidence and mortality in women. It is likely that physical activity is associated with decreased breast cancer risk via multiple interrelated biologic pathway that may involve adiposity, sex hormones, insulin resistance, adipokines and chronic inflammation (Recent Results Cancer Res, 2011). Although women diagnosed with breast cancer are living longer for treatment improvements, concerns about functional limitations, recurrence and survival remain paramount. Recent researches support the beneficial role that physical activity plays in reducing the risk for developing breast cancer and preventing or attenuating disease and treatment-related impairments (Methods Mol Biol, 2009). Post-diagnosis physical activity has been associated with improved quality of life and survivors should be encouraged to initiate and maintain a program of physical activity (Cancer Prev Res, 2011). However, actually it is not yet clear which duration, frequency and intensity of physical activities provide the benefits in primary or tertiary prevention; studies are also limited by incomplete reporting and methodological limitations (Cancer Treat Rev, 2010). We provided a physical activity program in breast cancer survivors (60 women; mean age  $59,5 \pm 9,8$ ) recruited by Cancer Rehabilitation Center in Florence to investigate the role of physical activity on psychophysical wellness. The subjects were evaluated at the baseline and after the 8-week study period. The anthropometric parameters were measured and the subjects underwent a battery of fitness tests to assess shoulder-arm mobility and range of motion, and back flexibility. All participants filled out numerical rating scale and Short-Form 12 questionnaires to quantify the pain intensity to back and the shoulder of the operated arm, and to assess the quality of life, respectively. Our results demonstrated that an organized specific program of adapted physical activity may be an effective countermeasure to reduce the adverse effects after surgery and oncological therapy.

Keywords: physical activity, breast cancer, tertiary prevention.