

## Actigraphy-based activity levels and anthropometric measurements in breast cancer survivors: effects of aerobic physical activity

Jacopo Antonino Vitale<sup>1</sup> - Eliana Roveda<sup>2</sup> - Andrea Caumo<sup>2,3</sup> - Letizia Galasso<sup>2</sup> - Eleonora Bruno<sup>4</sup> - Franca Carandente<sup>2</sup> - Angela Montaruli<sup>2</sup>

<sup>1</sup> IRCCS Istituto Ortopedico Galeazzi, Milano, Italia - <sup>2</sup> Department of Biomedical Sciences, University of Milan, Milano, Italia - <sup>3</sup> Research Centre of Metabolism, IRCCS Policlinico San Donato Milanese, Milan, Italy - <sup>4</sup> Fondazione IRCCS Istituto Nazionale Tumori, Milan, Italy

The research investments for the identification of modifiable factors associated with BC recurrences is increasing. Adiposity and other anthropometric indices have been acknowledged as factors involved in BC recurrences and mortality (1). Physical activity (PA) has the potential to counterbalance all of these risk factors (2). We designed a randomized controlled trial to test the effect of an aerobic PA program on anthropometric indices of adiposity and circadian rhythm activity level, evaluated by actigraphy, in BC women included in a dietary intervention trial for prevention of BC recurrences. 40 BC women, aged 35-70 years, were randomized into an intervention (IG=19) and a control group (CG=21). The IG participated in a 3-month active PA program that included two sessions of one-hour brisk walking per week. At baseline and after 3 months, both IG and CG were evaluated for the following parameters: height, weight, BMI, waist circumferences, % fat mass, % lean mass; energy expenditure and motion level (Total Energy Expenditure-TEE, number of steps, PA level, Metabolic Equivalents-METs) using a SenseWear Pro 3 Armband; and activity level circadian rhythm using the Actigraph Actiwatch. At the end of the 3-month PA program, IG showed a significant reduction in fat mass % while CG improved weight and BMI. The population mean cosinor applied to IG and CG at PRE and POST revealed the presence of a significant circadian rhythm in two groups ( $p < 0.001$ ). MESOR, Amplitude and Acrophase were not different in the two groups in pretest conditions. Amplitude decreased significantly between PRE and POST ( $F(1,38)=6.4$ ,  $p=0.02$ ). MESOR and acrophase remained unchanged. Our results suggest that a standardized PA program in BC survivors reduces anthropometric indices of adiposity and may represent an integrative intervention therapy able to modify behaviour.

### References

- [1] Pisani P. (2008) Arch Physiol Biochem 114: 63-70.
- [2] Mann et al. (2014) Diabetes Metab Res Rev. 30: 257-268.

### Keywords

Breast cancer; physical activity; actigraphy; anthropometry.