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Title: Usefulness of daily physical activity for monitoring therapeutic response in COPD

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Body: The level of physical activity during routine daily life is being recognized as an important parameter to assess therapy response in COPD patients. Markers of physical activity have been shown to correlate with mortality and with the number of hospitalizations and exacerbations of disease. Previous studies have shown data validating the use of accelerometers for objectively assessing the physical activity in COPD patients. We used a new type of accelerometer that can be easily carry while performing daily routine activities to assess therapy response in COPD patients. Twenty three stable COPD patients that consulted in our institution were enrolled in the present study. The diagnosis of COPD was done according to the criteria of American Thoracic Society. Informed consent was obtained from all subjects before entry. To assess the clinical value of physical activity to monitor therapeutic response, the patients were asked to carry an uniaxial accelerometry sensor fixed to their belts for 4 weeks before therapy; the patients were then asked to carry again the device for 4 weeks during treatment with a long-acting β2-agonist (indacaterol) by inhalation. The number of steps, the time in seconds of moderate or more degree of activity and the energy expenditure were significantly increased after treatment compared to before treatment in all COPD patients. Also, the metabolic equivalent of task was significantly enhanced after treatment with the long-acting β2-agonist compared to data before treatment. In conclusion, the results of this clinical investigation suggest the usefulness of measuring the daily physical activity for the assessment of therapeutic response in patients with COPD.