Chapter 21
Life Style Evaluation by Accelerometer

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ABSTRACT

The assessment of the Spontaneous Motor Activity (SMA) of the life style (LS) is fundamental to establish the daily Physical Activity (PA) dose as therapy. The recent employment the accelerometer (AiperMotion 440 PC – Aipermon GmbH – Germany), can immediately distinguish “active” from “sedentary” subjects providing a larger adhesion to the exercise program. The study aims to verify the role of the accelerometer. 28 obese-hypertensive were evaluated either by the questionnaire or by the accelerometer. A larger sedentary LS in the population investigated was found by the accelerometer respect of questionnaire. After three months of regular physical exercise, the body compositions parameters, investigated principally, resulted to be improved. The accelerometer determines a real and objective visualization of the LS expressed as PAL resulting on a direct early improvement of the parameters strongly related with the cardiovascular risk. The results support the educational role of the employ of the accelerometer.

DOI: 10.4018/978-1-4666-2979-0.ch021
ACCELEROMETER FOR LIFE STYLE EVALUATION: THE EDUCATIONAL ROLE IN A GROUP OF OBESE-HYPERTENSIVE SUBJECTS

Introduction

The daily evaluation of the life style is the first step to start with the “Exercise as prescription” that represents a new and helpful therapy in several kinds of patients. Particularly in subjects at high risk level, a correct investigation of the daily Spontaneous Physical Activity (SPA) in term of time, frequency, intensity and kind of exercise can play a relevant role to plan the “exercise as prescription” program (Lee, 2010; Brown & Siahpush, 2007). It has been proved that a correct life style is associated to a progressive reduction of acute events and increase of survival. It is reasonable to think that adequate life style can also produce a reduction social costs mainly in terms of drugs and also costs social assistance. The necessity to distinguish sedentary from non-sedentary subjects (Historical leisure activity questionnaire, 1997), a longer period of registration by an accelerometer, can verify the effective SPA and quantify the time spends to practice exercise at different level of intensity (Bravata, et al., 2007; Basset et al., 2010). It is note that the poor recognition of physical inactivity may be in fact an important barrier to improve the healthy behavior change (Ronda, Van Asserrna, & Brug, 2001). Respect of simple questionnaire, where the information of the life style are often summarized, the accelerometer can discover the presence of several “daily sedentary behaviors” and therefore can play an educational role promoting an improvement of the own LS (Klem et al., 1997; Melanson et al., 2004; Tudor –Locke et al., 2001). Particularly in case of ambulatory patients, where the main goal is to reduce the cardiovascular risks, the accelerometer, for its peculiar small size and easy employment, can be considered to better visualize the effective exposure to sedentary life style. It is reasonable to think that this kind of approach, applied at the onset of a program of exercise as therapy and whose intensity is often at the beginning difficult to establish, can be helpful toward a stronger of and objective realization of the real characteristics of own LS (Bravata et al., 2007; Tudor-Locke & Basset Jr., 2004). The aim of the manuscript is to highlights the role of accelerometer in identifying sedentary behaviors and also to quantify the immediate positive impact on the improvement of the main anthropometrics and body composition parameters. For this reason an investigation in a cohort of subjects at high risk level as overweight hypertensive subjects has been conducted. In consequence of this application, this popular tool, normally induce to motivate their Physical Activity (PA).

BACKGROUND

The use of wearable systems to measure physical activity are recently involved in several chronic disease (Beaglehole et al., 2007; Yach et al., 2004) in order to reduce the progression of these illness and to avoid the sedentarism. If the exercise is considered to play a relevant role in the management of the chronic diseases, in a parallel a valid outcome to measure of physical activity is in fact important in reducing the developing of chronic disease and delay the premature mortality at any age (Chodzko-Zajko et al., 2009). Several tools are available for measuring physical activity and literature supports the use of the accelerometer to better evidentiate the basic physical function instead of simple questionnaire. The oral investigation can contain a subjective judgment which leads to estimation of the daily habits. A recent development is the use of wearable motion sensing technology for studying human movement (Myers et al., 1993, de Bruin et al., 2008) based on a miniaturized motion sensors, widely approved in old
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