

Physical Activity Measurements in Sport Field: Objective or Subjective Measures?

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The benefits of physical activity have been extensively documented in the literature [1]. Despite these benefits, physical inactivity has been a global health issue in the last decade. Interventions to boost the physical activity level of individuals have been emerging [2]. These interventions often involve some physical activity measurements, such as using self-reported questionnaire to measure the duration and frequency of physical activity. The International Physical Activity Questionnaire is a well-established tool which assesses the physical activity of individuals in population-based studies. It assesses leisure time, work-related and transport-related activities. The duration and frequency of walking, moderate and vigorous intensity activities are also assessed.

The advantages of using questionnaire pertain to its low cost and non-invasive nature. However, it is subjected to some limitations, including the recall biases. Consequently, activity monitors which objectively quantify physical activity level are used to improve the objectivity of measurement. These activity monitors include heart rate monitor, pedometer and accelerometer [3]. Heart rate monitor assesses the cardio functions and reflects the intensity of activity in terms of heart beats per minute, whilst pedometer assesses the step counts accumulated in a specific period of time. Similarly, accelerometer records the body movements and expresses them as light, moderate and vigorous intensity of activity.

Objective measurements have been an essential part in a variety of epidemiological studies since they can avoid biases caused in subjective measurements, such as the recall bias. However, objective measurements are also subjected to some limitations. For example, heart rate is affected by emotions, whilst measuring step counts using pedometers are not suitable for those who walk at slow speed [4]. In addition, step counts only reflect walking but may overlook other

dimensions of body movement, including the movements from upper body. In contrast, accelerometer can assess body movement in multi-dimensions, but the reliability of accelerometers may also be affected by the intensity of physical activity being recorded [5]. The validity of objective measurements are also affected by the geographical characteristics of residents being examined [6], and the wearing time and non-wearing time of these monitors.

In recent years, some new brands of activity monitor emerge into the market, such as Garmin and Fitbit. These brands of activity monitors are more customer focused and user friendly. As technology advances, the limitations of activity monitor may be reduced and objective measurements will be playing an indispensable role in the sport field.

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