The ability to walk is an important prerequisite for the performance of many daily-life activities. However, people with movement disorders may face restrictions in their physical mobility. The goal of rehabilitation medicine is to minimize such restrictions, for example, by decreasing the physical effort of walking. This can be assessed by the measurement of energy expenditure (EE) during steady state of walking, using portable systems for metabolic gas-exchange. This assessment method is considered to be the criterion evaluation tool for this purpose, because it provides a means to objectively quantify the physiological strain resulting from pathological gait, and the outcomes are proven to be accurate, reproducible, and sensitive enough to detect clinically relevant changes in an individual patient. It is concluded that the assessment of energy expenditure during walking should be used as a clinical tool in rehabilitation medicine, to indicate and evaluate medical interventions that address walking ability.