

The CUELA system in use in clinical rehabilitation: Creation of a patient movement measuring system

Cooperation with Münster University Hospital

1 Optimizing the fitting of artificial limbs

After the one-sided amputation of a foot or lower or upper leg, the aim of providing a prosthesis and physiotherapy is to accustom the patient to a non-strenuous, energy-saving and unobtrusive gait in order to prevent follow-up disorders, e.g. from overstraining the healthy leg. To this end, measurements are required of the trunk and leg movements over a prolonged period extending from several hours to a whole day. Short-time measurements under laboratory conditions are widespread as "gait studies" in the clinical examination context. However, owing to the complexity of the movements, they are generally very difficult to interpret. Moreover, the laboratory situation can easily yield unrealistic results. The CUELA measuring system has therefore been adapted for use in hospitals and is currently undergoing long-time testing (Figure 1).



Fig. 1:
Patient with prosthesis and adapted
CUELA measuring system



2 Treatment of the diabetic foot

Before amputation becomes necessary, the foot tissue often incurs severe prior damage due to diabetic complications such as poor blood circulation, nerve damage or bone transformations. It has been shown that the movement behaviour of patients with a diabetic foot can affect the development of the disease. The CUELA system could be used here as a patient monitoring system for recording movement behaviour and plantar foot pressure distribution.

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