MOVEMENT ANALYSIS TECHNIQUE FOR THE SHOULDER COMPLEX

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Background

The shoulder is one of the most complex joints in the human body. It joins the arm to the trunk and is where the clavicle, scapula, and humerus meet. The shoulder allows for many movements, which is why pathologies related to it can limit a person's quality of life. Among the most widespread pathologies can be found shoulder instability: it is defined as the painful symptom the patient experiences when the shoulder does not remain in its normal and correct position.

Objectives

The objective of the research consists in the study and development of technique for the movement analysis of the shoulder complex suitable for specific patients and for the rehabilitation paths.

Methodologies

Human movement will be mainly evaluated with the optoelectronic system which consists of 10 cameras and optical passive markers. Moreover, inertial sensors, electromyography and devices for virtual reality will be used to complement the analysis. The subjects involved in the study will be healthy and pathological since the study will be conducted in collaboration with the orthopaedic unit of the 'Spedali Civili' of Brescia.

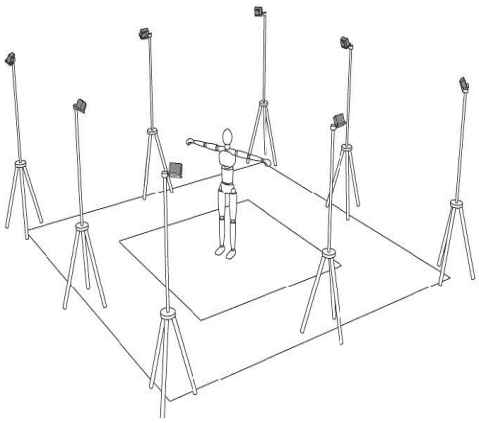

FIGURE 1. SCHEME OF OPTOELECTRONIC SYSTEM

Expected Results and Impact

The main expected results are:

- recognition of motor patterns typical of diseases of the musculoskeletal system;
- identification of personalized rehabilitation paths aimed at the use of low-cost wearable technologies with a view to telerehabilitation.