ential of augmented auditory feedback as a means to guide movement performance during training (Knowledge of Performance) and not, as is usually done, simply to signal the success of the trial (Knowledge of Results).

**Material and methods.** Sonification of arm movement can provide patients with auditory feedback relative to the ongoing direction of the movement, coordination between shoulder and elbow movement and/or motion smoothness. This implies the on line recording of the movement and quantifying of the related impairment in order to generate feedback which stimulates appropriate audio-motor coupling.

**Results.** We present a literature review of previous pilot studies of sonification for motor rehabilitation and our current exploration involving different types of sonification and musical metaphors usable in rehabilitation (including source-filters, concatenative/granular synthesis and physical model sound synthesis).

**Conclusion.** The perspective of sonification for rehabilitation will be discussed.

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**Upper arm of stroke patients: From kinematics recording to rehabilitation**


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**Keywords:** Stroke; Upper arm; Kinematics analysis; Rehabilitation; Video games

**Objectives.** Kinematics analysis allows quantitative and qualitative assessment of motor function of the upper limb. This method allows the recording of sensori-motor markers that can be used in rehabilitation to adapt the difficulty of the exercises applied to patients after stroke.

**Patients and methods.** Three successive studies conducted between 2011 and 2013 will be summarized. These studies rely on kinematics motion analysis through electromagnetic sensors.

**Results.** A first study of 13 hemiplegic patients in the initial phase of recovery has established the correlation between kinematics parameters and clinical scores. A second study conducted with 13 hemiparetic subjects and 12 healthy controls aimed to measure the anisotropy of the peri-personal space during pointing tasks. A third preliminary study focused on the interest of the use of kinematics data acquired during a video game session in seven stroke patients, in order to design difficulty self-adaptation software modules to automatically upgrade the difficulty of the game.

**Discussion.** These results confirm the importance of translational research involving researchers in the field of motor control and rehabilitation professionals.

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