

Oral presentation

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## The development of a novel biofeedback system for the evaluation, recording, control and correction of the spinal posture

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### Aim

The goal of this study was to develop a system which controls and records the posture and the spinal curvature for both diagnostic and therapeutic use.

### Background

The system consists of a sensor PCB (60 × 40 mm, 50 g) that is placed at the back of the patient, using an adhesive material. Biomechanical analysis (BMA) of the spine with the Spinalmouse<sup>®</sup> system was formerly used to show the abnormal levels of the spine and indicate the sensor's placement. The practitioner sets the neutral position (or reference position) and can monitor and record the patient's spinal posture in real time, for 12 continuous hours. The data is also stored in the sensor's memory and can be downloaded to a PC. The flexion and extension, as well as the lateral bending limits are set and an audio signal or a low electric stimulus, (feedback) warns the patient when he/she reaches them. How many times and how long the patient remained beyond the preset limits is also recorded.

### Patient population

To evaluate our system, 40 subjects (aged: 20 ± 5.4 y) with abnormal spine curves, participated in our study.

### Results

The BMA of the participants, before and after a 4 hours' session, showed a significant ( $p < 0.05$ ) improvement of

their posture. The participants gave  $8 \pm 2.3$  (max: 10 scale) score in their gratification.

### Conclusion

The system successfully works as an advanced biofeedback therapy method that enhances self-correction of the undesirable posture and as a diagnostic tool.

### References

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