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## Postural control deficit in acute QTF grade II whiplash injuries

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**Introduction:** Tetra-ataxiametric posturography in chronic pain patients after whiplash injuries of the cervical spine has revealed an impaired regulation of balance. However, so far it is unclear if this is caused by the accident or other factors that are associated with the pain chronification process. Studies with patients with acute whiplash injuries have not been performed so far. Therefore the objective was to investigate the balance control in patients with acute QTF grade II whiplash injuries of the cervical spine.

**Methods:** 40 patients with acute QTF grade II whiplash injuries and 40 healthy matched controls were examined in an experimental in-vivo study on a dynamic posturography platform. The stability index  $ST_{\Sigma}$  and the Fourier analysis  $FA_{\Sigma}$  (0.10-1.00Hz) were established for eight standing positions and sum scores were calculated. The pain index was established using a visual analog scale ranging from 0-100. A follow-up examination was conducted for the patients after two months.

**Results:** The patients with acute whiplash injuries of the cervical spine achieved significantly poorer results for both  $ST_{\Sigma}$  and  $FA_{\Sigma}$  than the healthy controls. There were no differences between the eight standing positions for both  $ST_{\Sigma}$  and  $FA_{\Sigma}$ . After two months 17 patients had no change in the pain development, 21 patients showed an improvement in the pain intensity and 2 patients deteriorated. The subgroup of patients with improvement of the pain intensity showed a significant improvement of the balance control concerning the  $FA_{\Sigma}$  C compared to patients with unchanged pain intensity.

**Conclusion:** Patients with acute whiplash injuries have a reduced balance control as compared to matched controls. This study indicates that acute posttraumatic neck pain could be associated with reduction of the balance control.

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