CO19-003-e
A clinimetric study of lateropulsion measure by Verticam for patients recovering from a stroke
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Keywords: Lateropulsion post stroke; Measure by Verticam

Introduction. After a cerebrovascular accident (CVA), clinical scales are used to qualitatively evaluate lateropulsion. Verticam is a system using a high-speed camera. It allows measuring lateropulsion quantitatively [1]. This study aims to analyze the clinimetric properties of this technique.

Methodology. The trunk orientation of 30 patients was measured by Verticam at 30 ± 3 days after their first hemispheric stroke (age = 62 ± 17.7 years; sex: 14f/16 M; lesion side: 14L/16R), and two days later. Seven patients had a SCP (Scale for Contraversive Pushing) score > 0.5, which is the proposed criterion for clinical lateropulsion diagnosis [2]. Verticam quantified the trunk lateral inclination thanks to a measure of the average orientation of a segment between two markers (T6 & L3) (negative sign if the inclination was contralateral). The measures were performed in a sitting position during 30s, eyes open. Seventeen controls (mean age 52 ± 10 years) were also tested. A non-parametric statistical analysis was performed.

Results. The average trunk orientation was −0.6 ± 1.3° within controls, which led us to set the pathological threshold to every measure below −3.5°. Surprisingly, the average orientation was not different within patients: −0.8 ± 7.8°. The trunk orientation of patients with lateropulsion characterized by SCP was not significantly different from other patients (−4.3 ± 15 vs 0.5 ± 1.9°, ns). One patient had a contralateral trunk inclination below −3.5°. The inclination measured by Verticam was not correlated with the SCP score (r = −0.29, P = 0.12). In patients, measures of trunk inclination two days apart were correlated (r = 0.52, P < 0.01).

Discussion. This technique for measuring lateropulsion seems to be unreliable.

References

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CO19-005-e
Postural adaptations to wearing safety shoes with convex soles
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Keywords: Posture; Soles; Workstation; Risk

Aim. Determine posturological effects of wearing different types of safety shoes meant to standing workstation optimization.

Material. Posturological data [coordinates (X, Y), Total Area (A), Anteroposterior and Lateral Magnitude (Ant-M et Lat-M), Length (L) and Velocity (V) of the Center of Pressure] were measured using a baropodometric platform (WinPod, sampling frequency: 200 Hz) while the forces (Fx, Fy et Fz) were measured by a force plate (AMTI, sampling frequency: 1 kHz).

Participants. Ten workers [age: 23.3 ± 6 years old, height: 1.80 ± 0.05 m, weight: 77.9 ± 8 kg, shoe size: 43–44].

Methods. Participants were asked to maintain three times 120s standing position over WinPod which was embedded over the force plate to ensure synchronized acquisition, according to the following modalities: barefoot, safety shoes with conventional standards (λ), safety shoes (OREGON), recognized as more comfortable than λ, safety shoes with convex soles, meant to be more ergonomic (MBT). An Anova with Fisher post-hoc was done in order to compare the 4 conditions. A level was set at α = 0.05.

Results. No significant variations were observed for X, Y and Lat-M. However, A, L, V and Ant-M were significantly higher when wearing MBT [F(3, 116) = 10.5; 94.3; 94.3; 9.5; respectively P < 0.05]. Only minimal Fy [F(3,116) = 11.6] and maximal Fy [F(3,116) = 6] absolute values were significantly higher (P < 0.05).

Discussion. The results of the current study shows that space-time parameters (A, L, V, Ant-M) were amplified while wearing MBT, probably due to increase in Fy [1,2]. Surprisingly, this was not the case of the center of pressure.
localization which was not varied according to all conditions. This phenomena seems to be a posturological adaptation which allows to avoid a possible decrease in balance. Moreover, that was corroborated by nearly stable values of Pf (P > .05) [3]. To conclude, MBT shoes seems to favour the activity of the stretch shortening cycle of the anterior-posterior muscular chains.

References

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CO19-007-e
The politics of falls prevention in pole ST Helier
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Keywords: Fall; Quality; Prevention

Introduction.– The fall of a patient can result in an important and durable functional loss. From extrinsic and intrinsic risk factors described in the recommendations of the HAS in 2005 and an assessment of professional practices, a multidisciplinary team has established in 2007 a predictive score of falling.

Methods.– At each arrival of a patient, the risk of falling is estimated between 0 and 6. From score 3, patients are considered at risk. Assessment score and the list of the precautions are located in a specific form in the computerized patient record. Starting from score 5, the contention is discussed in multidisciplinary team and prescribed. Score is reassessed every week.

Results.– Currently, 84% of fallers had scores between 3 and 6. Since January 2012, a multidisciplinary team meets once a month to analyze declarations of falls. In 2011 and 2012, 201 falls were reported. Serious consequences were reported for three patients. The quantitative analysis has highlighted a more accurate profile of fallers. Patients with stroke account for 50% of these fallers. In 60% of cases, we note that the fall occurs in the first month of hospitalization. Patients are for 64% wheelchair users. In 70% of falls, the patient is alone.

Conclusion.– Areas of improvement of politics to prevent falls in the year 2013 include the awareness of patients about their risk of falling. Following assessment by the physician at the patient’s admission, preventive measures are implemented to reduce the number of falls.

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Effect of a dance therapy workshop on social participation and integration of adults with motor deficits: An exploratory study
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Keywords: Dance therapy program; Participation

Introduction.– A dance therapy program (DTP) has been offered to clients at the Lucie Bruene Rehabilitation Centre in Montreal, Canada since 2010. DTP is based on the principal components (body, space, effort and shape) of Laban movement theory (Laban, 2003), and consists of a 1.5 hr session per week over a 12 week period. The goal is to facilitate social integration and participation in adults with motor deficits while improving balance, endurance, and mobility. Until now, the effectiveness of this program has not been formally investigated.

Objective.– to explore the effect of a 12-week DTP workshop on social integration and participation of adults with motor deficits.

Methods.– Design: pre and post analysis. Four outcome measures were used to evaluate the effectiveness of the workshops conducted in 2012-2013: – flow State Scale (FSS2); – timed up and go (TUG); – assessment of life habits (LIFE-H 3.0), and; – semi-structured exit interview on participant satisfaction with the program.

Results.– At the end of the 12-week sessions, the TUG (n = 16) was significantly improved (P = 0.001), with a decreased time of execution (from 15 ± 6s to 11 ± 6s); concurrently, the risk for falls in the participants decreased from 100% to 25%. The FSS2 (n = 14) score significantly increased over time.

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Haptic supplementation improves postural control in perturbed upright stance
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Keywords: Haptic supplementation; Perturbed upright stance; Postural stability

Introduction.– Haptic information improve postural stability in static situations [1,2]. The present study aimed to explore their effects on perturbed posture in young and older participants.

Methods.– Thirty-three participants (n = 12 young, 27 ± 2 years; n = 11 older, 75 ± 6 years) have been tested on a moving force platform perturbing by anteroposterior translations (amplitude of perturbations 62 mm, velocity 0.1 m/s) in five experimental conditions (Anova: age condition, P < 0.05). We compared a control condition (REF, perturbation without supplementation) with four conditions with haptic supplementation due to a light grip of an inclined cane touching the ground. The mobility of the cane has been manipulated: fixed cane (FC), mobile handle, blocked extremity (BC), mobile cane on slippery surface (SC) or rough surface (RC). The displacements of the centre of pressure in time after the translation (CT).

Results.– During the perturbation, the MA equaled for both groups. It increased for all participants in all conditions of supplementation (REF: 23 mm, FC: 38 mm, BC: 36 mm, SC: 40 mm, RC: 39 mm). After the perturbation, the CT of older was shorter than of young participants in the condition REF (280 ms vs 610 ms). The TC of young decreased due to HI perturbation, the CT of older was shorter than of young participants in the fixed condition while the second one was not significantly different. The results of the second one were marked by a shortening of the amplitude of the Centre of Pressure (SP) and the amplitude of the Centre of Gravity (CG) in the second condition.

Discussion.– These results suggested that young and older participants use their body sway to improve the perception of sensory cues. Concerning young participants, after the perturbation, haptic supplementation enabled them to accelerate their postural response. On the contrary, the very short correction time of older participants observed in the condition without supplementation (REF) suggested a difference in postural control strategy associated to an increased rigidity possibly due to an apprehension to fall. These results underline the importance of a multifactorial approach in postural rehabilitation of older adults.

References

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