Discussion.– these two tests are very different and not correlated in a stroke population. The RFT is a cognitive task assessing the VD with a static method, the second test is a postural task evaluating the effect of dynamic visual disturbance. Visual dependence is not an absolute concept but is depending on the task.

http://dx.doi.org/10.1016/j.rehab.2013.07.341

CO19-003-e

A clinimetric study of lateroplusion measure by Verticam for patients recovering from a stroke

M. Jaeger *, A. Admirat, A. Marquer, A. Chrispin, P. Davoine, C. Piscicelli, D. Pérennou
Institut de rééducation, clinique MPR, CHU de Grenoble, avenue de Kimberley, 38130 Échirolles, France
*Corresponding author.
E-mail address: mjaeger@chu-grenoble.fr

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 quantitavely [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 ± 17.7years; 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 diagnostic [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 contralesional). 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 contralesional 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.
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http://dx.doi.org/10.1016/j.rehab.2013.07.342

CO19-004-e

New simplified 3D device for clinical gait analysis

O. Nocent [a,*], D. Trafial [b], S. Piotin [c], A. Benassarou [a], M. Krajecki [a], F.C. Boyer [d], R. Taïar [b]
[a] *CReSTIC, université de Reims Champagne-Ardenne, IUT de Reims Châlons Charleville, rue des Crayères BP 1035, 51687 Reims cedex 2, France*
[b] *GRESPI, université de Reims Champagne Ardenne, Reims, France*
[c] *Centre Image, université de Reims Champagne Ardenne, Reims, France*
[d] *Pôle de médecine physique et de réadaptation, CHU de Reims, Reims, France*
*Corresponding author.
E-mail address: olivier.nocent@univ-reims.fr

Keywords: Clinical gait analysis; New technology; Video
Introduction.– With its very low cost, the Microsoft KINECT camera is one of the last generation game controllers. KINECT is composed of a conventional video camera and an infrared depth sensor. Coupled with dedicated software, it is able to track the 3D posture of several players in real-time [1]. A depth sensor does not require any calibration and can work under variable lighting conditions. Recently, several depth sensors, relying on the same technology, have been released with an improved spatial precision. The objective of this study is to adapt and optimize this system for the clinical gait analysis.
Materials and methods.– In this study, we investigated the potential use of a depth sensor as a measure device for the human gait and posture analysis. For that purpose, we developed the following tested: an optical motion capture system (six 200 Hz VICON cameras) is used as a reference measure device in order to compare the performances (spatial precision, latency, etc.) of different depth sensors models for ten healthy subjects.
Results.– These experiments, jointly conducted by the computing and biomechanics laboratories, were used to assess a spatial accuracy from 4 cm to 5 mm. Even if the skeleton tracking algorithm provided by these depth sensors seems to be relevant for gesture based interfaces, the generated joints position and orientation cannot be matched precisely with the joints configuration of the real skeleton. We adapted a 2D feature point tracking algorithm [2] to overcome this problem. Using the depth map generated by the depth sensor, we obtained the segmental 3D position with a backward projection.
Discussion.– This methodology allows tracking points which are not recognized by the default system. The results obtained on the subject foot by placing colored stickers on the toe and the lateral and medial malleoli showed that the error related to the spatial position is less than 2 mm, using a short range depth sensor that we will present during the congress. Our method is with an original approach which will simplify the utilization of 3D system of movement analysis such as the Vicon system. The cost of the 3D equipment analysis will be strongly reduced and the interaction between the user and the subject or patient will be optimized.
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http://dx.doi.org/10.1016/j.rehab.2013.07.343

CO19-005-e

Postural adaptations to wearing safety shoes with convex soles

M.A. Choukou, S. Ghouli, R. Taiar
Groupe de recherche en science pour l'Ingénieur (GRESPI), université de Reims Champagne Ardenne, Campus du Moulin-de-la-Housse, BP 1039 51687 Reims cedex 2, France
E-mail address: amine_choukou@yahoo.fr

Keywords: Posture; Soles; Workstation; Risk
Aim.– Determine posturological effects of wearing different types of safety shoes meant to standing workstation optimization.
Materiel.– 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: barefeoot, 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 $\alpha = .05$.
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 ($P < .05$).
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