Discussion/Conclusion Each of the three proposed models answers to a specific question and cannot substitute for the other. The finite elements model used in the first two models is tedious to implement due to the geometry, obtained by segmentation of medical images, and calculation time can be high. However, this is a rich method, accurately describing the studied mechanical system and leading to detailed results. The analytical approach used in the third model requires more approximation, but its lower calculation time allows deployment in research and development units and clinics.

Keywords Low back pain; Lumbar belt; Modelization; Biomechanics; Medical textile

Disclosure of interest The authors declare that they have no competing interest.

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CO0254

Brace kinematical analysis on patients with camptocormia

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Objective A camptocormia is a postural disease characterized by the trunk’s antero-flexion during the walking gait. A brace to correct the posture is usually proposed. The evaluation of its effect through static measures has proved to be insufficient. The brace effectiveness was never evaluated on the kinematics point of view.

According to that, the purpose of this study was to evaluate cinematically the evolution of the cervical arrow during the walking gait in patients with camptocormia.

Patients and methods Five camptocormia patients were selected. Three kinematics markers were placed on the vertebral processes of C7, L3 and S1 in order to measure the evolution of C7-SAR in static and dynamic exercises during the walking gait with and without brace.

It was asked to the patients to standing during 30 seconds and then walk during 10 min in a 20 meters’ circular path and finally to stand again during 30 seconds. A 3D video analysis system OptiTrack was used. That allowed to average the antero-flexion of the trunk during 3 meters of each tour. The patients started without brace in order to increase the patients’ fatigue and then dressed with the brace.

Results It was observed postural collapse during the walking gait when the brace was not used. Conversely, using the brace, that postural collapse, typical in camptocormia patients, was significantly (beginning w/o brace 215 ± 46 mm; beginning with brace 133 ± 46 mm; end w/o brace 255 ± 61 mm and end with brace 143 ± 50; P < 0.05; P < 0.05 reduced).

Discussion/Conclusion The brace permitted a postural redress effect in camptocormia patients. Additionally, the brace prevents the typical postural collapse, usually observed in camptocormia patients, induced by the walking gait. Thereby, the brace allowed the posture correction during the walking gait.

Keywords Camptocormia; Brace; Analyse kinematics; Cervical arrow

Disclosure of interest The authors declare that they have no competing interest.

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CO0255

Assessment of a shoulder orthosis prototype setting the upper limb in a functional posture: A single case report

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Objective The shoulder is painful in 70% of post-stroke patients. Sling and shoulder orthosis are important for medical care. However, series slings have not proved efficiency to improve upper limb function.

We realize (with OCTO31 company) a custom-made shoulder orthosis prototype (EO31) to set the upper limb in a posture with an elbow flexion, a forearm supination and, by the way, a finger extension. The objective is to facilitate the upper limb function and to decrease shoulder pain.

Observations A 54-year-old female, 6-month post ischemic left stroke, with shoulder pain (diastasis) recovers a distal motor function with both pinch and grasp. She under-uses this recovery, due to proximal weakness with impossibility to obtain a functional position of the forearm.

Patient has used the EO31 prototype daily for 30 days. Assessments are performed with prototype compared to standard shoulder orthosis (Ottobock® Shoulder support 7126). Functional assessment (Wolf Motor Function Test and Chedoke Arm and Harm Activity Inventory) do not show significant difference (neither ability to perform tasks or speed) between the two orthosis. Quebec User Evaluation of Satisfaction with assistive Technology (QUEST) is a lot better with EO31 (31/35) compare to standard orthosis (14/35). Shoulder pain slightly decreases with EO31.

Discussion/Conclusion This custom-made shoulder orthosis setting the upper limb in a functional posture improves comfort and patient’s satisfaction. This improves significantly safety and observance.

After a month of use, we were unable to prove the functional benefits of the prototype compare to a standard orthosis, probably due to functional improvement and motor recovery of the patient. This prototype will now be used with other patients, with early comparative assessment to confirm our results and better define functional benefits.

Keywords Shoulder orthosis; Sling; Pain; Motor function; Prototype; Stroke

Disclosure of interest The authors declare that they have no competing interest.

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CO0256

Functional electrical stimulation (FES): The science is strong, the clinical practice not yet – A review of evidence

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