CO04-006-e

**Influence of a 2-year steroid treatment on body composition as measured by dual X-ray absorptiometry in boys with Duchenne muscular dystrophy**

C. Vuillerot a,*, P. Braillon b, S. Fontaine-Carbonnel a,*, P. Rippert c, E. Andre b, I. Iwaz a, I. Poiroud a, C. Berard a

a Hospices Civils de Lyon, L’escala, Hôpital Femme-Mère–Enfant, Aile A1, Bron, France
b Hospices Civils de Lyon, Hôpital Femme-Mère–Enfant, service d’imagerie et de radiologie pédiatrique, 69677 Bron Cedex, France
c Hospices Civils de Lyon, Pôle Information Médicale, Évaluation, Recherche, 69003 Lyon, France
d Centre Hospitalier d’Arles, Centre d’Action Médico-Sociale Précoce, 13637 Arles, France

e CNRS UMR 5558, Laboratoire de Biométrie et Biologie Évolutive, Équipe Biostatistique Santé, 69310 Pierre-Bénite, France

*Corresponding author.

**Objectives.**—Study effects of a long term steroids treatment on body composition in patients with Duchenne muscular dystrophy (DMD).

**Methods.**—Their effects on body composition were assessed using dual X-ray absorptiometry. The study followed over 2 years 29 genetically confirmed DMD patients: 21 in the steroid-treated group and 8 in the steroid-naïve group.

**Results.**—After 2 years of steroid treatment, the lean tissue mass values increased significantly (P<0.0001), the percentage of body fat mass remained practically constant (P=0.94) in comparison with the initial visit. In the steroid-naïve patients, there were no significant increases in the lean tissue mass but deterioration in body composition confirmed by a significant increases in the percentage of body fat mass. Besides, significant negative correlations were found between the percentage of body fat mass and the MFM total score (R = −0.79, n = 76, P<0.0001).

**Discussion.**—A 2-year steroid treatment improves significantly body composition of boys with DMD through a significant increase in lean tissue mass. We suggest that a thorough check of body composition should be carried out before steroid treatment discontinuation in case of overweight gain.

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CO10-001-e

**A bidimensional system of facial movement analysis: Conception and validation**

M. Baude a,*, E. Hutin a, J.M. Gracies b

a Service de Rééducation Neuro-locomotrice, Hôpitaux Universitaires Henri-Mondor, Créteil, France
b Centre de référence maladies neuromusculaires et SLA, CHU La Timone, Marseille, France

*Corresponding author.

**Keywords:** Facial movement analysis; Bidimensional; Facial markers; Reliability

**Objectives.**—To design and validate a free, bidimensional facial movement measuring tool.

**Methods.**—We utilized Kinovea™, a free video-analysis software, to track pre-selected points during movement and measure two-point distances off-line. Three raters positioned facial markers on 10 healthy individuals and videotaped them during contractions of frontalis, corrugator, orbicularis oculi, zygomaticus, orbicularis oris and buccinator, on two occasions 1-week apart. Each rater analyzed the first video twice, 1-week apart. For each muscle, intra-rater reliability was measured by percent agreements (PA) and intra-class correlation coefficients (ICC) between two assessments of the same video 1-week apart and between assessments of two videos collected 1-week apart. Inter-rater reliability was measured by PA, ICC and coefficients of variation (CV) between assessments of the first video-recording by the three raters.

**Results.**—Intra-rater and inter-rater reliabilities were good-to-excellent for frontalis (PA and ICC > 70%; CV < 15%), insufficient for orbicularis oculi, zygomaticus and orbicularis oris (PA and ICC < 70%) and poor for corrugator and buccinator (PA and ICC < 50%).

**Discussion.**—The method was reliable for frontalis. Improvement in marker selection, training sessions and reliability testing in patients with facial paresis may enhance reliability for orbicularis oculi, zygomaticus and orbicularis oris.

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CO10-002-e

**Experimental analysis of 6D scapula kinematics**

A. Roren a,*, A. Roby-Brami b, S. Poiraudou c, M.M. Lefeuvre-Colau b

a CHU Cochin, Paris, France
b ISIR, Université Pierre-et-Marie-Curie, CHU Cochin, Paris, France
c Service de rééducation et de réadaptation de l’appareil locomoteur et des pathologies du rachis, Hôpital Cochin, Université Paris-Descartes, Unité Inserm U1153, Paris, France

*Corresponding author.

**Keywords:** Shoulder; Scapula; Biomechanics; 6D analysis

**Background.**—The motion of scapula relative to the thorax has theoretically a maximum of 6 degrees of freedom (DoF). However, only the 3D rotations are assessed in biomechanical studies.

**Objectives.**—To assess the 6D scapula kinematics (3D rotations and 3D displacements of the barycentre of the scapula, DBS).

**Methods.**—We assessed 3 different active and unilateral tasks: arm elevation in sagittal and frontal plane, simulated daily activities (hair combing and back washing) and shoulder rolling (forward and backward) in 8 healthy subjects using a 6 DoF electromagnetic device. Principal component analysis was performed on the normalized time course of the 6 parameters.

**Results.**—Scapula 3D rotations and DBS were found for all tasks in varying amplitudes. Three factors (factor 1: protraction and anterior and lateral DBS, factor 2: posterior tilt and inferior DBS, factor 3: lateral rotation) explained 97.6% of the variance.

**Discussion.**—By assessing all the movements of the scapula, this study sets 3 functional DDL and improves the understanding of the scapula kinematics.

**Farther reading**


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CO10-003-e

**Cervical orthosis for dropped head syndrome in neuromuscular disease**

V. Milhe de Bovis a,*, C. Rigal b, J.L. Conil b, S. Attarian a, A. Verschuere a, E. Campana Salort a

a Centre de référence maladies neuromusculaires et SLA, CHU La Timone, Marseille, France
b Orthopédie prothèse, Lagarrigue-Aubagne, France

*Corresponding author.

**Keywords:** Dropped head syndrome; Cervical orthosis; Neuromuscular disease

**Objectives.**—Dropped head syndrome is often described in neuromuscular disease. The orthosis management has not been reported before. We assess the orthoses used for patients with this syndrome.

**Methods.**—Retrospective study of 6 patients. We analyzed: the muscular testing of the neck extensor, the gait, deglutition, and phonation disability before selection kind of orthoses. We described the different orthosis used, with or without molding. We measured the cervical lordosis, the dropped head with and without the orthosis. We precised how many hours each patient used the orthosis, the orthosis kind of orthoses. We assessed in biomechanical studies.

**Results/Discussion.**—Cervical orthoses increased difficulties for swallowing, speaking. Some patients complaint about mandibular conflict zone and also social embarrassment.

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