Dynamic Surface Electromyographic Evaluations For Cervical Flexion Studies

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In the comprehensive assessment of painful conditions, dynamic surface electromyography (sEMG) recordings can provide information regarding muscle spasm, antalgic postures, fear of pain (protective guarding), muscle injury, and disordered movement secondary to pain. In a single subject with normal cervical paraspinals (CPS) and sternocleidomastoid (SCM) muscles, three cervical movements were studied (i) lower cervical flexion, (ii) atlantoaxial (upper) cervical flexion, and (iii) a combination upper/lower cervical flexion. Two distinct sEMG recruitment patterns associated with upper versus lower cervical flexion were identified. The CPS recruit briskly during return to midline when the lower cervical flexion is utilized, while the SCM recruit briskly when the upper cervical flexion is utilized. A combination upper then lower cervical flexion movements recruits both sets of muscles. A standardized clinical protocol is suggested, using recordings from the combined upper and lower flexion movements. In this way, procedural noise in applied clinical studies could be reduced, and both CPS and SCM muscle sets could be adequately studied.