



Apparatus to simultaneously measure fourteen isometric leg joint moments. Part 2: Multi-Moment Chair System

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Read in conjunction with: Donaldson NdeN, Munih M, Perkins TA, Wood DE.
Apparatus to simultaneously measure fourteen isometric leg joint moments - Part 1:
design and calibration of 6-axis load cells for the forces and moments at the ankle.
Medical and Biological Engineering and Computing, 37(2): 137-147, 1999.

An apparatus has been developed that measures isometrically the fourteen lower limb joint moments corresponding to the degrees of freedom of the hips, knees and ankles. This is the second of two papers describing the development of the Multi-Moment Chair System (MMCS). It presents the overall design and changes that were implemented to compensate for problems. These were primarily to improve the accuracy of hip joint moments; a compromise between accuracy and practicalities, because of force-moment responses being measured at the ankles. All joint moment errors have been calculated to be of the order of a few Nm. Since these represent errors of less than 10% when considering peak joint moment responses, this is considered sufficiently accurate for our application. The MMCS is being used in a programme to investigate the restoration of lower limb functions, principally standing, in paraplegics by electrical stimulation of the lumbosacral anterior roots.