Postural orientation and equilibrium

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Postural orientation and equilibrium: what do we need to know about neural control of balance to prevent falls? FAY B. HORAK Neurological Sciences Institute of Oregon Health & Science University, Portland, OR, USA Address correspondence to: F. B. Horak. Email: horakf@ohsu.edu. Abstract Postural control is no longer considered simply a summation of static reflexes but, rather, a complex skill based on the interaction of dynamic sensorimotor processes. The two main functional goals of postural behaviour are postural orientation and postural equilibrium. Postural orientation involves the act of postural equilibrium, or balance, involves active resistance to external forces acting on the body. The dominant external force affecting equilibrium on earth is gravity. Postural orientation is the positioning of body segments with respect to each other and to the environment. The biomechanical requirements of postural control depend on anatomy and postural orientation and thus vary with the animal. Nevertheless, in a variety of species the control mechanisms for postural equilibrium and orientation have many common features. The sensorimotor
mechanisms for postural control are quite similar in humans and quadrupedal mammals even though their habitual stance is different. Postural Equilibrium Requires Control of the Body’s Center of Mass.