

Towards Interdisciplinarity for Better Insight into Postural Disorders

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Editorial

The control of balance is crucial if we are to perform efficiently most of our daily motor tasks such as those involving goal-directed arm movements or whole-body displacements. Like all terrestrial species, humans move in a gravity field that permanently tends to induce postural destabilization through its attracting effect towards the centre of the Earth. In addition, movements themselves perturb our balance, and can be considered as a self-inflicted perturbation [1]. Alteration of the balance control system may therefore result in postural instability and increase the risk of falls with well-known associated morbid consequences (physical, psychological, social etc).

Identifying why this system may sometimes become deficient so as to induce falls in individuals is highly important if physiotherapists are to develop adequate rehabilitation programs and best restore postural function. Obviously, alterations in the central and peripheral structures involved in balance control, e.g. with aging and with specific pathologies (Parkinson's disease, hemiplegia etc), are major sources of balance disorders. However, there is growing evidence in recent literature on motor control that, in addition to these "organic" factors, psychological factors such as a fear of falling (obtained by asking subjects to stand on a surface above the ground; e.g [2].) and emotion (especially negative emotions which may be induced by pictures extracted from the IAPS [International Affective Picture System]; e.g [3].) may also contribute to alterations in balance control and, as such, may increase the risks of falls in posturo-deficient patients. Conversely, a recent study showed that positive emotions (e.g. induced by erotic photographs or pictures of happy baby faces extracted from the IAPS) may enhance postural control during the initiation of gait in both normal patients and those with Parkinson's disease [4]. This positive

effect has been proposed to be helpful for the development of emotion-based interventions designed to maximize improvements in gait initiation for individuals with Parkinson's disease. Such a relationship between emotion and balance control is thought to be mediated by the known neural linking between human motor control centres and emotion centres [5].

Currently, this psychological dimension of movement is not taken into account in the classical evaluation of balance capacity of individuals with postural deficits. It is believed that the manipulation of this dimension might be relevant to help physiotherapists obtain better insight into the factors of balance impairments and thus, better individualize rehabilitation programs. Therefore, in the future, the association between specialists in biomechanics of motor control, psychologists and clinicians in other words, interdisciplinarity seems essential in order to fully understand the aetiology of falls in persons with postural disorders.

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