



RESEARCH NEWS & VIEWS

GUY GOSSELIN DC PHD FRCC FEAC

SCHOOL OF ENGINEERING, UNIVERSITY OF HULL, UK – MEMBER, FICS RESEARCH COMMISSION

**Posture vs Performance, the old
Chicken and Egg Dilemma.**

It is all well to know that exercise and sports improves posture, but as sports specialists it is expected from us to understand the fundamentals underpinning our management of sports injuries and rehabilitation. Paillard and colleagues have published an excellent paper in this area entitled: *Plasticity of the postural function to sport and/or motor experience*.

The extensive review article proposes mechanistic explanations as well as conceptual models to explain how postural adaptations operate according to the nature of physical activities and the context in which they are practiced, as well as the level of motor expertise of individuals.

A relationship between plasticity of postural function and motor and sport experience turns out to be undeniable. But how this occurs, and to what extent this is transferable, is what we are talking about here. The review addresses the possible structural and functional adaptations of postural function to motor experience.

Everyone will agree with the evidence suggesting that postural performance and strategy evolve after training in previously inactive subjects. But in trained subjects, postural adaptations could also occur, since elite athletes exhibit better postural performance, and different postural strategy, than sub-elite athletes.

It is interesting to note that the postural adaptations induced are specific to the context in which the physical activity is performed. They appear to be so specific that there would be no or only a very slight effect of transfer to non-experienced motor tasks (apart from in subjects presenting low initial levels of postural performance, such as aged subjects).

Yet adaptations could occur as part of the interlimb relationship, particularly when the two legs do not display the same motor experience. Having said this, how can the information presented help improve your overall sports injuries management?

1. As you would expect regularly repeated physical and/or sport activities (for the most part) induce structural and functional adaptation of the postural function which improve postural performance and refine postural strategy.

2. These postural adaptations are not only multifactorial and systemic concerning neurophysiological aspects, but also context-specific regarding positions and movements completed during the practice of physical and/or sport activities, as well as being related to the environmental conditions in which these activities are practiced.

3. There is no or only a very slight effect of transfer to non-trained balance tasks. Therefore, specific balance training will strictly improve postural control during a very similar task. Yet adaptations could occur in some cases as part of the interlimb relationship.

4. Sport-specific balance develops specific postural skills. Training effects are so specific that the postural performances of players in team sports (for example in soccer and volleyball) could be distinguished according to their role in the team.

5. Motor expertise engenders superior adaptations in terms of postural performance and strategy in comparison with simple motor experience. In general, the contribution of visual information decreases under the effect of sport training while the contribution of proprioception increases. To illustrate this, in soccer players and surfers, the contribution of visual cues to postural regulation decreases as the level of competition increases.

This review paper provides the sports chiropractor with essential knowledge to fully understand the relationship between specificity in balance, training and performance. This knowledge will hopefully lead to improved practice with better results for rehabilitation and performance in patients active in sports.

Thierry Paillard, Plasticity of the postural function to sport and/or motor experience, Neuroscience & Biobehavioral Reviews, Volume 72, 2017, Pages 129-152, ISSN 0149-7634, <http://dx.doi.org/10.1016/j.neubiorev.2016.11.015>.