Expanding Panjabi’s stability model to express movement: A theoretical model

Abstract

Novel theoretical models of movement have historically inspired the creation of new methods for the application of human movement. The landmark theoretical model of spinal stability by Panjabi in 1992 led to the creation of an exercise approach to spinal stability. This approach however was later challenged, most significantly due to a lack of favourable clinical effect. The concepts explored in this paper address and consider the deficiencies of Panjabi’s model then propose an evolution and expansion from a special model of stability to a general one of movement. It is proposed that two body-wide symbiotic elements are present within all movement systems, stability and mobility. The justification for this is derived from the observable clinical environment. It is clinically recognised that these two elements are present and identifiable throughout the body in different joints and muscles, and the neural conduction system. In order to generalise the Panjabi model of stability to include and illustrate movement, a matching parallel mobility system with the same subsystems was conceptually created. In this expanded theoretical model, the new mobility system is placed beside the existing stability system and subsystems. The ability of both stability and mobility systems to work in harmony will subsequently determine the quality of movement. Conversely, malfunction of either system, or their subsystems, will deleteriously affect all other subsystems and consequently overall movement quality. For this reason, in the rehabilitation exercise environment, focus should be placed on the simultaneous involvement of both the stability and mobility systems. It is suggested that the individual’s relevant functional harmonious movements should be challenged at the highest possible level without pain or discomfort. It is anticipated that this conceptual expansion of the theoretical model of stability to one with the symbiotic inclusion of mobility, will provide new understandings on human movement. The use of this model may provide a universal system for body movement analysis and understanding musculoskeletal disorders. In turn, this may lead to a simple categorisation system alluding to the functional face-value of a wide range of commonly used passive, active or combined musculoskeletal interventions. Further research is required to investigate the mechanisms that enable or interfere with harmonious body movements. Such work may then potentially lead to new and evolved evidence based interventions.