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## Activity-based restorative therapies: Successful innovations in neurorehabilitation

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Traditional rehabilitation following spinal cord injury focuses on teaching compensatory techniques to enable the individual to perform daily activities despite significant neurologic deficits. Once thought to be irreparable, recent evidence has shown that the central nervous system is capable of plasticity, regeneration and recovery. Activity Based Restorative Therapies (ABRT) is a new fundamental approach to deficits induced following neurological paralysis. ABRT involves lifelong interventions based on the principle of activity-dependent neural plasticity. The goal is to drive changes in the nervous and muscular systems by repetitive activation of the neuromuscular system, both above and below the injury level using rehabilitation therapies. This optimizes the neurologic system and offsets the rapid aging, physical deterioration and secondary complications associated with SCI. It is characterized by high intensity practice, task specific and patterned activity above and below the level of the lesion. Key components include weight loading activities, Functional Electrical Stimulation (FES), neuromuscular electrical stimulation, locomotor training, massed practice and task-specific training. Though activity based interventions is not the cure for paralysis, it is important to note that it utilizes activity and physical exercise as tools for neurologic recovery rather than to merely achieve a compensatory function.

### Biography

Philippines Cabahug is a Physician in the paralysis restoration program at the International Center for Spinal Cord Injury (ICSCI) and Faculty Clinical Instructor within the Department of Physical Medicine and Rehabilitation at the Johns Hopkins University School of Medicine. Her professional honors include the Johns Hopkins Healer Award from the Johns Hopkins Department of Physical Medicine and Rehabilitation in 2010 and 2012 and the Frank L. Coulson, Jr. Award for Clinical Excellence in 2012. Her research interests include spasticity management and aging in spinal cord injury, and the use of vibration plates in spasticity management.

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