Twenty-five years ago it became clear that the advent of new scanning techniques was paving the way for neurology to expand into new areas of clinical practice. It no longer needed to be entirely constrained by the demands of pathology and structure required to diagnose disease, but could also investigate the function of the nervous system and the facilitation of independence during rehabilitation after neurological insults.

What underpins change during rehabilitation at the anatomical, physiological and psychological levels has only just begun to be elucidated. It has required work at many levels of basic and clinical neuroscience over the last 50 years to show that Cajal’s immutable adult nervous system in fact continues to be plastic, as it was during development. This is illustrated so effectively by the visual aids that result from functional imaging using PET, fMRI and TMS. This change in understanding of how the nervous system works has had a profound effect on clinical practice. Not least of these effects is an acceptance that change after neurological insults may take place for years rather than only a few months after injury, given appropriate circumstances, although how useful this change is depends on a multitude of factors.

Systematic study of how and why this change occurs, and what might facilitate it, is increasing. A number of longitudinal studies show change in one modality or another during functional improvement, but how these processes can be facilitated by rehabilitation techniques is less well understood and promises to be a fertile field of enquiry for the future.

This book is an essential introduction to the interfaces within restorative neurology. It describes the ‘mechanisms of activity-dependent learning within the spared modules of like-acting neurones [that] are a fundamental property of the microbiology of functional gains’, as well as the characteristics of effective clinical practice used to rehabilitate patients with neurological disorders. This bridging of the gap between the basic and clinical neurosciences is needed in order to advance the area, as a report from the Academy of Medical Sciences in London has recently emphasized.

Initial chapters describing organizational plasticity in sensory–motor and cognitive networks, and biological adaptation and neural repair are followed by a third chapter that uses functional imaging to illustrate these processes. Chapters 4–8 describe the ‘tools of the trade’—stimulators, prostheses and robotics—the measurement of gait and other outcomes, characteristics of the team, and medical problems that arise during rehabilitation. There are then three chapters on stroke, medical myelopathies and head injury.

There are inevitably some minor idiosyncrasies, among them the half-pages devoted to Alzheimer’s disease, epilepsy, chronic fatigue syndrome and acquired immunodeficiency syndrome, which might perhaps more suitably have been omitted, along with two pages on paediatric diseases; the American rather than standard English of the text; and the fact that recruitment of a clinical neuropsychologist might usefully add to material on cognitive, behavioural and psychosocial issues. However, the text is current—references from 2002 are included—and Dr Dobkin should be saluted for his endeavour, which surely emphasizes the need for rehabilitation to be regarded as a neurological subspecialty.

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