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Frontostriatal Circuits and Disorders of Goal - Directed Actions

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Frontostriatal projections are organized in multiple, parallel and reverberating circuits which appear to maintain many of the physiological and behavioural properties of the cortical areas they subserve. As such, this circuitry subserves motor, cognitive, emotional and motivated functions involved in goal-directed behaviour. The damage to diverse circuit structures (ie, basal ganglia, thalamus, frontal lobes) may cause similar abnormalities in planned motivated motor behaviour. Moreover, patients with severe psychiatric disease exhibit a spectrum of disorders of goal-directed actions, such as apathy, catatonic behaviour, compulsions, preservations and imitative response tendencies, which, from the phenomenological point of view, are strikingly similar to those observed in patients with frontal lobe and basal ganglia damage.

Therefore, frontostriatal circuits seem to provide a unifying framework to integrate the sensorimotor, cognitive and limbic elements of a variety of higher-order motor disorders associated with several disparate neurological and psychiatric conditions.

In this presentation I will first describe the anatomofunctional organization of corticostriatal circuits, then I will deal with the major clinical features of the motivational and cognitive motor disorders ascribed to dysfunction of these circuits in both neurological and psychiatric disorders.