

Praxis Involves Three Processes

Ideational Praxis

- Ideational praxis is the ability to cognitively understand the motor demands of the task.
- For example, when shown a shirt, the patient must be able to understand that this is an article of clothing that is worn on the trunk and upper extremities. The patient must also understand the motor plans needed to don a shirt.
- Ideational praxis is largely a function of the motor association area.¹²

Ideomotor Planning I

- Ideomotor planning I is the ability to access the appropriate motor plan. For example, the ability to sort through all stored motor plans and identify the specific one for shirt donning involves ideomotor planning I.
- Such motor plans are commonly stored in the premotor area.¹²

Ideomotor Planning II

- Ideomotor planning II is the ability to execute the appropriate motor plan, or put it into action. For example, after identifying the appropriate motor plan for donning a shirt, the patient must put that plan into action.
- Implementing motor plans commonly involves M1.¹²
- Pathology can occur in any of these 3 stages of motor planning.

Emergence of Primitive Reflexes as a Result of Neurologic Damage

- When serious neurologic damage occurs to the cortex, internal capsule, diencephalon, brainstem, and/or basal ganglia, often as a result of stroke or traumatic brain injury, it is common for primitive reflexes to re-emerge.
- Primitive reflexes develop during gestation and infancy and become integrated by the *central nervous system* (CNS) in the first months or years of life.
- These reflexes facilitate normal movement.
- The re-emergence of these reflexes in an adult with neurologic damage indicates severe CNS pathology. Volitional movement is compromised by the presence of such reflexes.
- There are 2 primary types of primitive reflexes¹³:
 1. Spinal level (or elemental) reflexes
 2. Brainstem level reflexes

Spinal Level Reflexes

Flexor withdrawal	When the sole of the foot is stimulated, the toes extend, the foot dorsiflexes, and the leg flexes. In an adult with neurologic damage, this often interferes with attempts to stand.	Develops at 28 weeks of gestation Integrated at 1 to 2 months
Crossed extension	When an extended leg is passively flexed, the opposite leg extends. In an adult with neurologic damage, this can interfere with attempts to assume a seated position, such as returning to a seated position in a wheelchair. It can also interfere with transfer training.	Develops at 28 weeks of gestation Integrated at 1 to 2 months
Extensor thrust	When the ball of the foot of a flexed leg is stimulated, that leg extends. In an adult with neurologic damage, this can interfere with attempts to assume a seated position, such as returning to a seated position in a wheelchair. It can also interfere with transfer training.	Develops between birth and 2 months Integrated at 1 to 2 months

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