

A central pattern generator (CPG) is a neuronal network in which interconnected excitatory and inhibitory neurons produce an oscillating, rhythmic output in the absence of sensory feedback. CPGs play an important part in motor behavior such as breathing, swimming and locomotion.

The significance of the [spinal circuitry](#) in controlling postural and [locomotor](#) functions largely re-emerged in the mid-1970s under the leadership of Sten Grillner, demonstrating key phenomena of “[central pattern generator](#)” and “fictive locomotion” with an evolutionary perspective. These concepts raised the question of how much function can be recovered after [paralysis](#), given the intrinsic automaticity of spinal networks in injured and uninjured states in adults.

A review explores biological mechanisms governing spinal control of movements such as [posture](#) and [locomotion](#). They focused on concepts that have evolved from [experiments](#) performed over the past decade. Rather than a [comprehensive review](#) of the vast literature on the neural control of posture and locomotion, they focused on the various mechanisms underlying functional automaticity, and their clinical relevance.

They proposed that multiple combinations of sensory mechanoreceptors linked to [proprioception](#) generate an infinite number of different sensory ensembles, having species-specific meaning and extensive influence in controlling [posture](#) and [locomotion](#). These sensory ensembles are translated as a probabilistic phenomenon into highly specific but indeterminate actions. Therefore, they opined that spinal translation of these ensembles in real-time plays a central role in the [automaticity](#) of motor control in individuals with and without severe neuromotor dysfunction ¹⁾.

1)

Edgerton VR, Gad P. Spinal automaticity of movement control and its role in recovering function after spinal injury. *Expert Rev Neurother*. 2022 Aug 31. doi: 10.1080/14737175.2022.2115359. Epub ahead of print. PMID: 36043398.

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