



INTRODUCTION

- Spasticity is due to an imbalance in the pathways of the upper motor neuron system over the extensor muscles, so that excitatory tracts prevail over inhibitory. Decerebrate rigidity and decerebellate rigidity posturing are clinical signs of these imbalances.
- Decerebrate rigidity consists of a mesencephalic lesion that yields a disconnection between cerebrum and the rest of the brain and spinal cord.
- Decerebellate rigidity consists of a rostral cerebellar lobe lesion that yields a disconnection between Purkinje cells and the rest of the brain.

PURPOSES

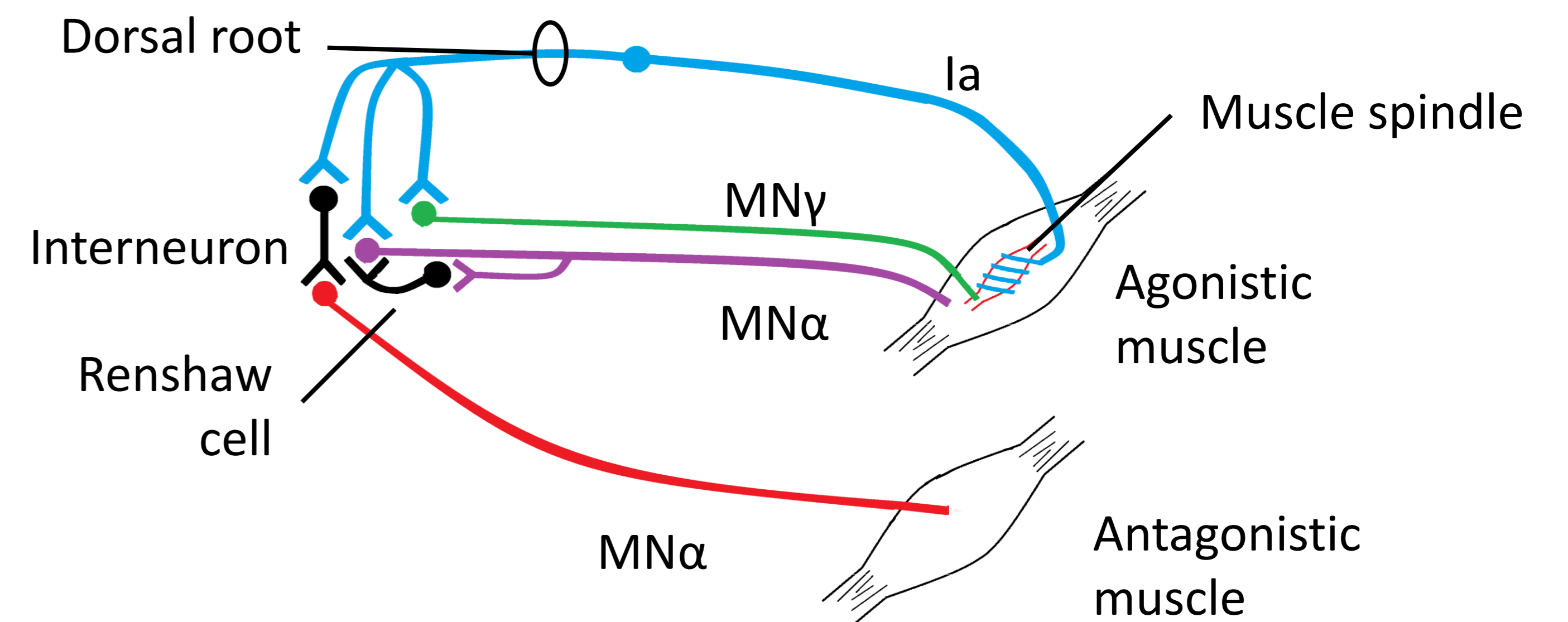
GENERAL PURPOSE

- To analyze the imbalance leading to overactivation or overinhibition of motor tracts in domestic animals and culminates with spasticity.

SPECIFIC PURPOSES

- To analyze the main influence of motor tracts on alpha or gamma motorneurons.
- To propose the cause of hip flexion in decerebellate rigidity.

THE SPINAL STRETCH REFLEX

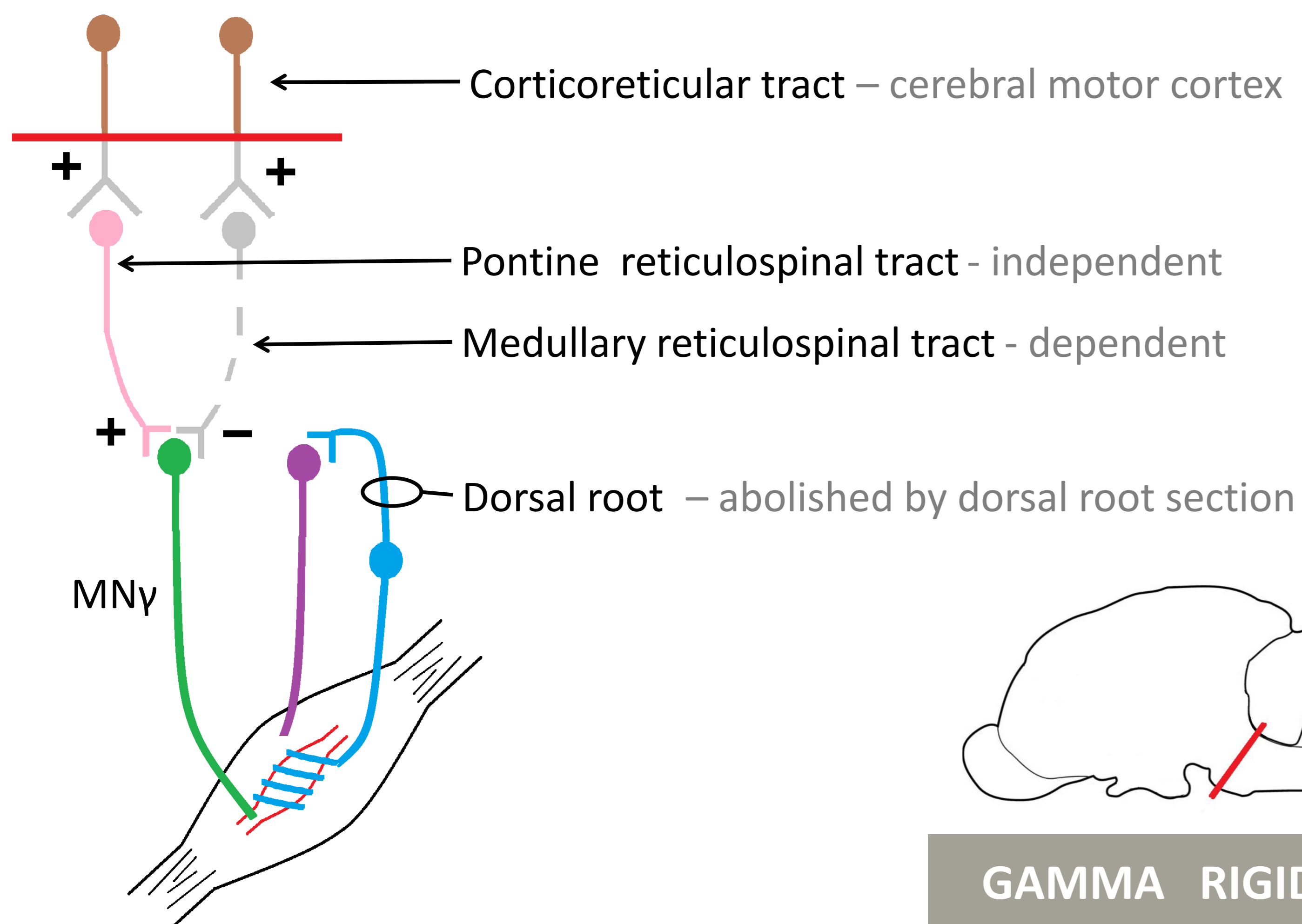


DECEREBRATE RIGIDITY



- Opisthotonus
- All limbs extended
- Diminished mental status

From (Garosi 2012)

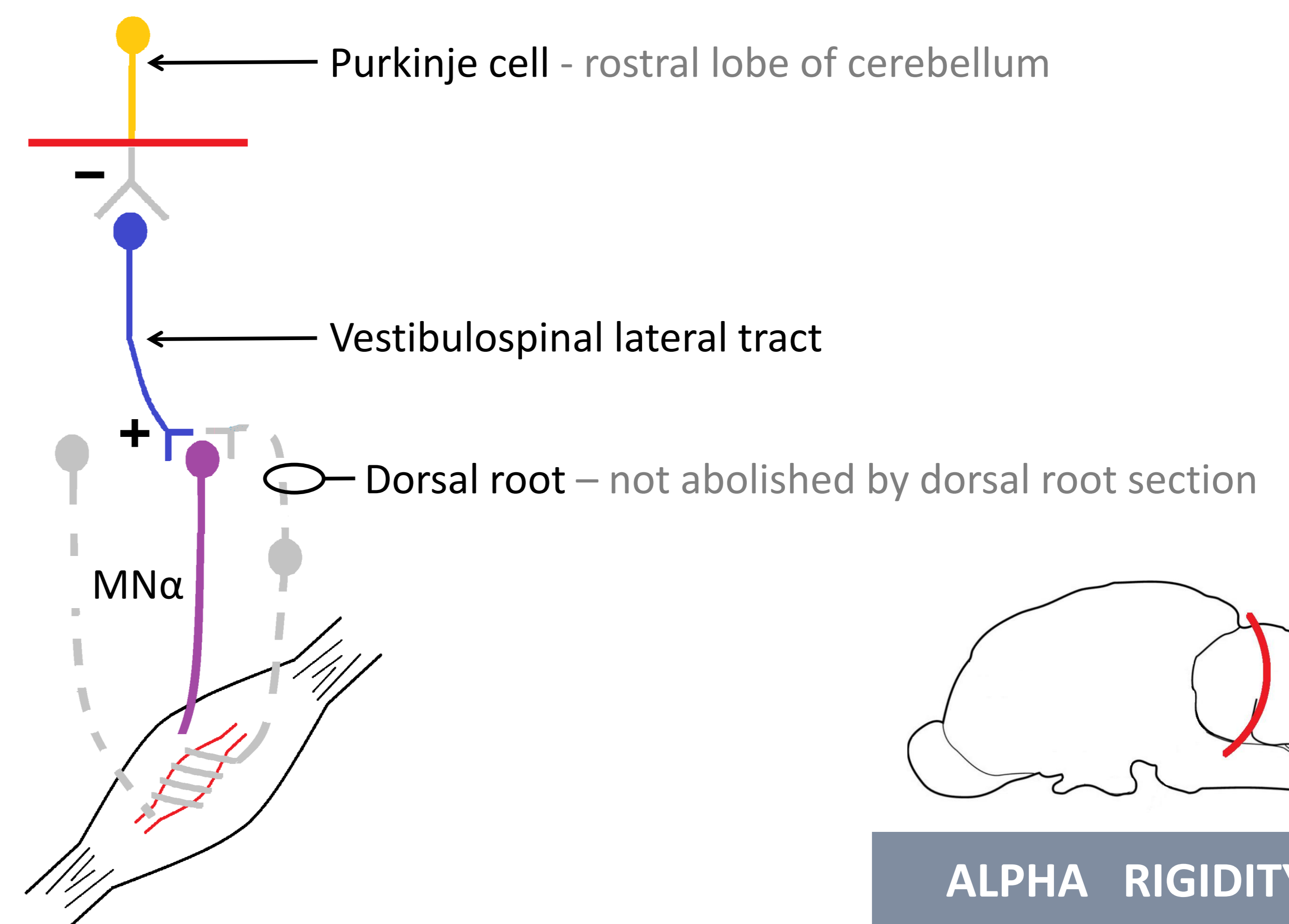


DECEREBELLATE RIGIDITY



- Opisthotonus
- Fore limbs extended
- Hip flexed
- Hind limbs flexed or extended
- Normal mental status

From (Garosi 2012)



HIP FLEXION

- Cerebellar influences may be involved in postural stabilization. To do this, they maintain the neck slightly elevated, the fore limbs extended and the hip semi-flexed, compensating forwards deviations.
- An exaggerated tone of these stabilizer muscles would result in opisthotonus, extension of the fore limbs and hip flexion, that is, the decerebellate rigidity.
- The cause of hip flexion must be iliopsoas muscle contraction.
- However, extrapolation of cerebellar somatotopy to single muscle contraction must be made with caution.

CONCLUSIONS

DECEREBRATE RIGIDITY

- Increased extensor tone in all limbs is caused by a release of motorneurons from medullary reticulospinal tract inhibition due to a lack of cortical activation.
- Reticular formation tracts acts mainly on gamma motorneurons.

DECEREBELLATE RIGIDITY

- Increased extensor tone in fore limbs is caused by an excessive lateral vestibulospinal tract discharge on motorneurons due to a lack of Purkinje cells inhibition.
- Lateral vestibular tract acts mainly on alpha motorneurons.
- The hip is flexed due to iliopsoas muscle contraction.