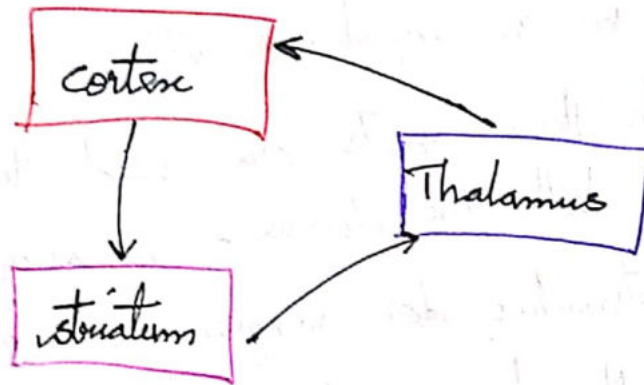
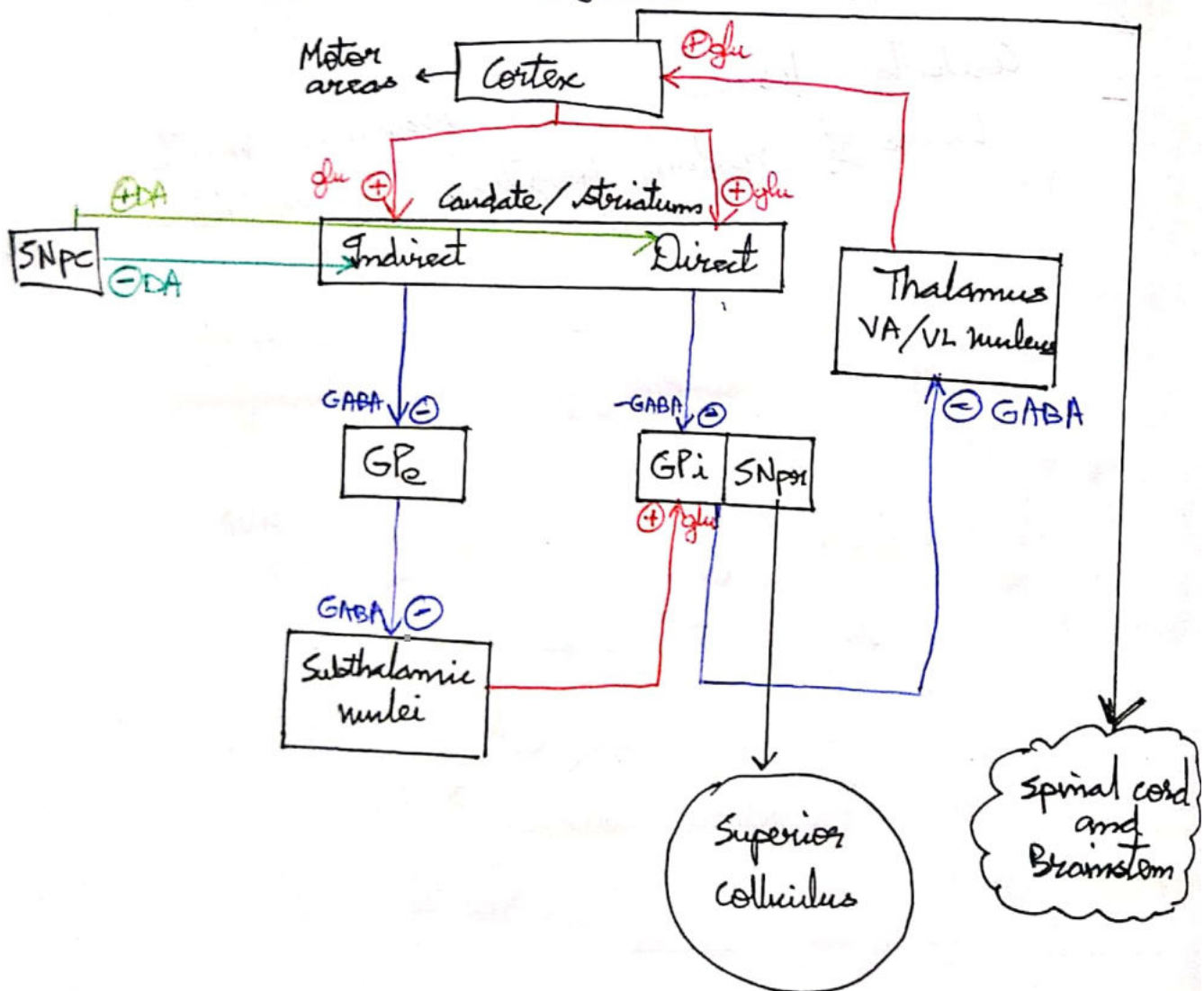


- With the exception of Primary visual & auditory areas of the cortex, almost most regions of the cortex project to basal ganglia.
- Corticostriate fibres arise from layer V of cortex



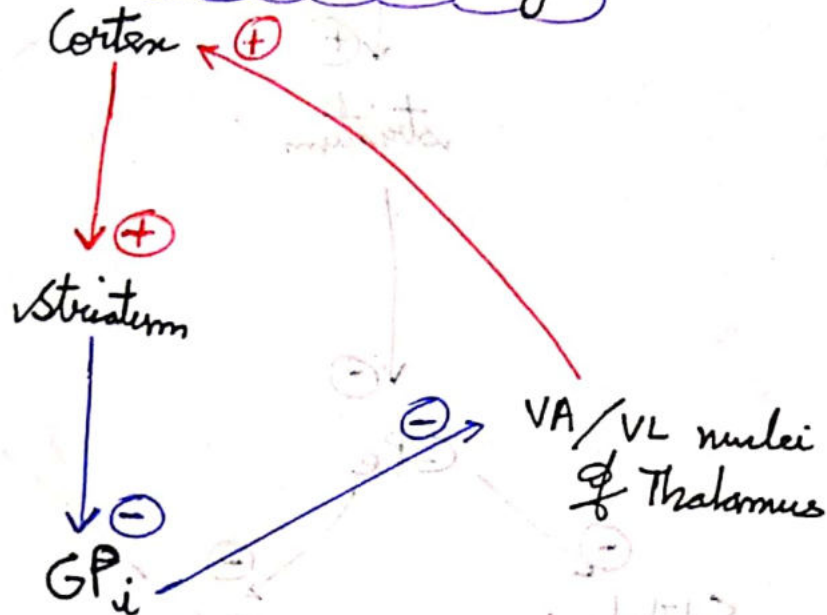
=> Pathways through Basal ganglia :-



glutamic acid - excitatory

GABA - inhibitory

- Direct Pathway :- Enhances motor activity

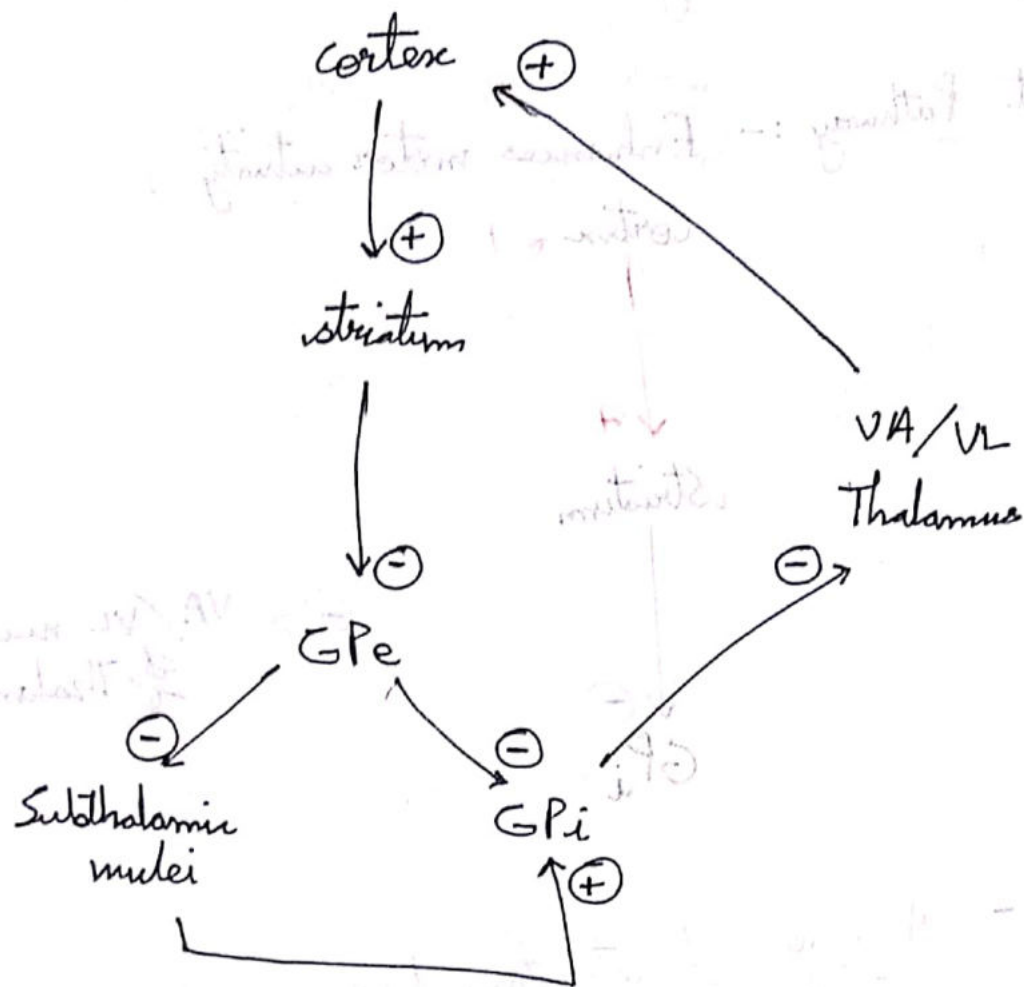


- Note :-
 Neurons of striatum have low background activity
 Neurons of Pallidum have high background activity
 GPi neurons normally inhibit the cells of VA/VL nuclei of Thalamus

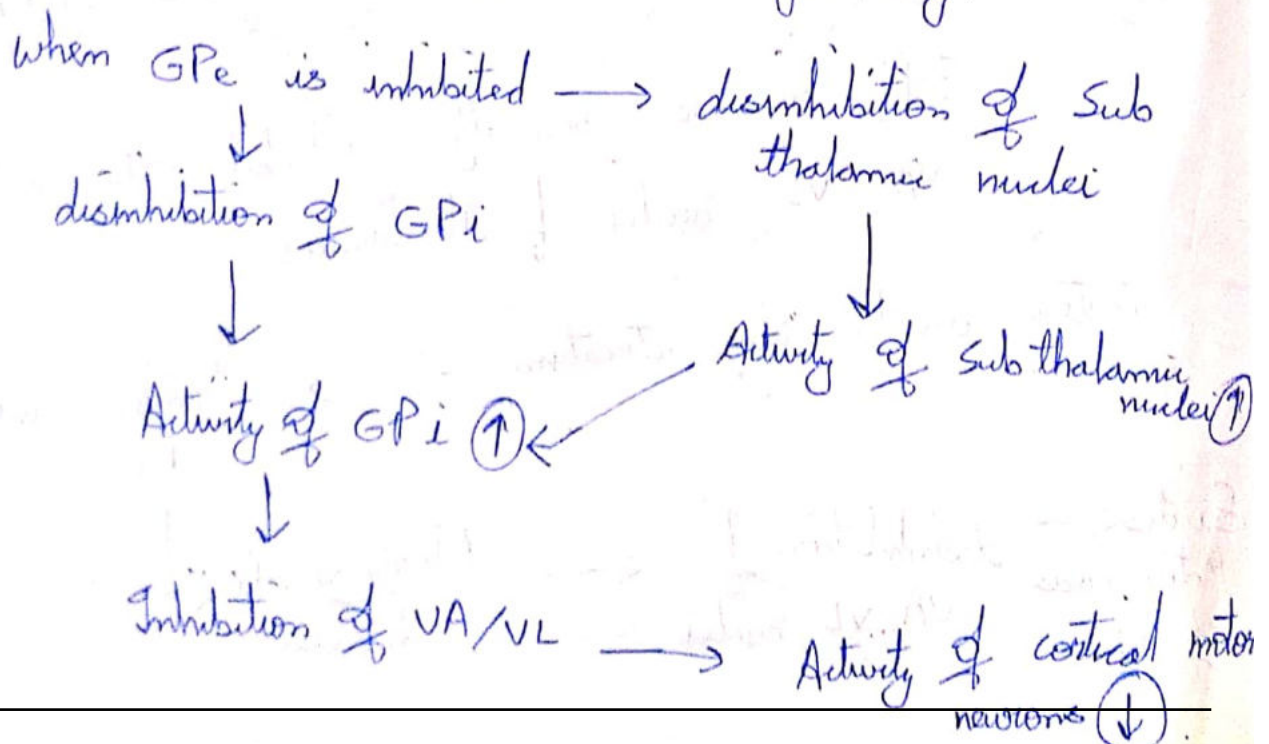
- Cortex excites the striatum → striatum inhibits GPi

Excites Motor areas of cortex ← disinhibition of VA/VL nuclei ← Activity of GPi decreases

inhibits motor activity — activity
of cortical motor neurons ↓



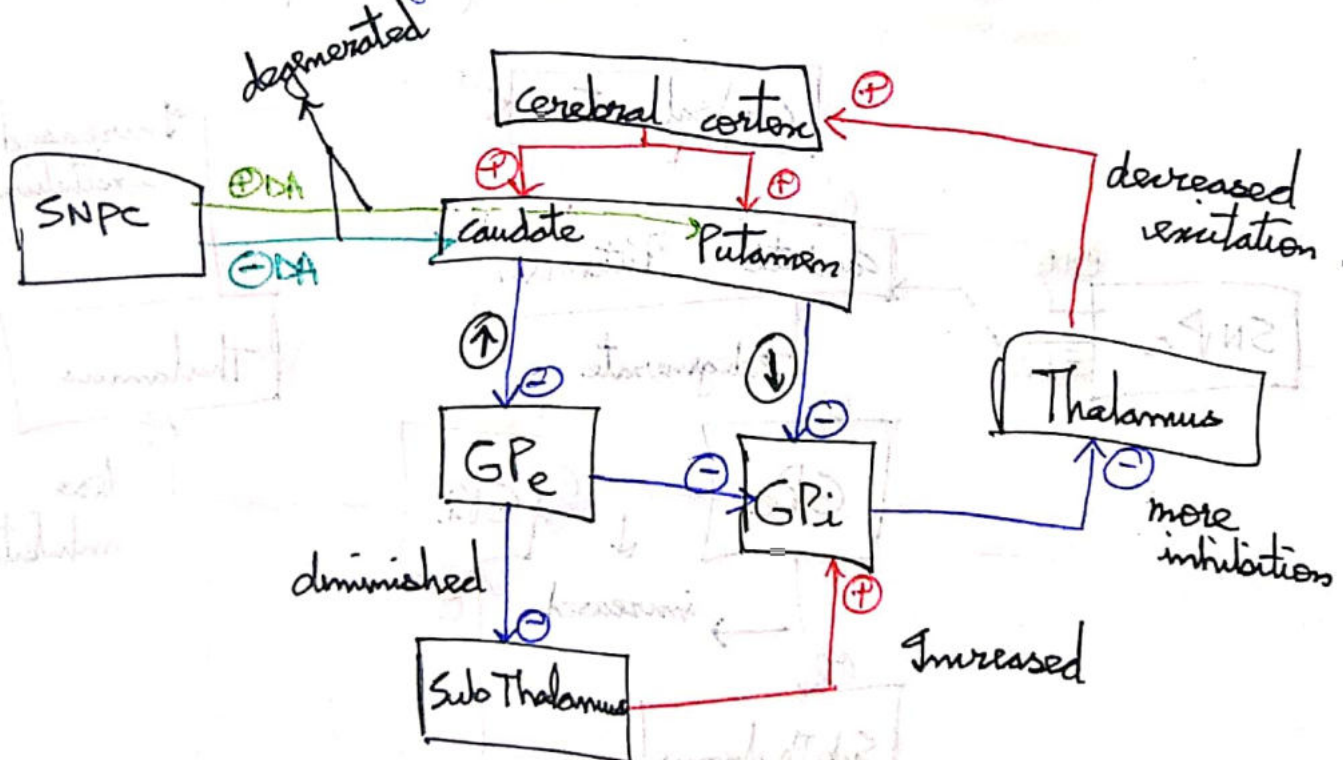
Subthalamic nucleus excites GPi generally.



Note :- dopamine is a neuromodulator that acts on D₁ and D₂ receptors on striatal neurons that participate in direct and indirect pathway

dopamine ⬆ - direct pathway & ⬇ indirect path.

- loss of neurons in SNPC, locus ceruleus and raphe nuclei
- loss of dopamine stimulation to striatum → diminishes direct pathway and facilitates indirect pathway.
- ⬆ in GPi activity → greater inhibition of neurons in VA/VL → inhibit motor cortex → Bradykinesia.

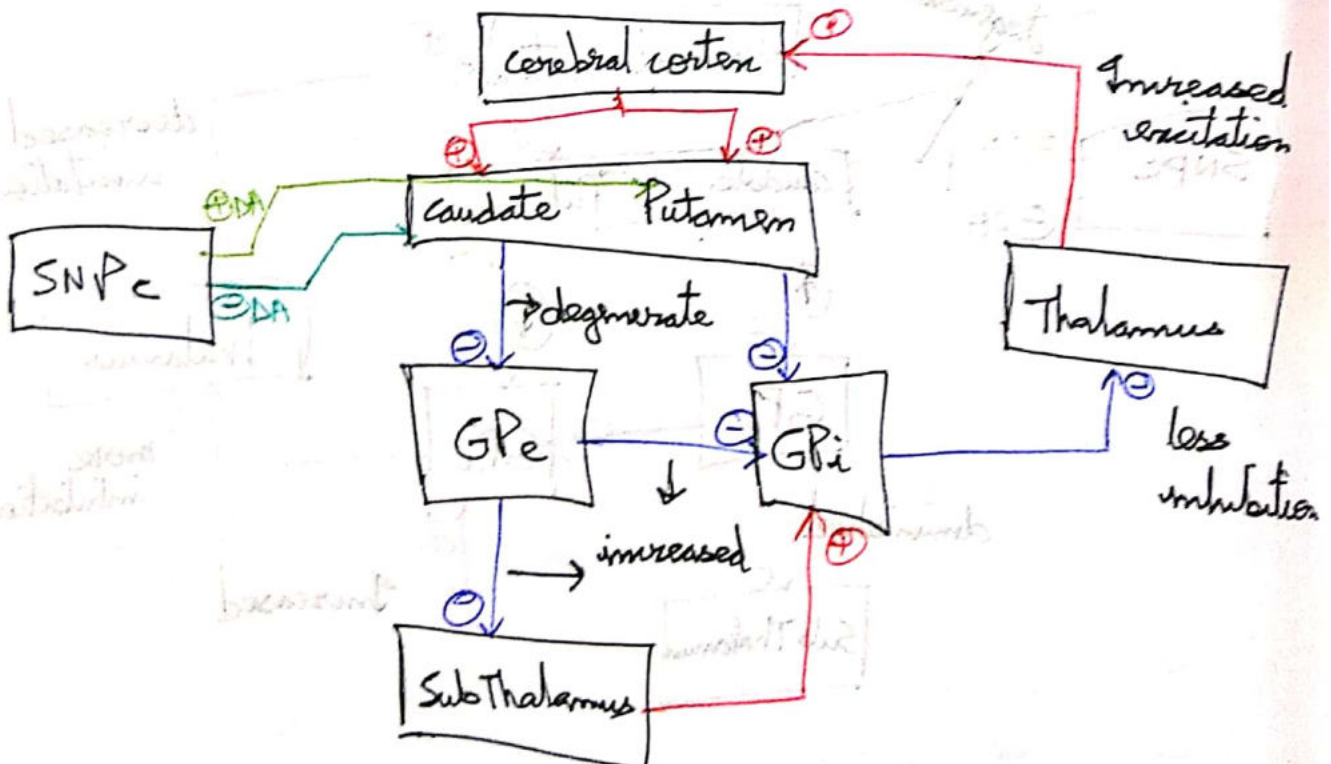


- loss of striatal GABAergic and cholinergic neurons that project to GPe
- loss of inhibition of GPe $\rightarrow$ Activation of GPe $\uparrow$

more disinhibition of VA/VL $\leftarrow$ $\downarrow$ in activity of GPi $\leftarrow$ $\downarrow$ in activity of subthalamic neurons

Activity of VA/VL $\uparrow$ $\rightarrow$ Activity of cortical neurons $\uparrow$

Jerky and purposeless motor behaviour



① Intention tremor

① Resting tremor

② Flaccidity

② Cogwheel / lead pipe rigidity

- Hemiballism :- lesion of subthalamic nucleus on one side of brain → disinhibition of VA/VL

Note - Hyperdirect Pathway :-

