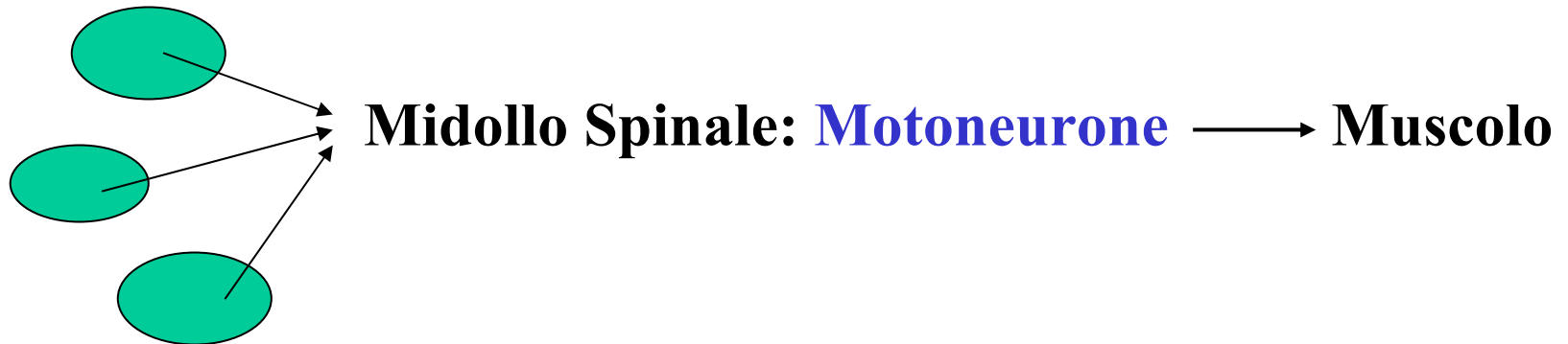


Sistema Motorio

Insieme delle **strutture cerebrali** e delle **vie nervose** che controllano la contrazione muscolare, al fine di eseguire i movimenti



Tipi di movimento:

Movimenti VOLONTARI (suonare piano, scrivere,...)

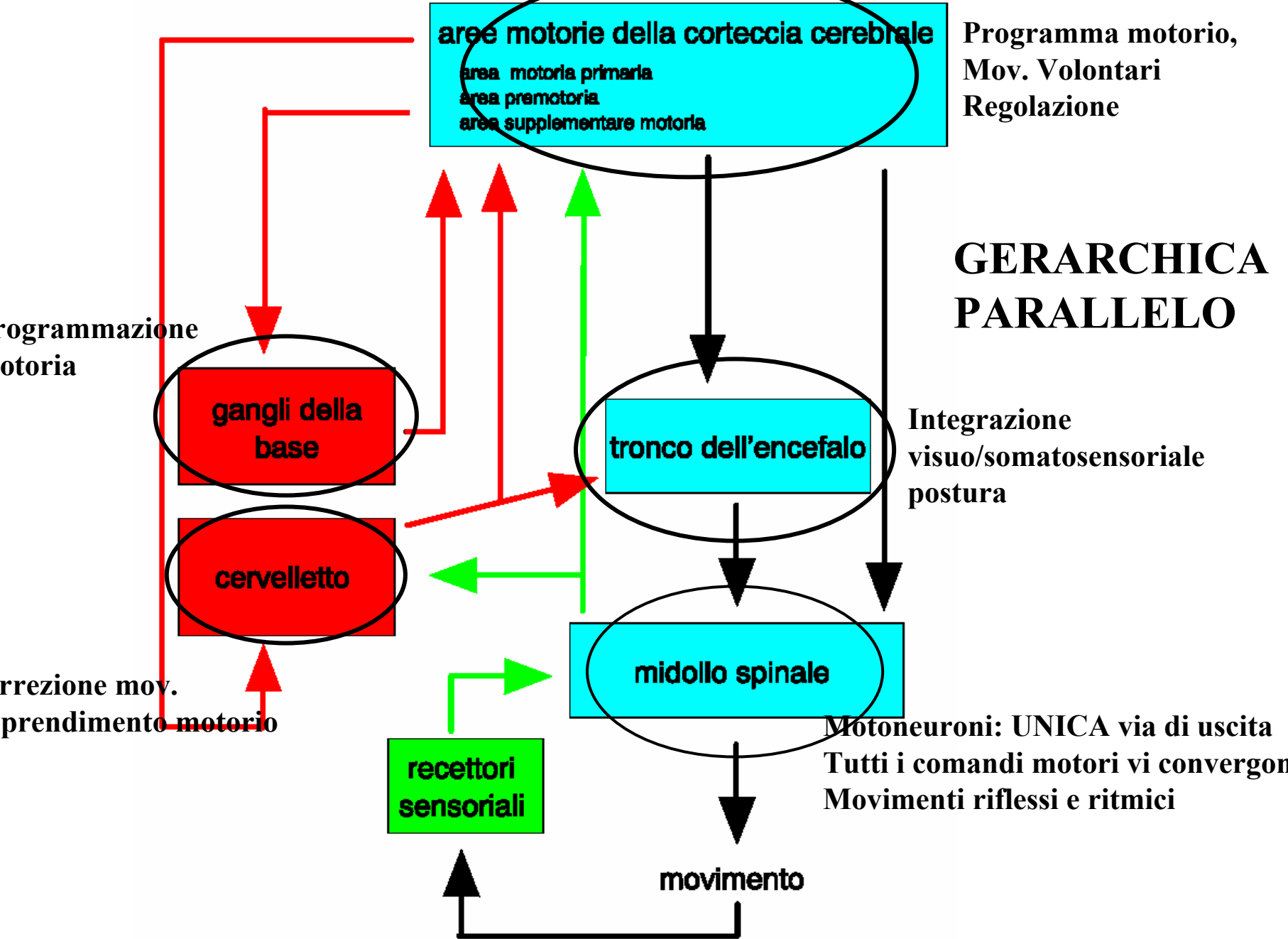
- **finalizzati**
- **appresi**

Movimenti RITMICI (masticazione, deambulazione,...)

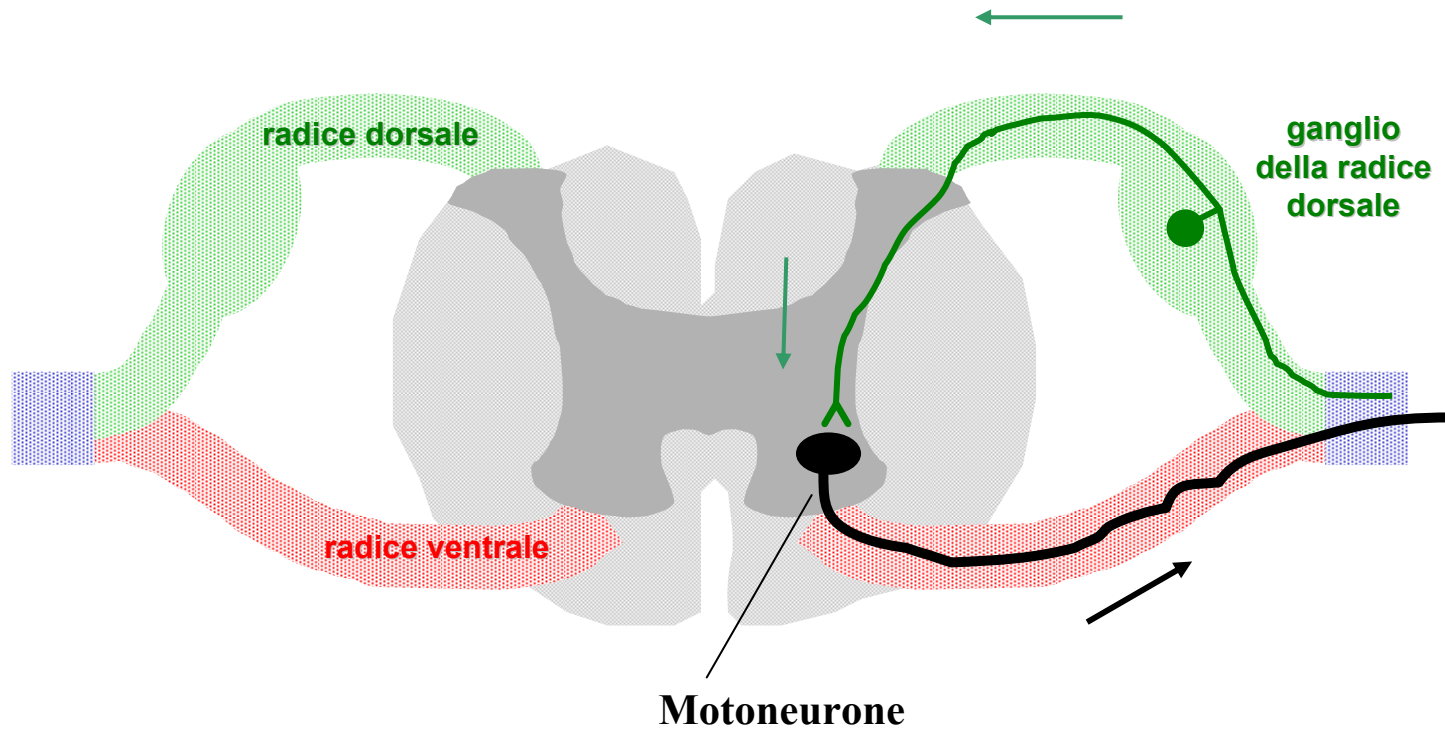
- **insieme di movimenti volontari e riflessi**
- **spesso innati**
- **inizio e fine volontari**

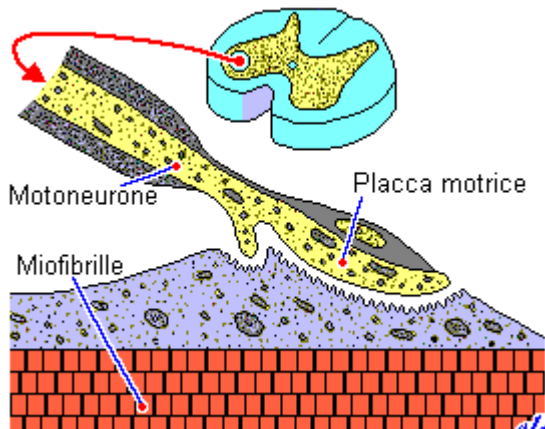
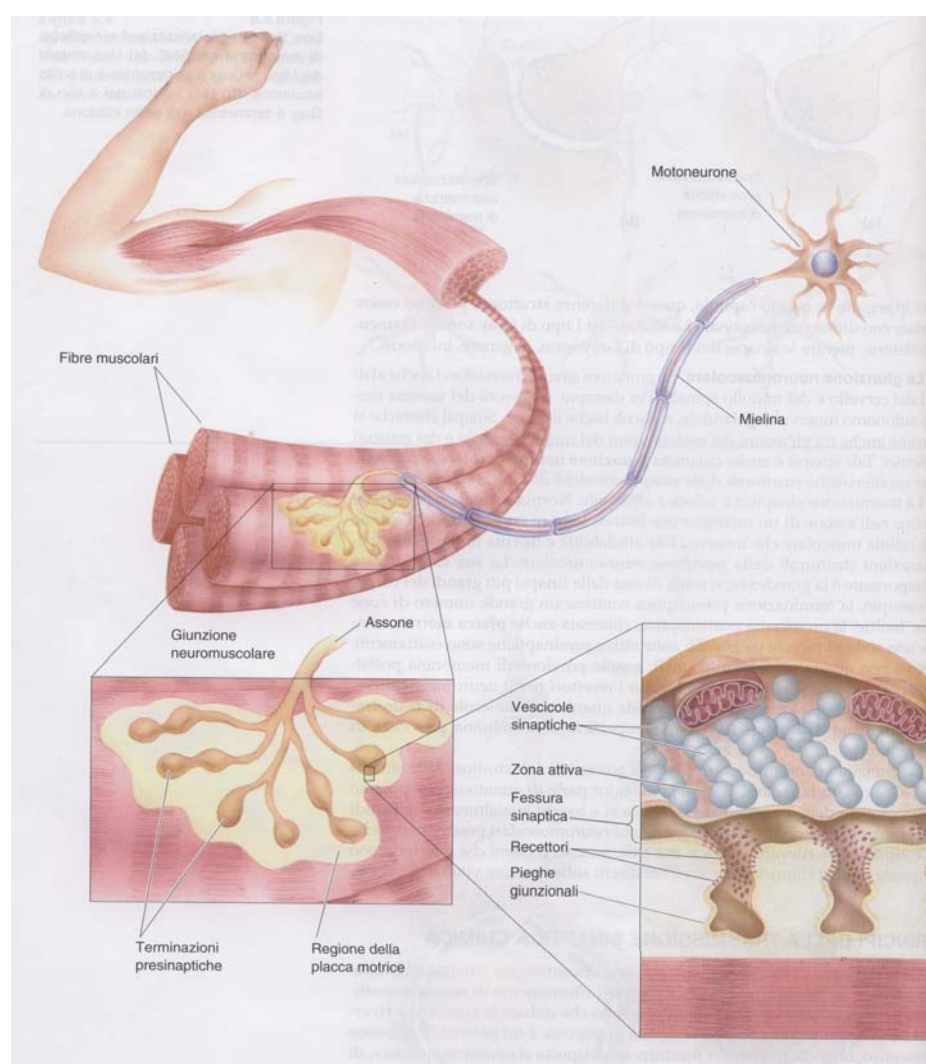
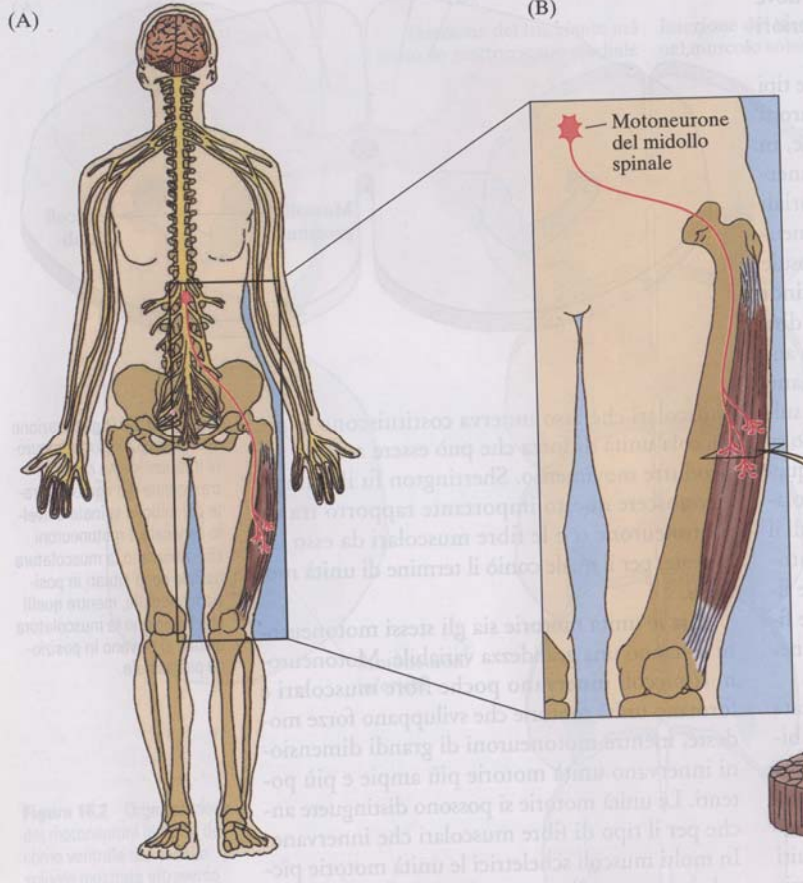
Movimenti RIFLESSI

- **“involontari”**
- **rapidi**
- **stereotipati**
- **innati**
- **specifici**
- **modulati da stimolo: l'intensità dello stimolo determina l'intensità del riflesso**

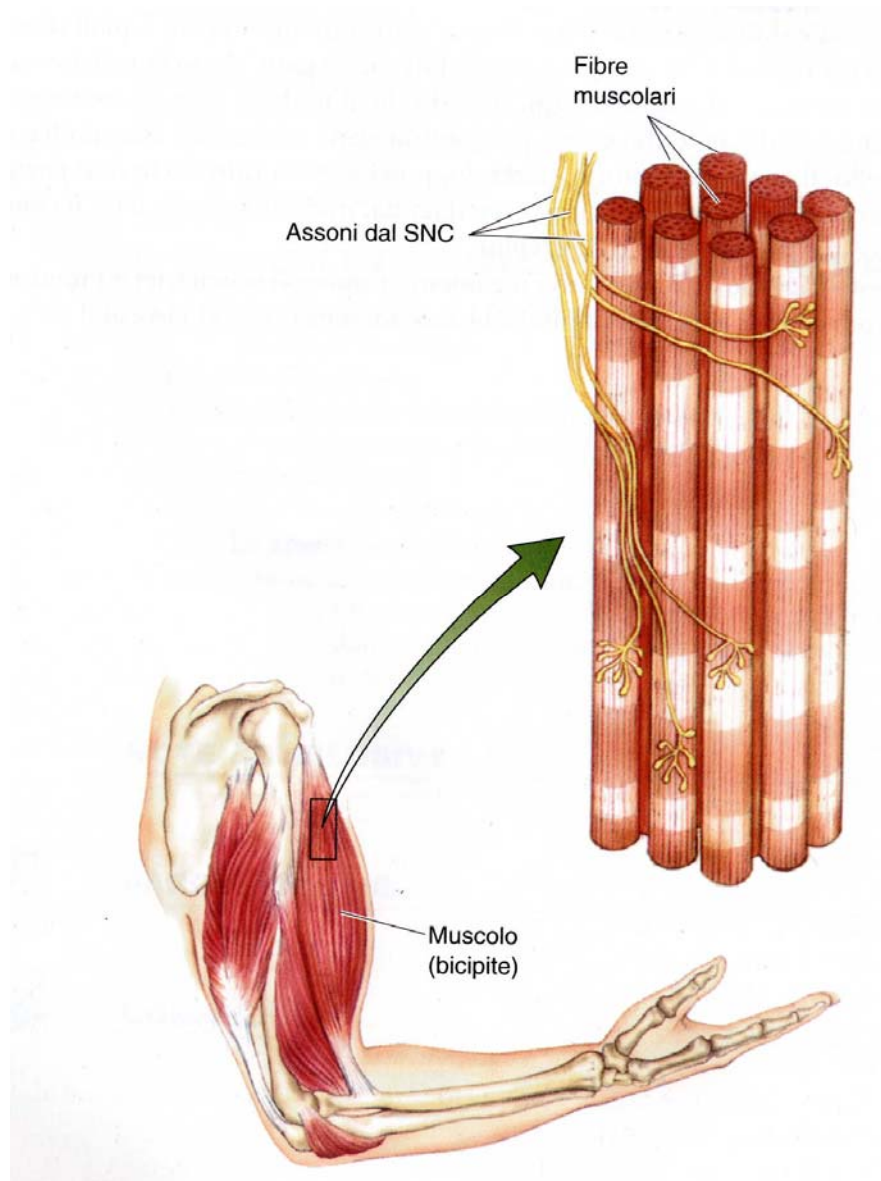


Midollo spinale e unità motoria





Sinapsi neuro-muscolare



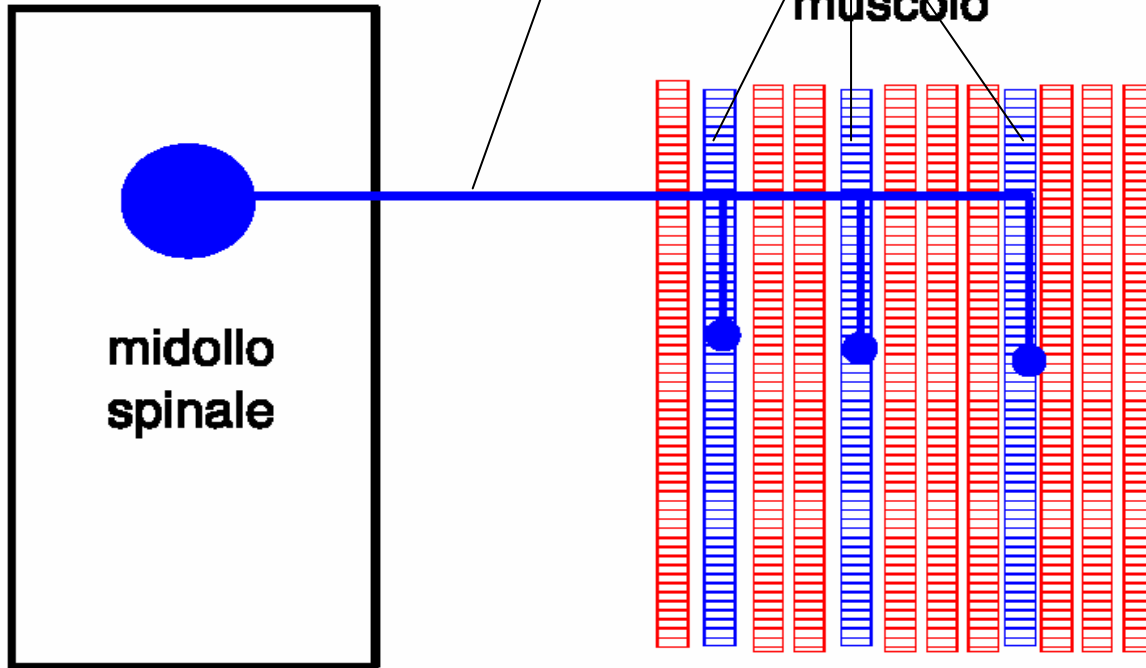
Unità motoria

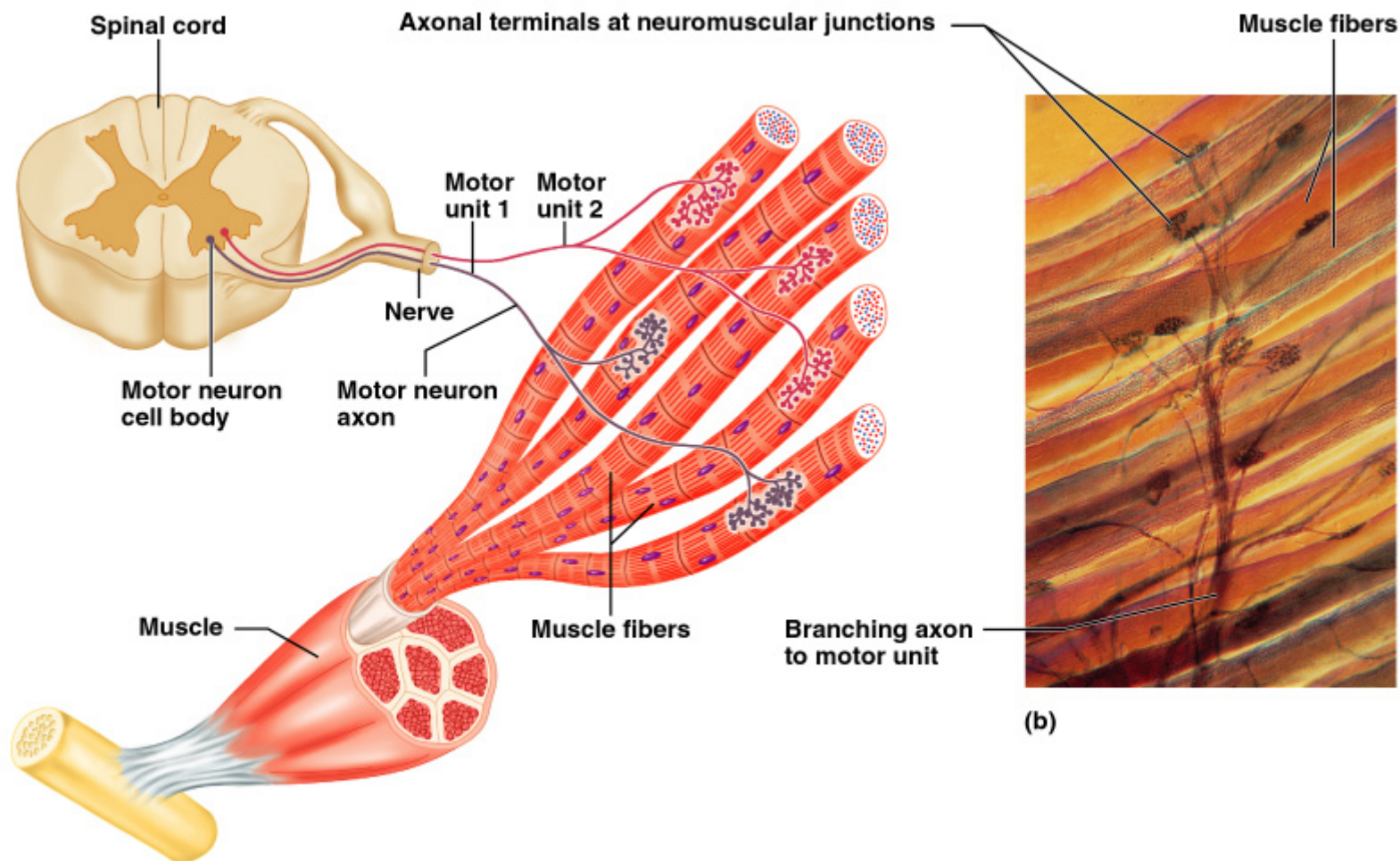
Motoneurone

Fibre muscolari

muscolo

midollo
spinale

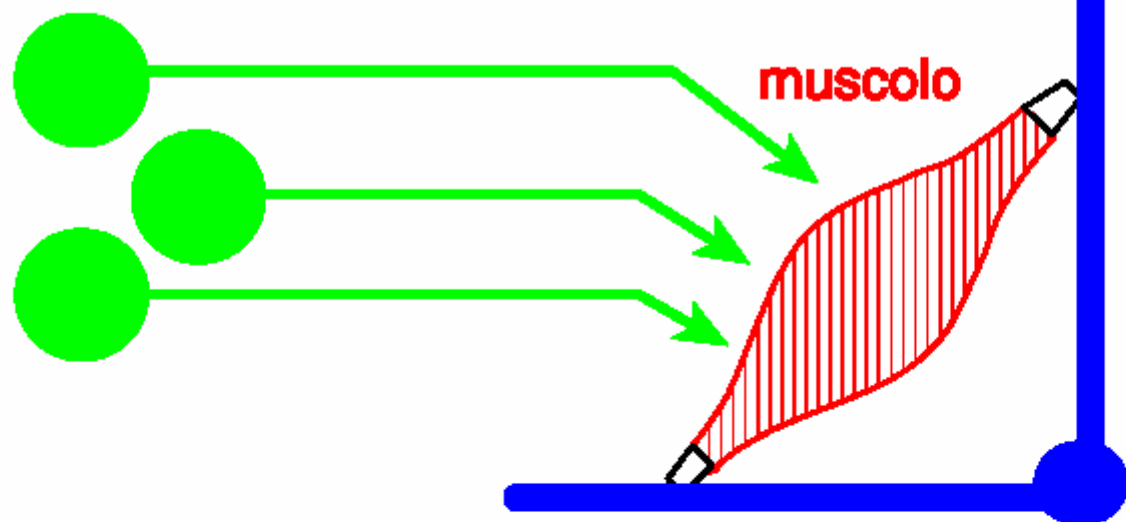




(a)

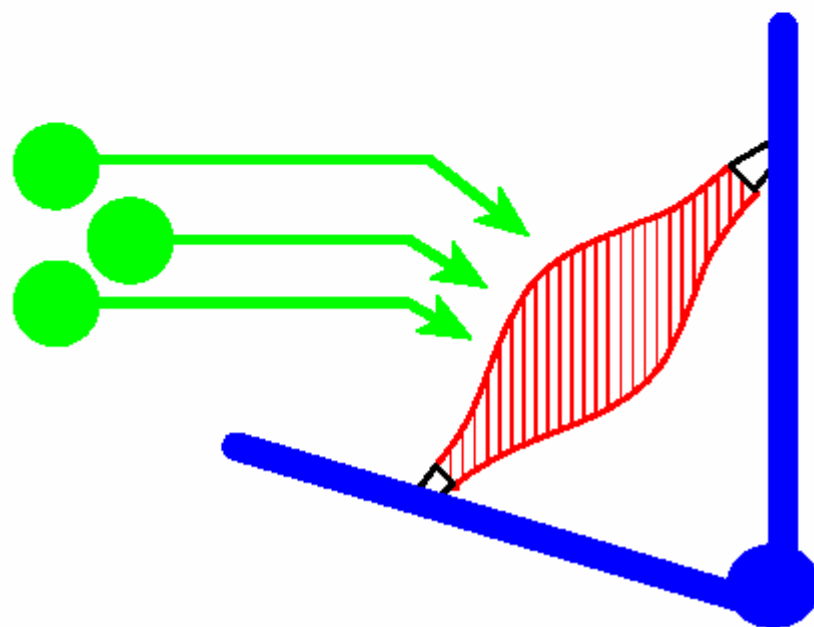
(b)

motoneuroni



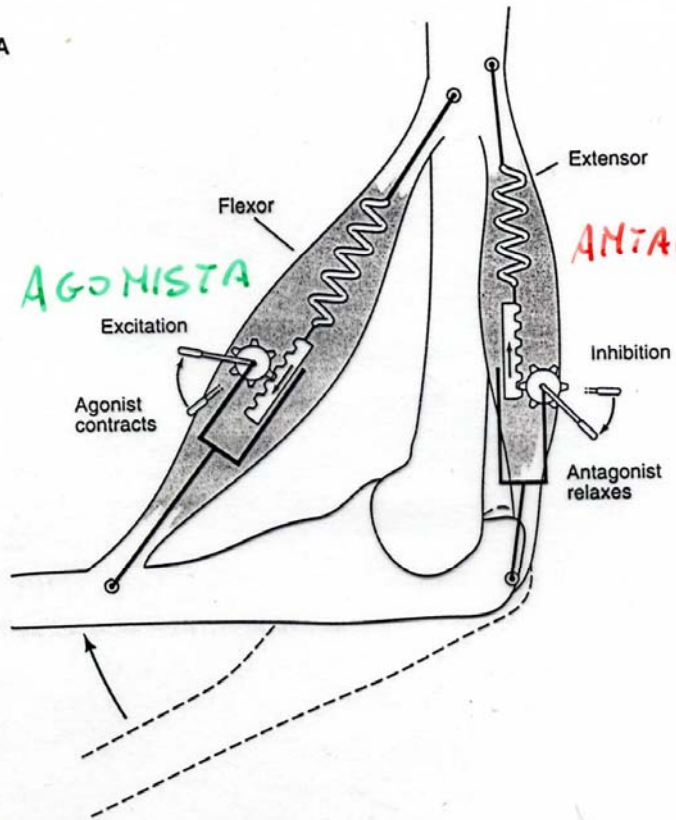
muscolo

articolazione

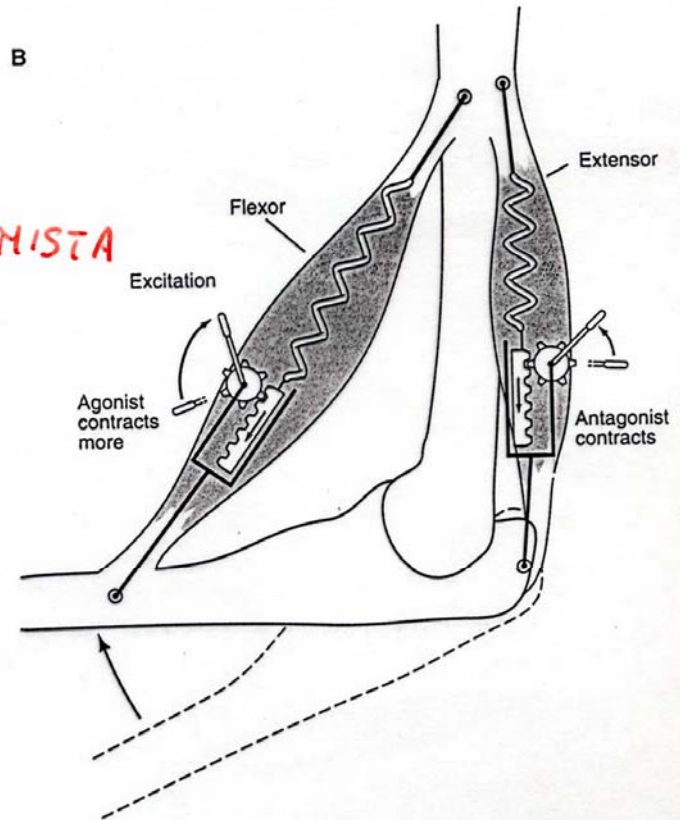


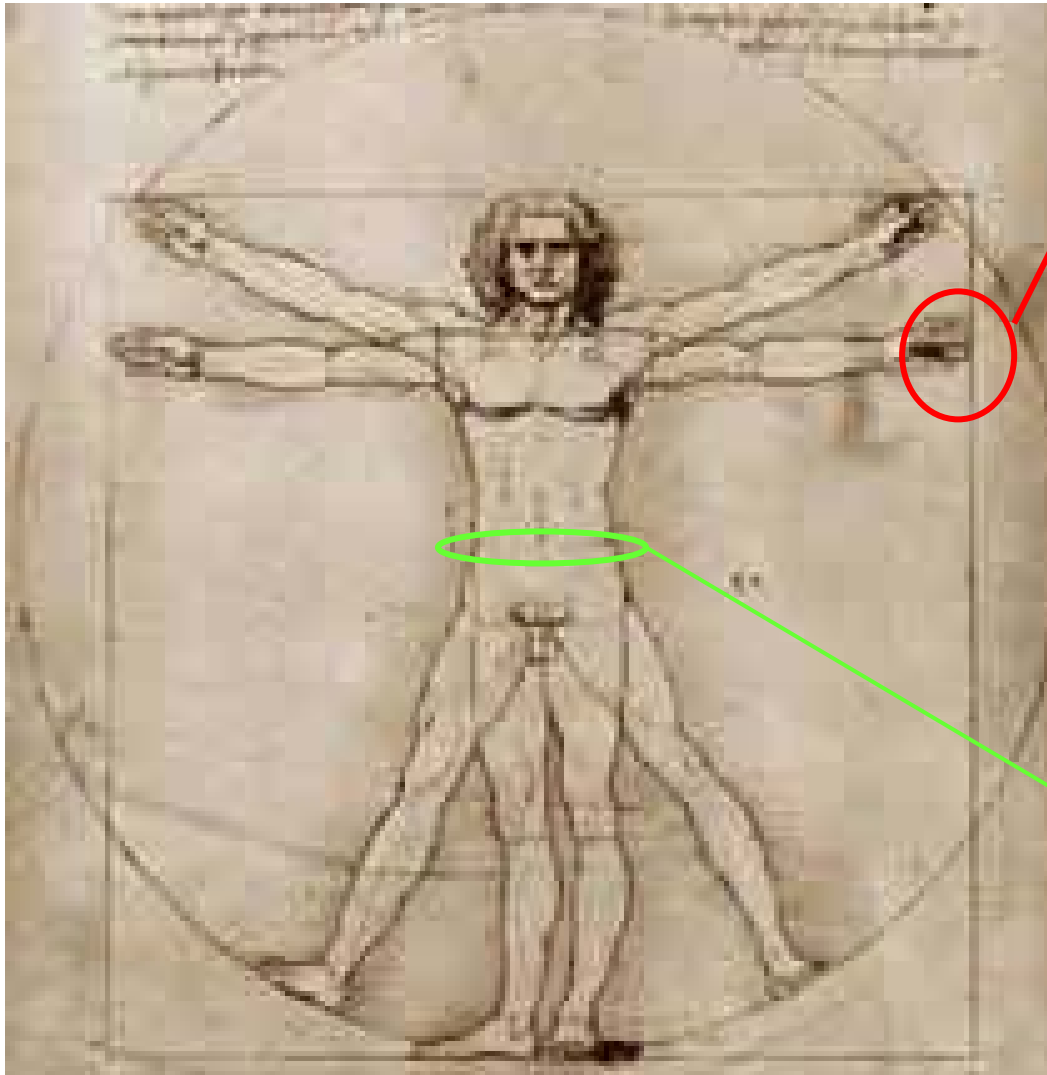
contrazione

A



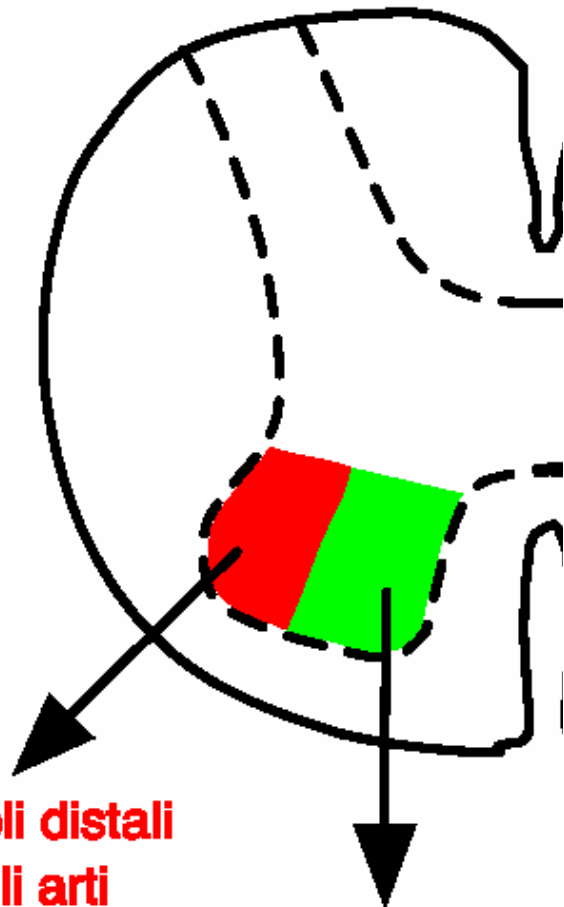
B





Muscoli distali
Mov. fini e volontari

Muscoli prossimali
Equilibrio e postura

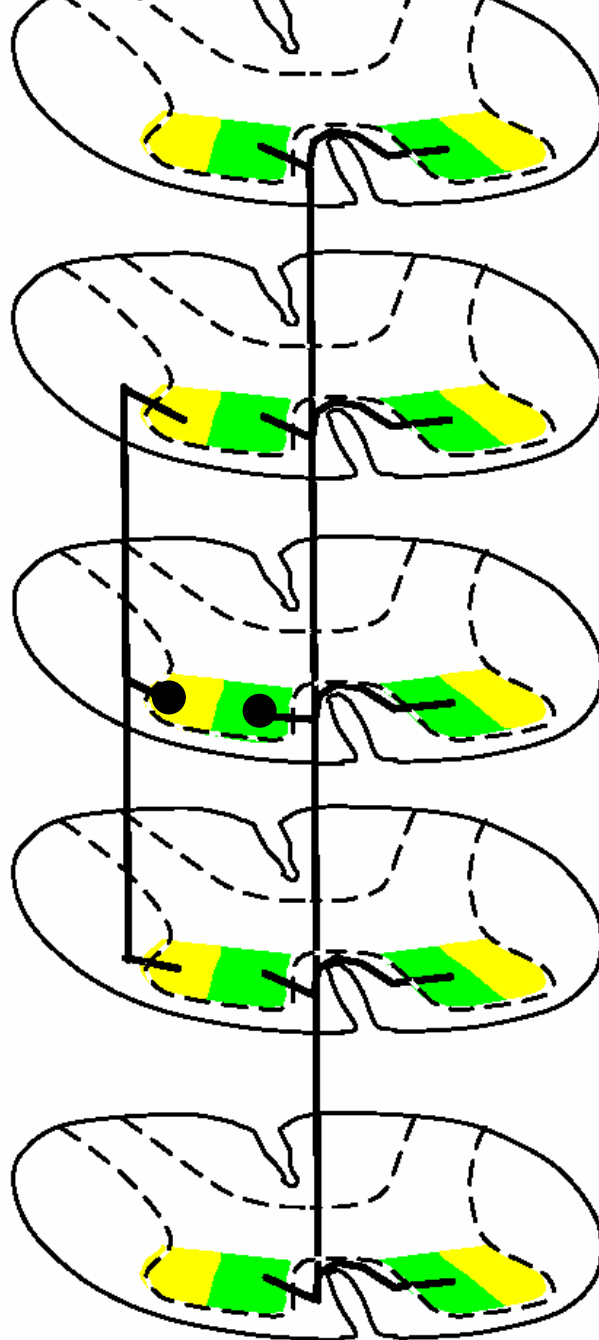


**muscoli distali
degli arti**

**muscoli assiali
(tronco, collo)**

**Mov. Volontari
Sistemi Laterali**

**Postura e equilibrio
Sistemi mediali**



**neuroni
propriospinali**

Vie Discendenti

- **Sistemi laterali e mediali**
- **Dal tronco encefalico e dalla neocorteccia**

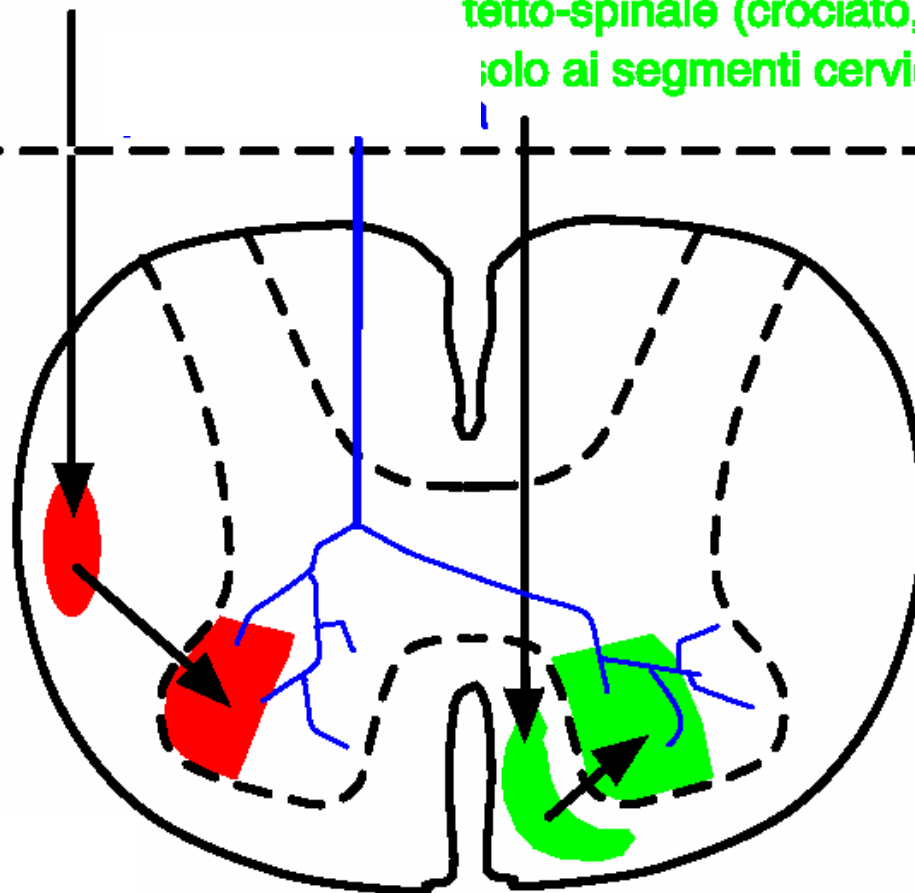
Tronco encefalico

Più
recente
felini

sistemi laterali
tratto rubrospinale
(crociato)

sistemi mediali
reticolo-spinale (diretto)
vestibolo spinale (diretto)
tetto-spinale (crociato,
solo ai segmenti cervicali)

Più
antichi



corteccia cerebrale motoria

area motoria primaria (area 4)

area premotoria (area 6)

tratto cortico-spinale laterale
(crociato)

tratto-cortico-spinale ventrale
(diretto)

Più recente:
SOLO in
mammiferi

tronco encefalico

sistemi laterali

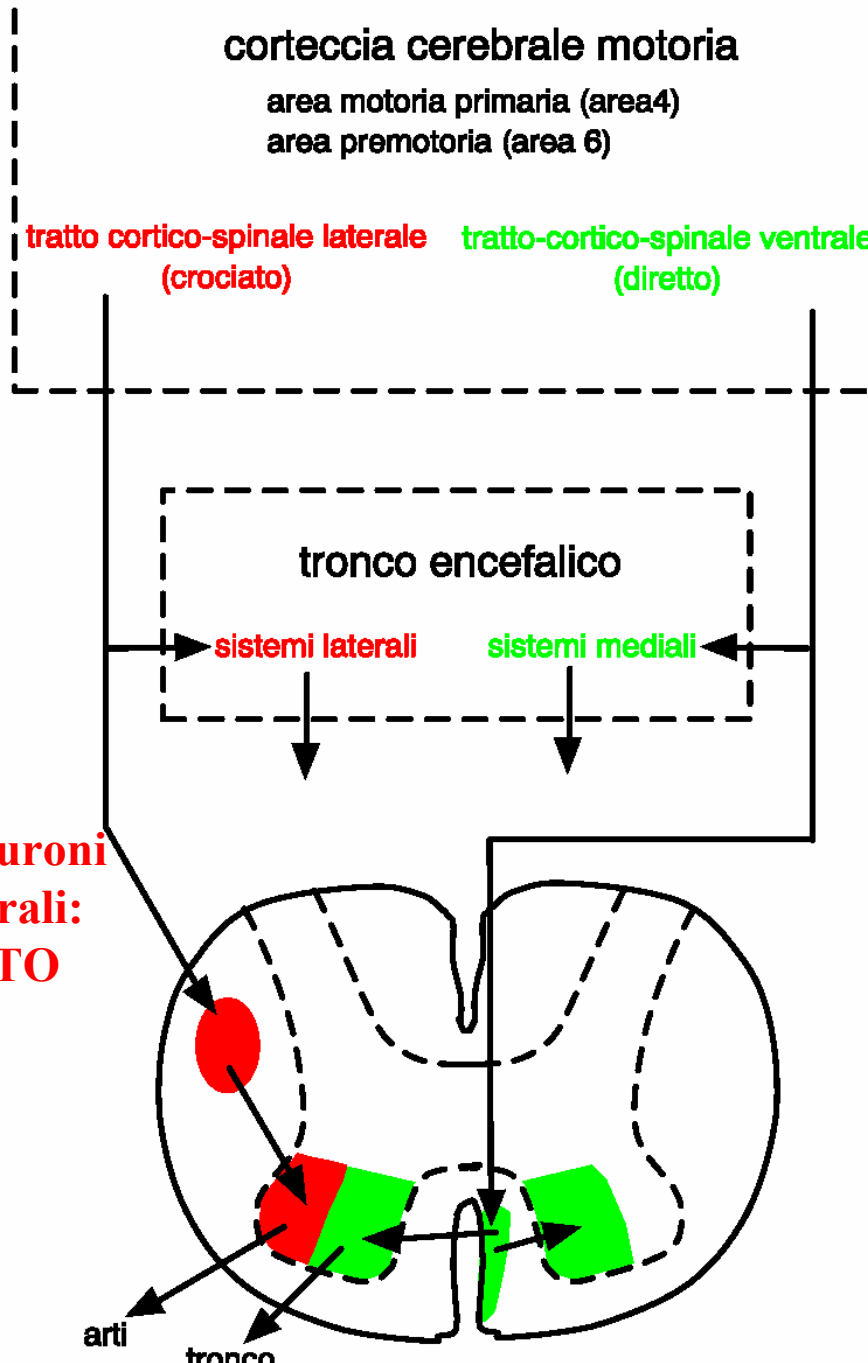
sistemi mediali

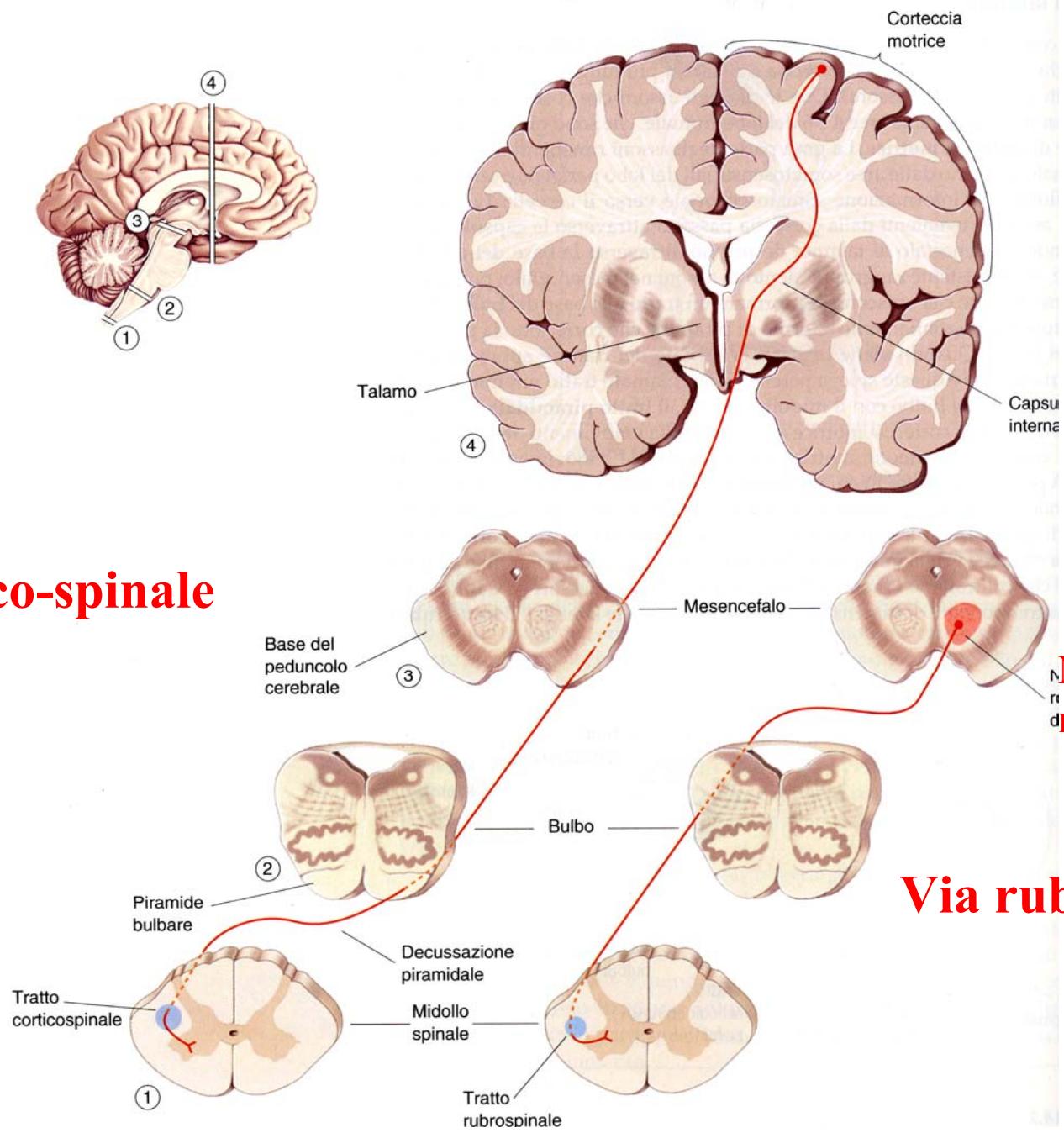
A motoneuroni
Controlaterali:
CROCIATO

A motoneuroni
Ipsilaterali
DIRETTO

arti

tronco





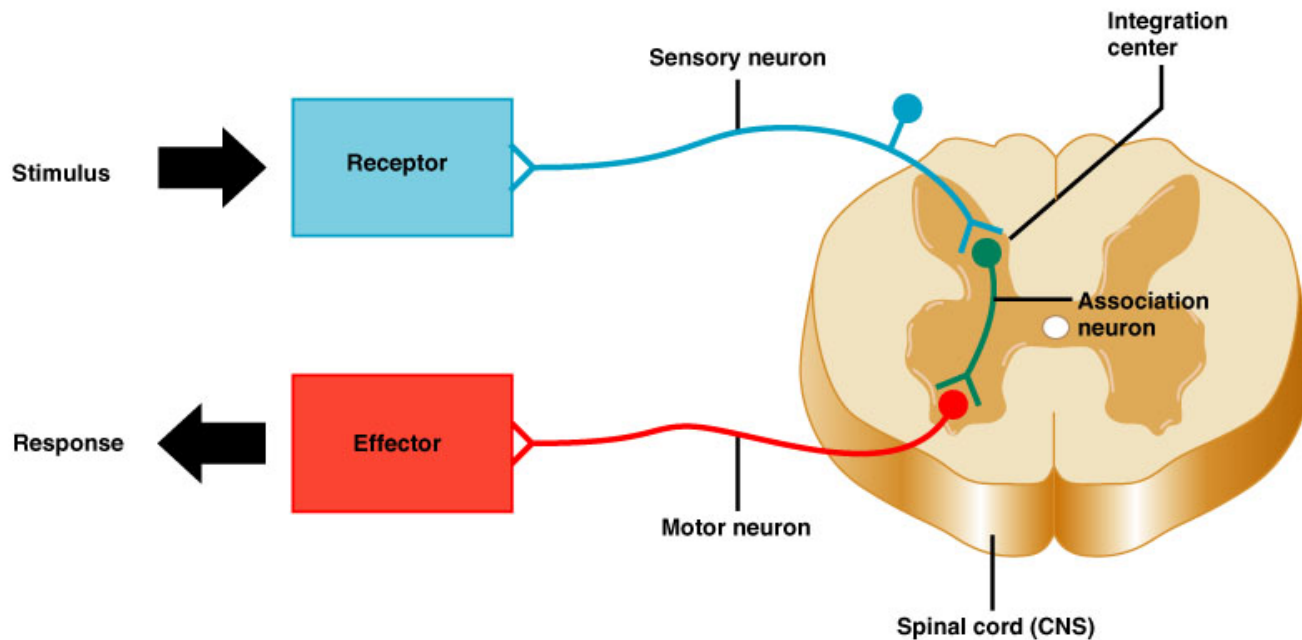
**Via cortico-spinale
laterale**

**Nucleo
rosso**

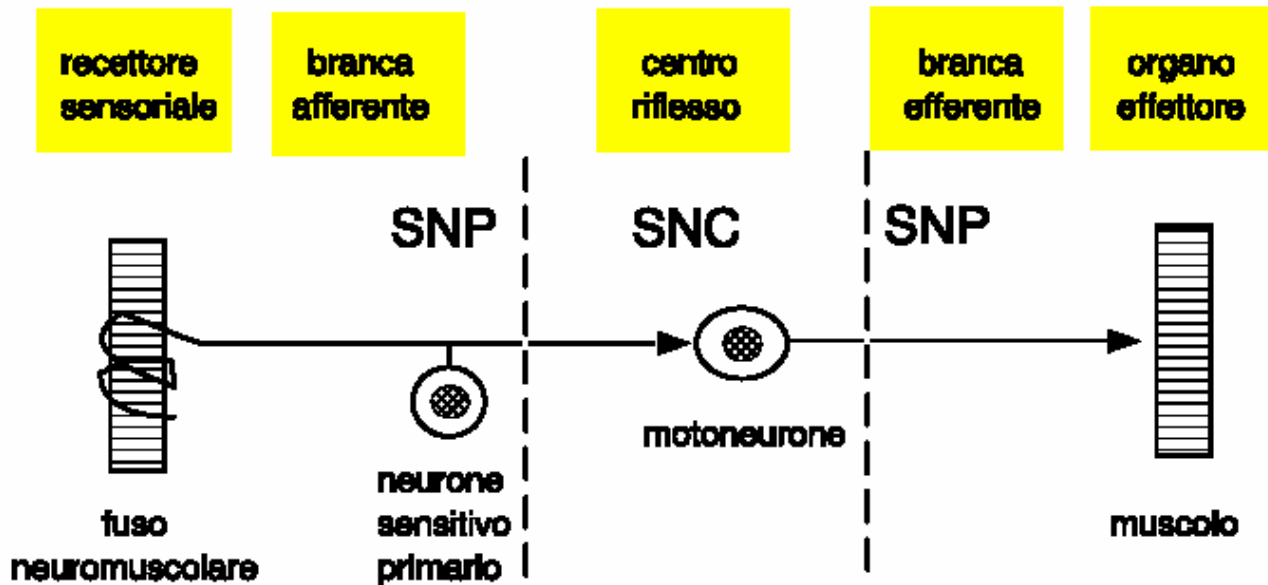
Via rubro-spinale

Movimenti RIFLESSI

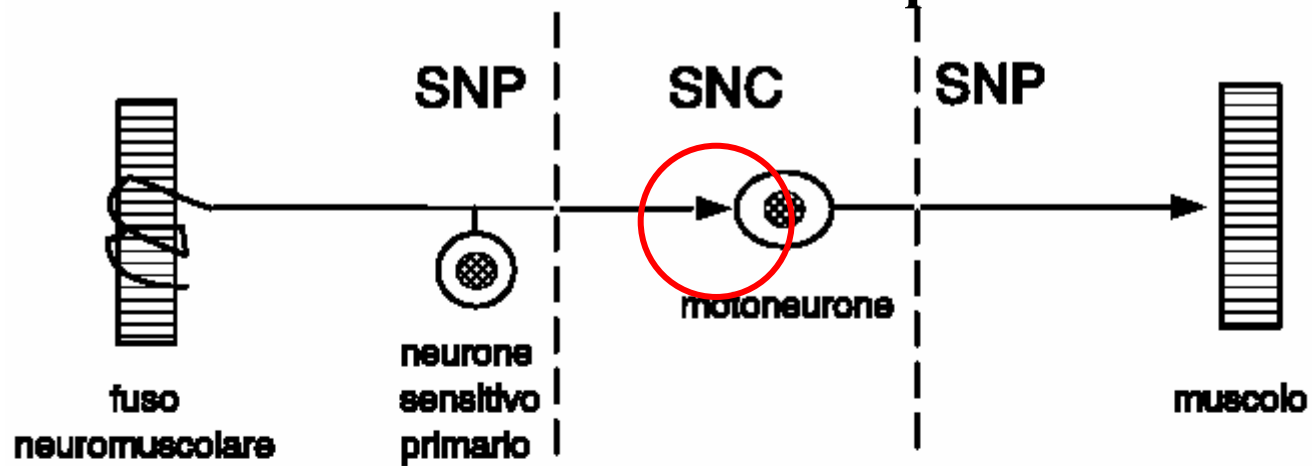
- “involontari”
- rapidi
- stereotipati
- innati
- specifici
- modulati da stimolo: l'intensità dello stimolo determina l'intensità del riflesso
- mediati dal midollo spinale e in parte dal tronco encefalico



Copyright © 2004 Pearson Education, Inc., publishing as Benjamin Cummings.



riflesso monosinaptico



riflesso polisinaptico

