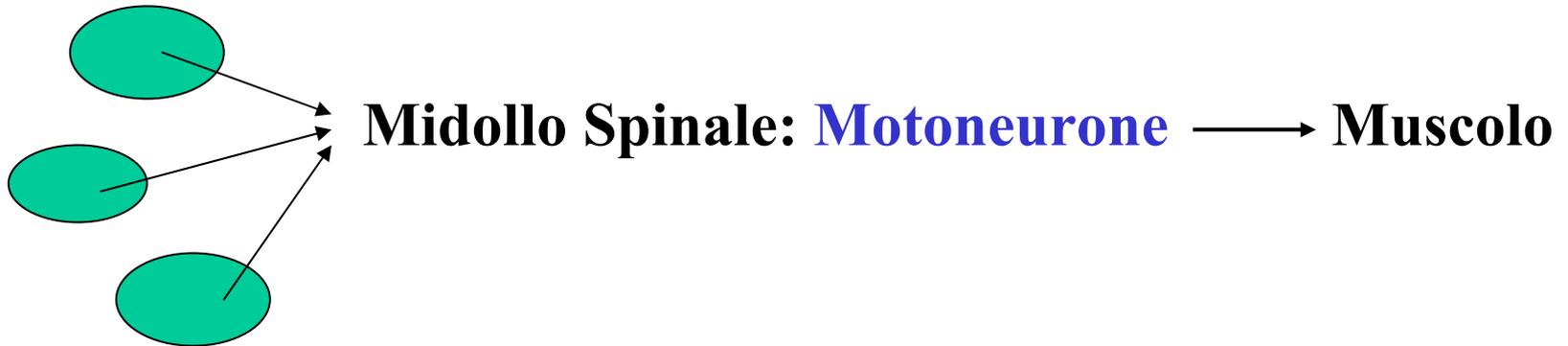


Sistema Motorio

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**

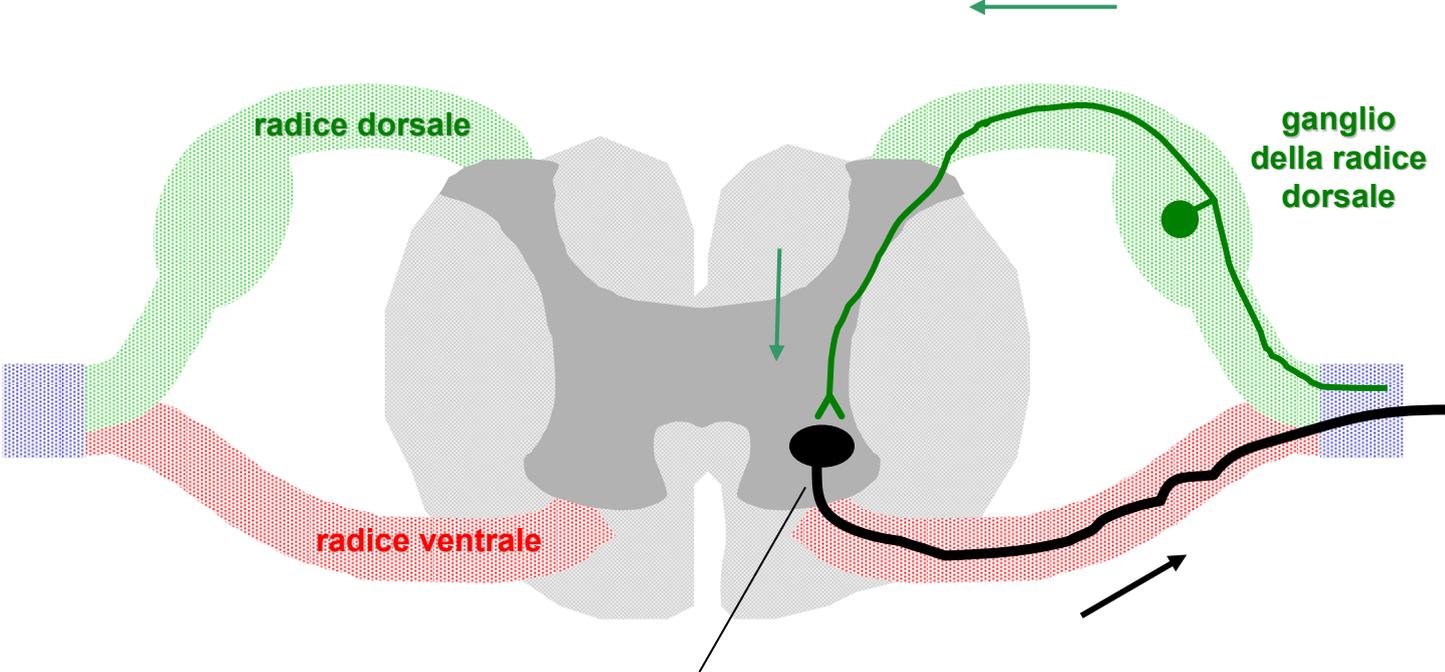
Movimenti RITMICI (masticazione, deambulazione,...)

- **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

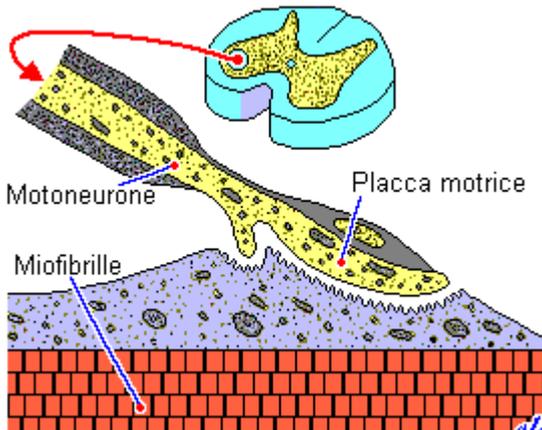
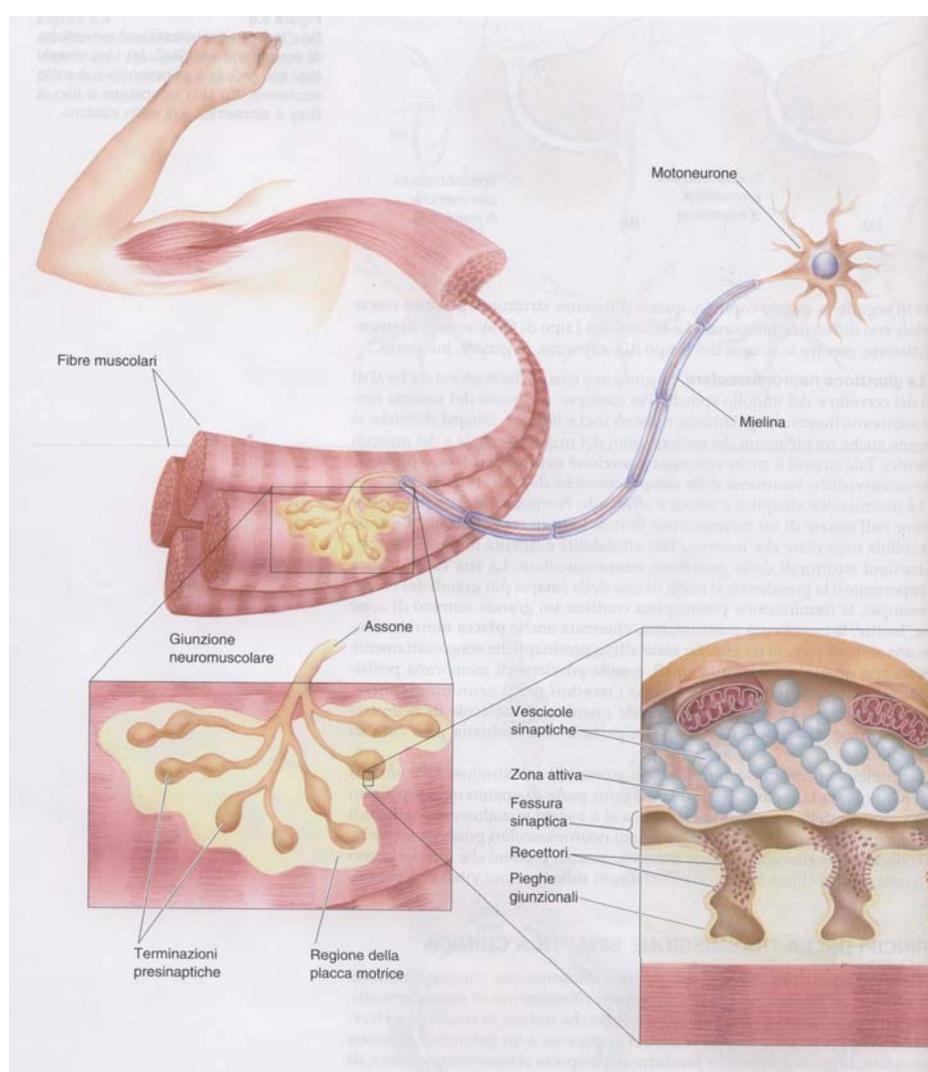
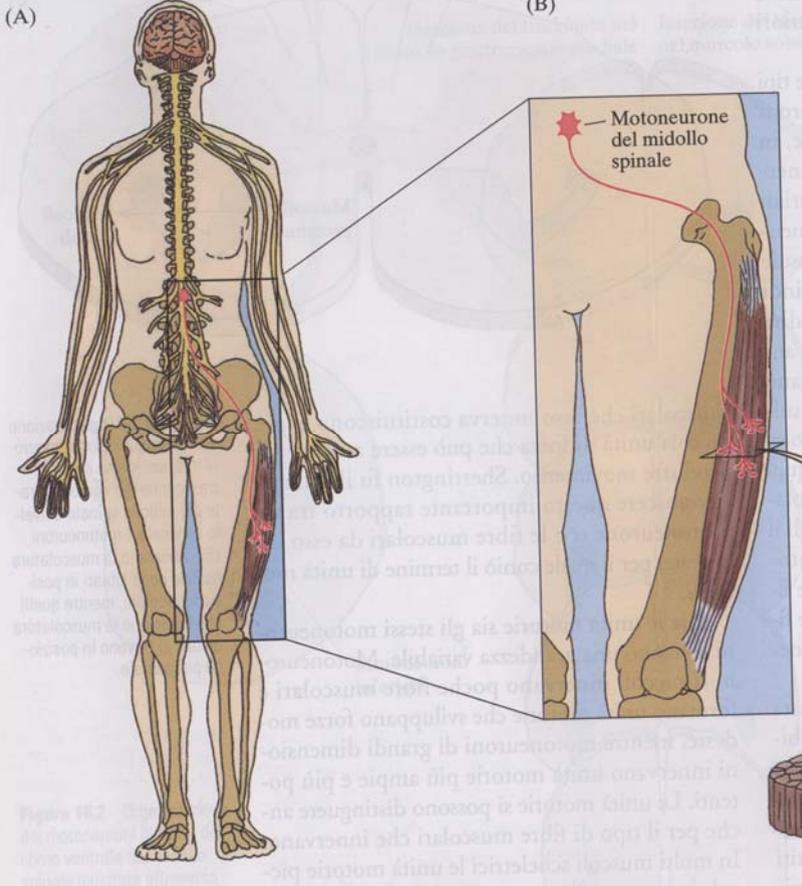


radice dorsale

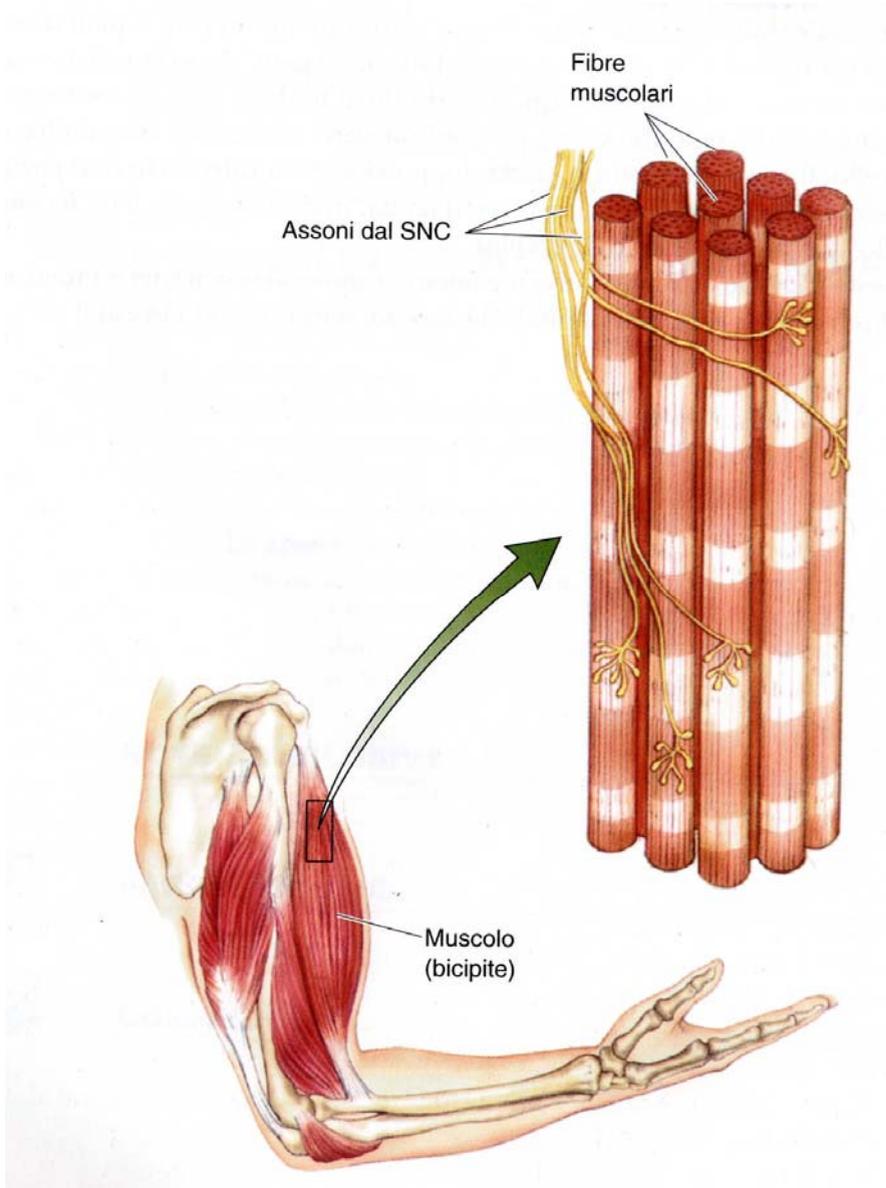
ganglio della radice dorsale

radice ventrale

Motoneurone



Sinapsi neuro-muscolare



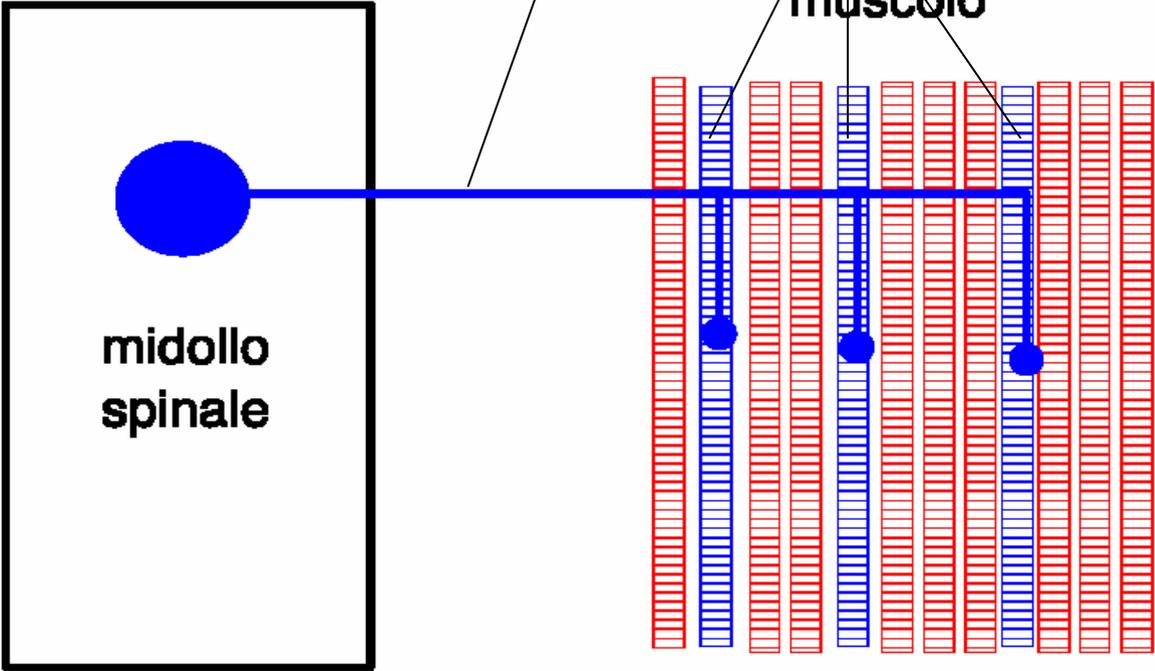
Unità motoria

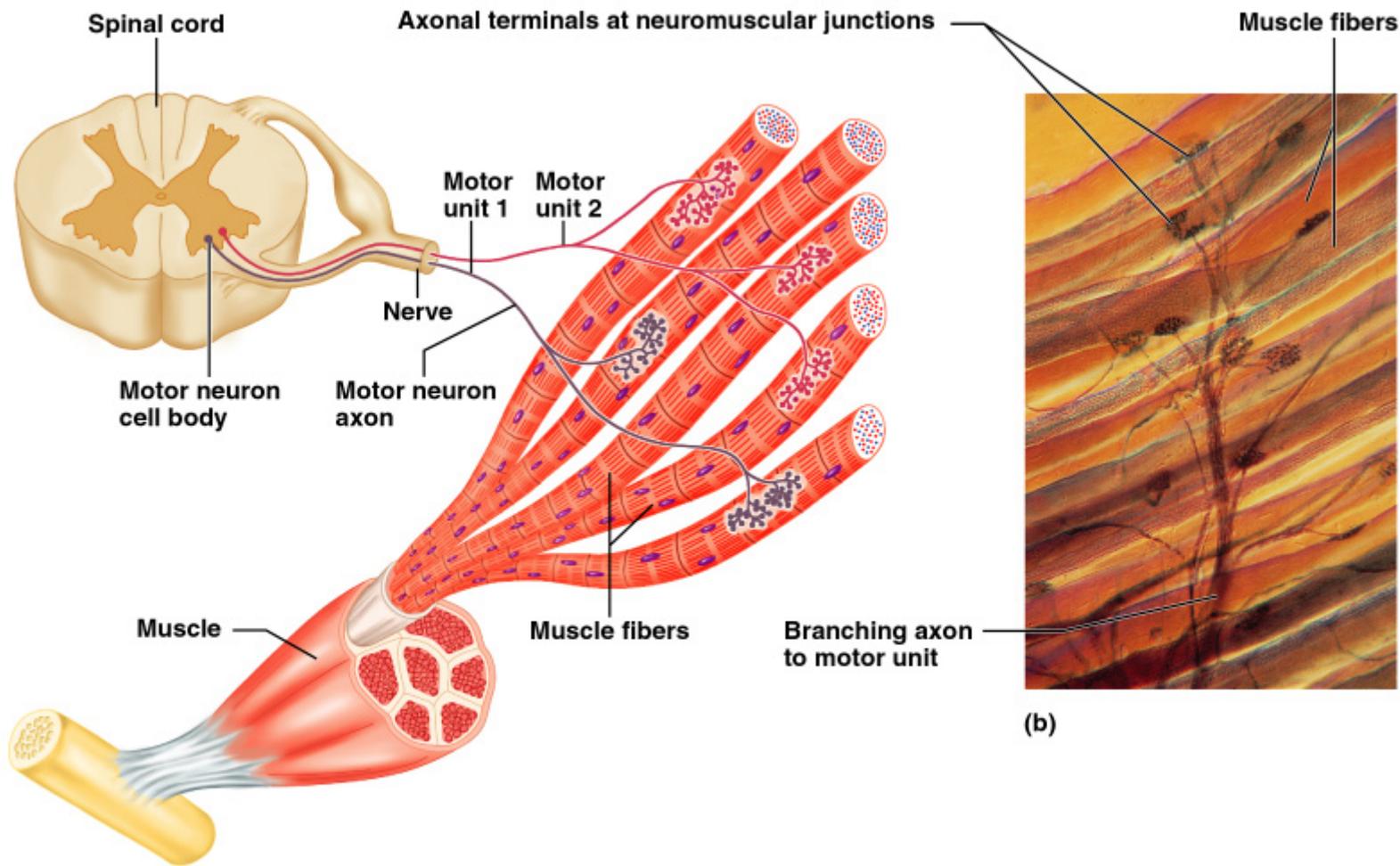
Motoneurone

Fibre muscolari

muscolo

midollo
spinale

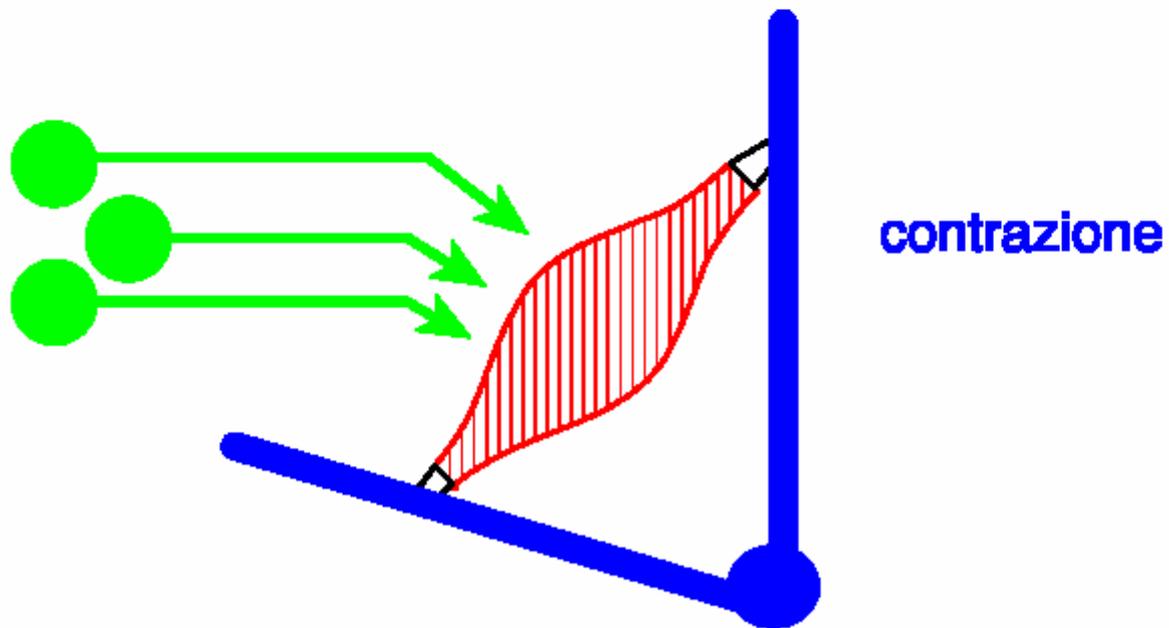
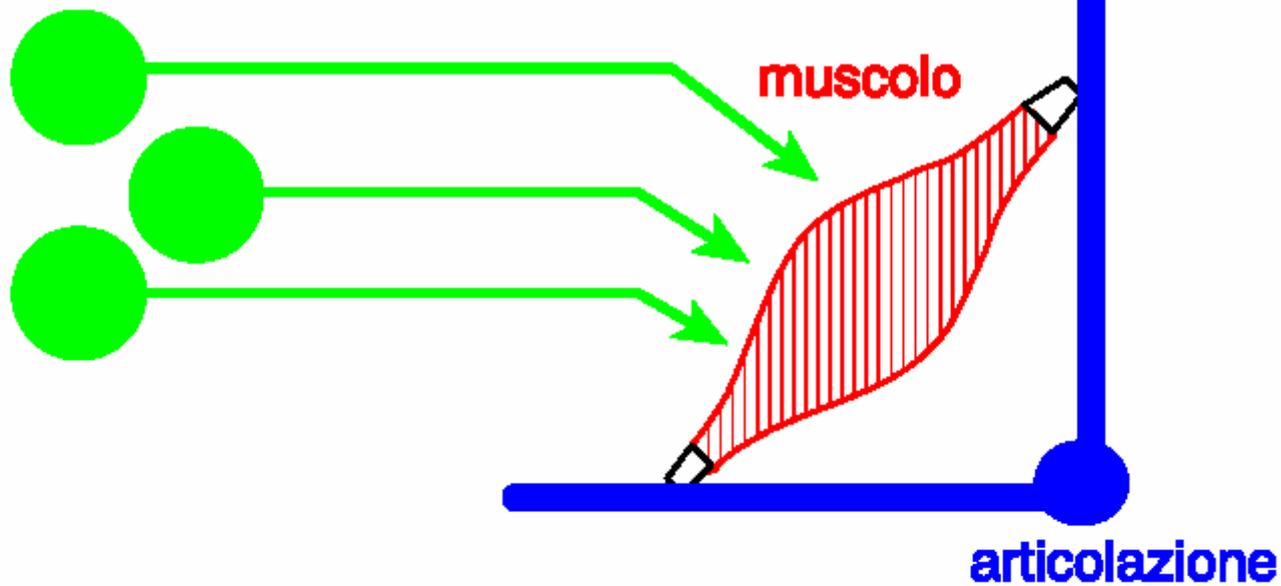




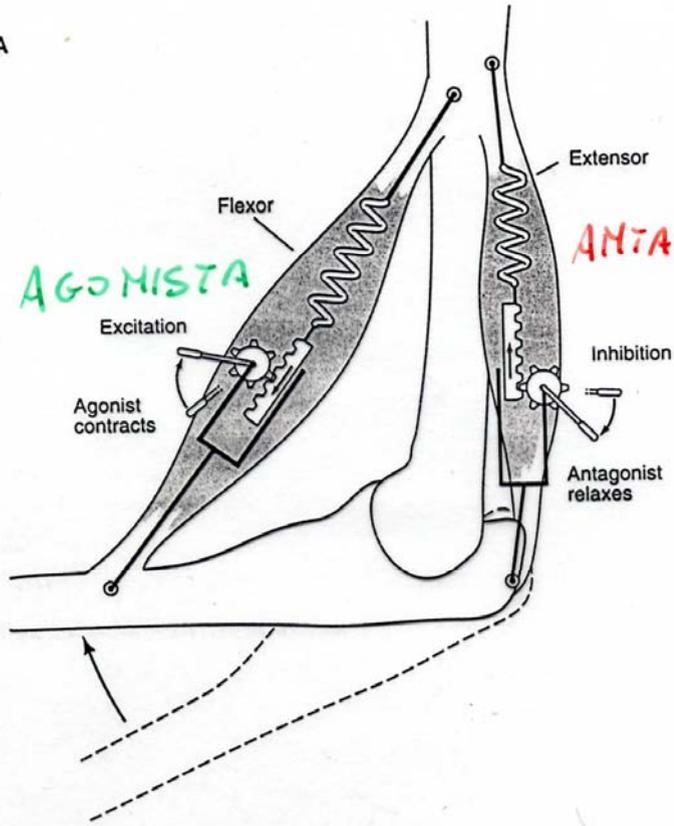
(a)

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

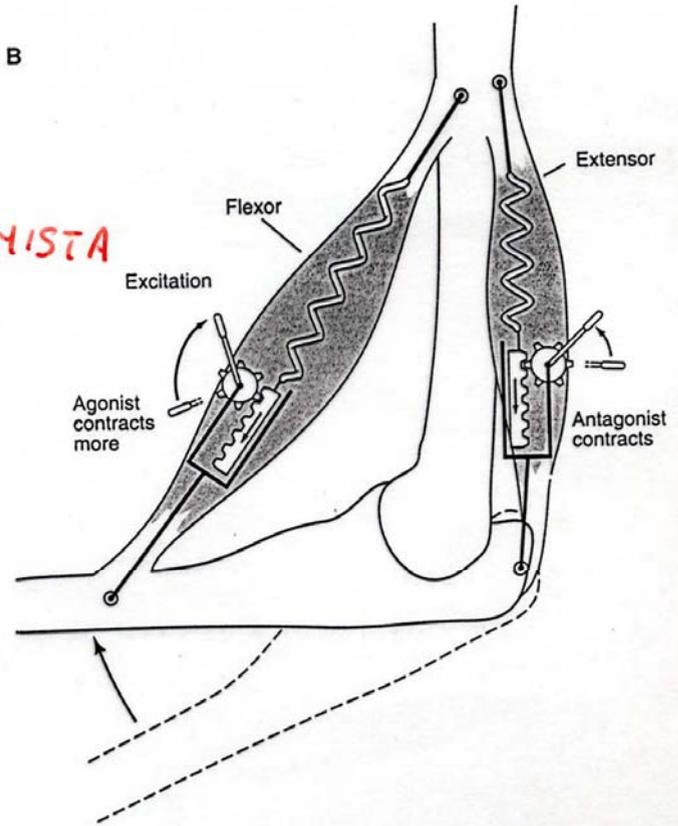
motoneuroni

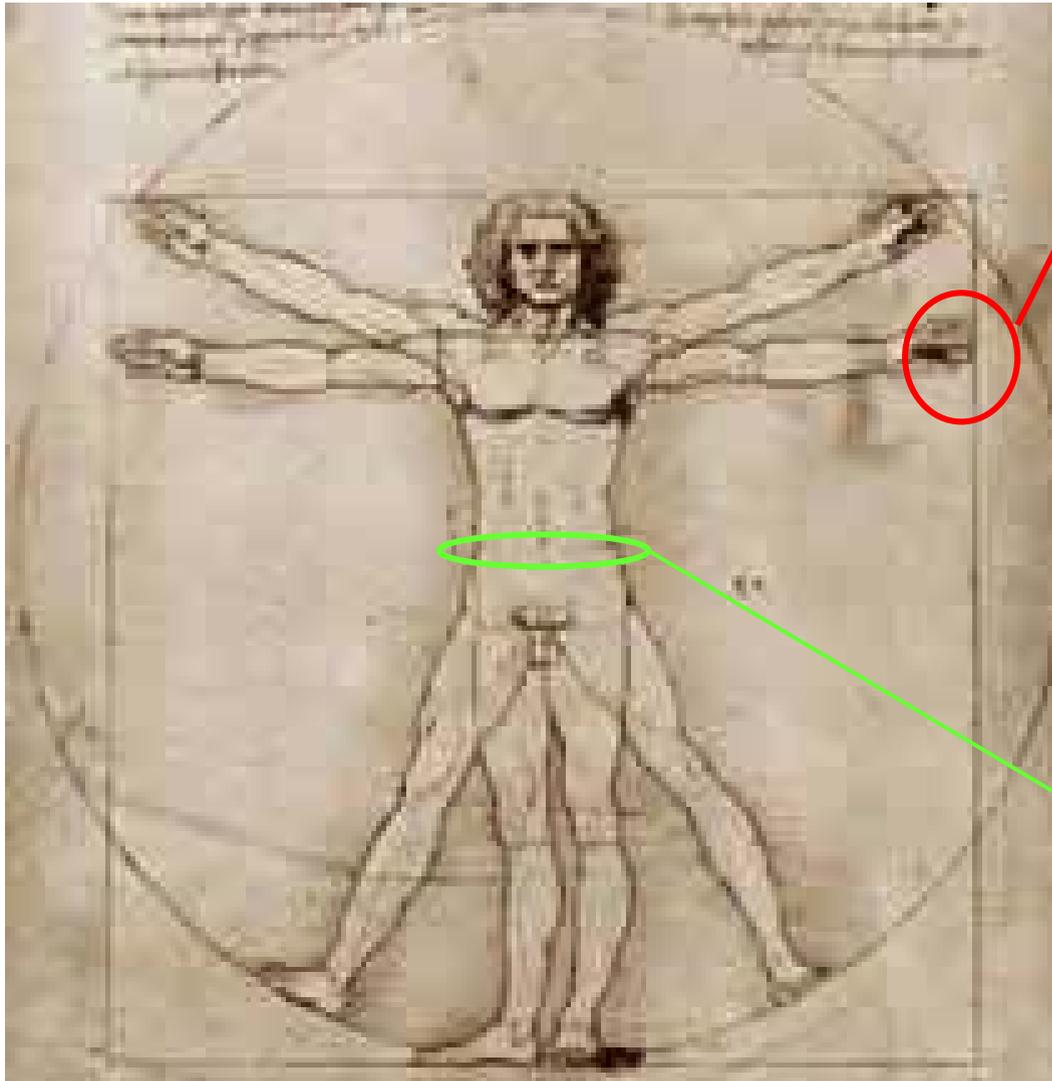


A



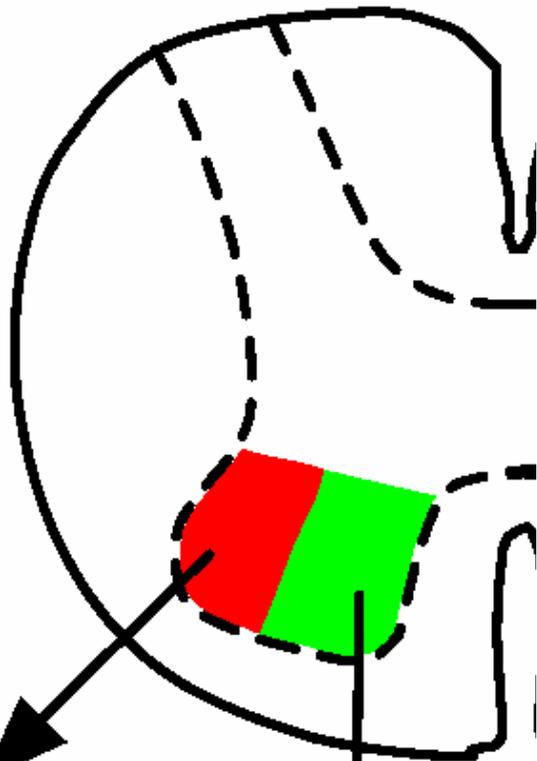
B





Muscoli distali
Mov. fini e volontari

Muscoli prossimali
Equilibrio e postura

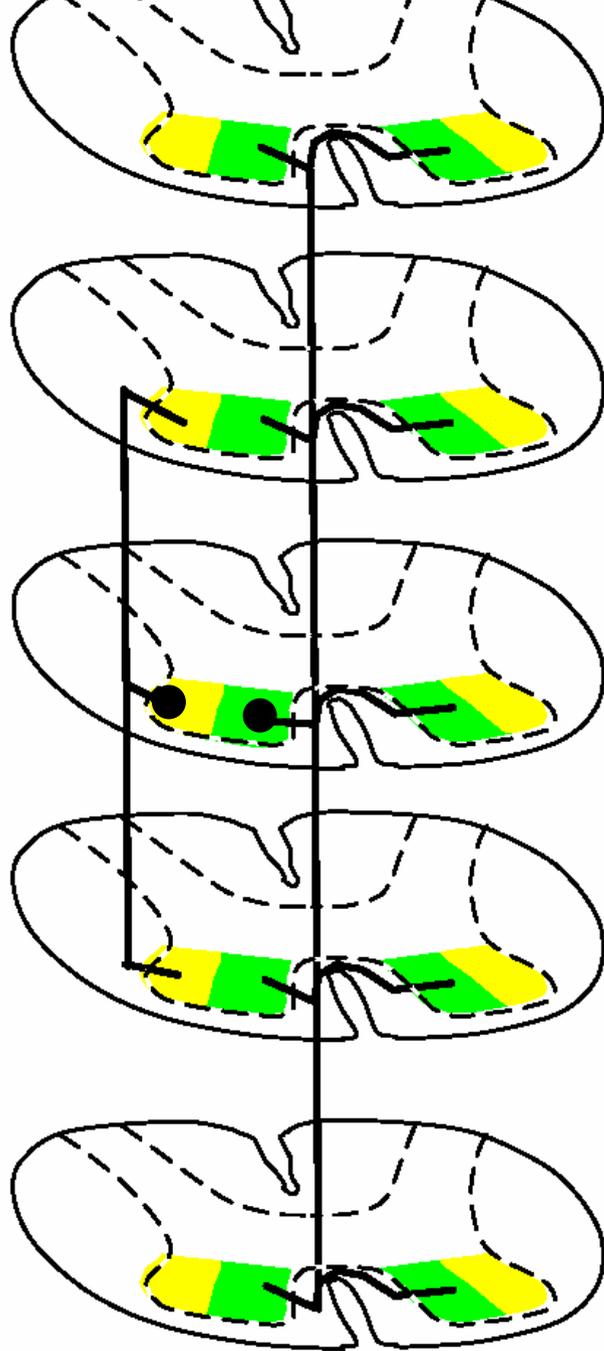


**muscoli distali
degli arti**

**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**

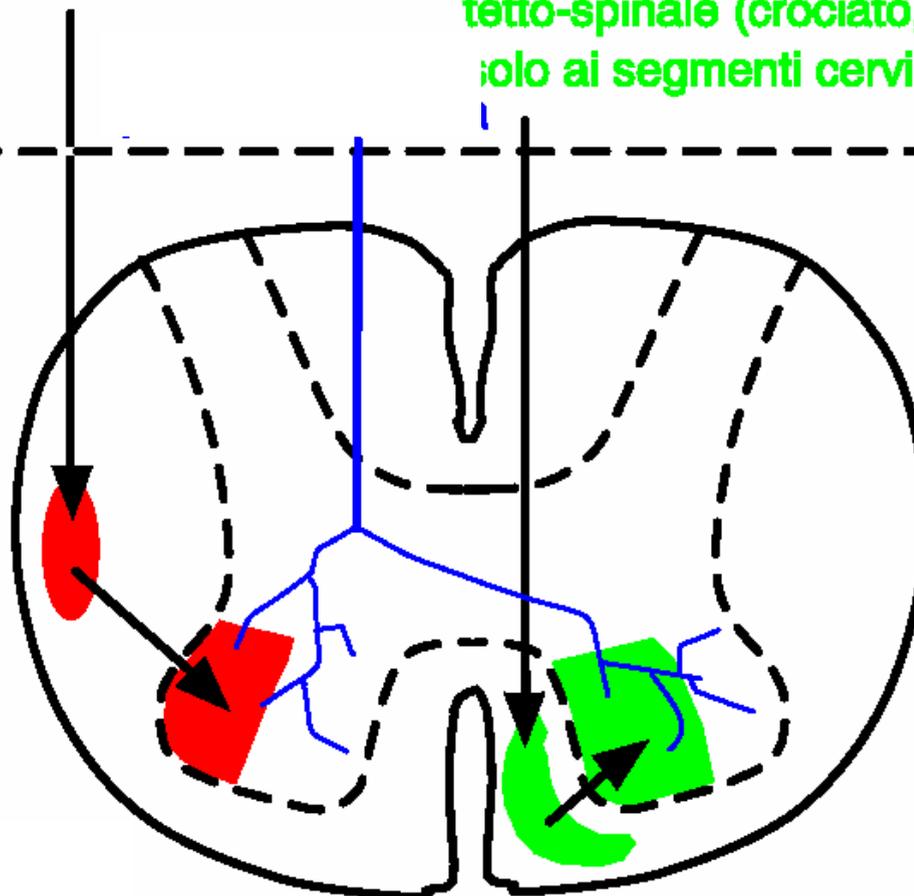
Tronco encefalico

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
memmiferi**

tronco encefalico

sistemi laterali

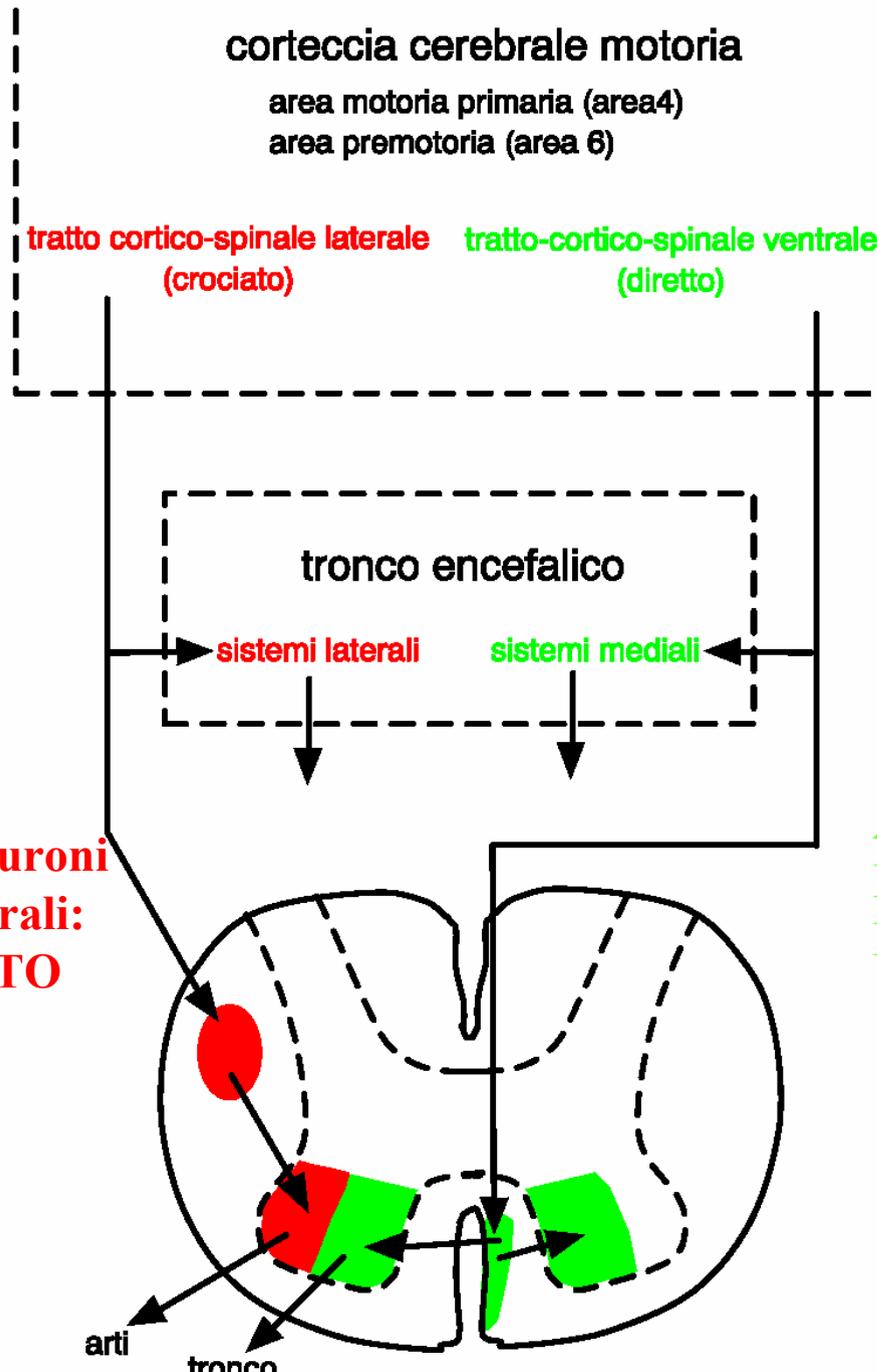
sistemi mediali

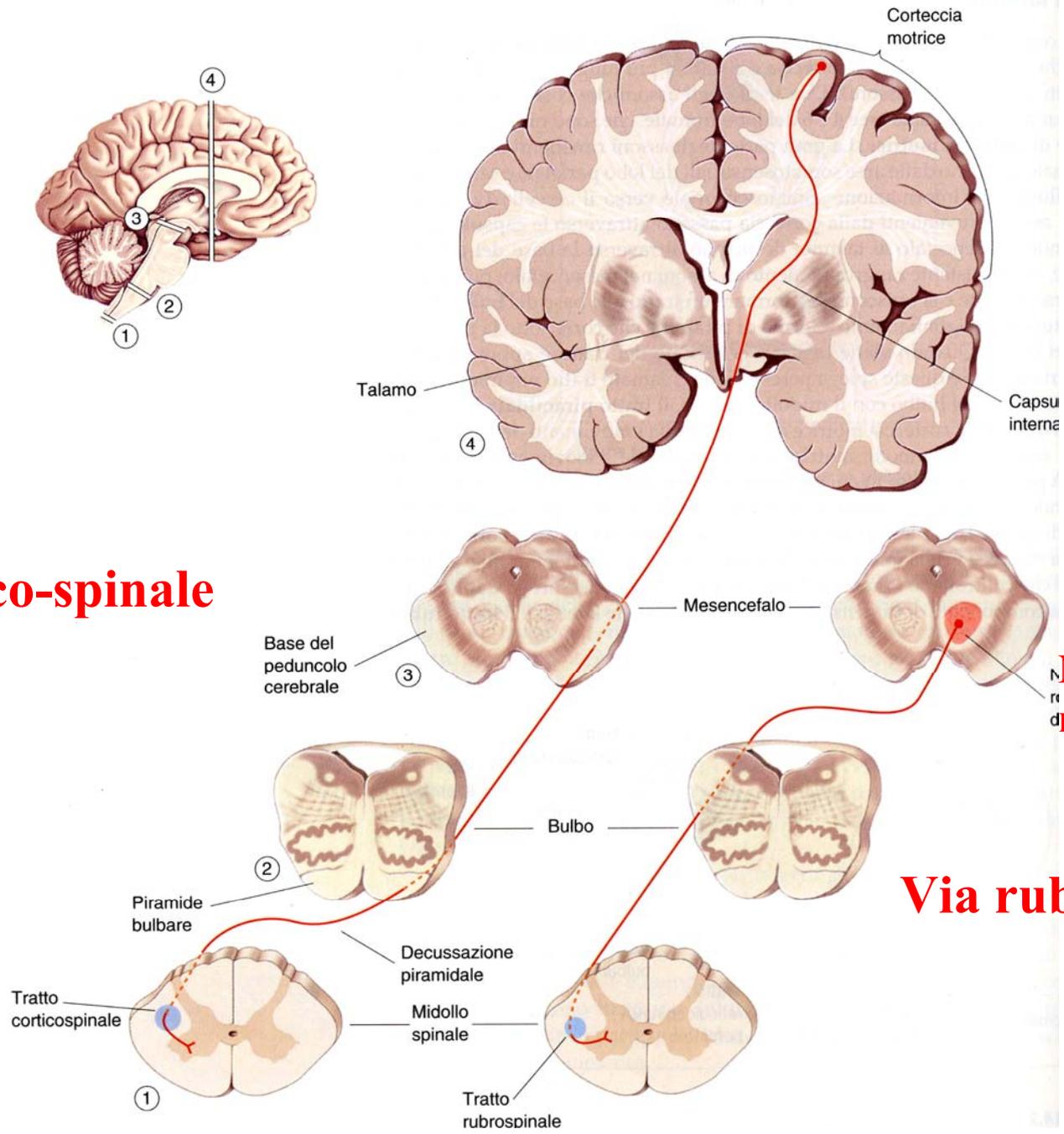
**A motoneuroni
Contolaterali:
CROCIATO**

**A motoneuroni
Ipsilaterali
DIRETTO**

arti

tronco





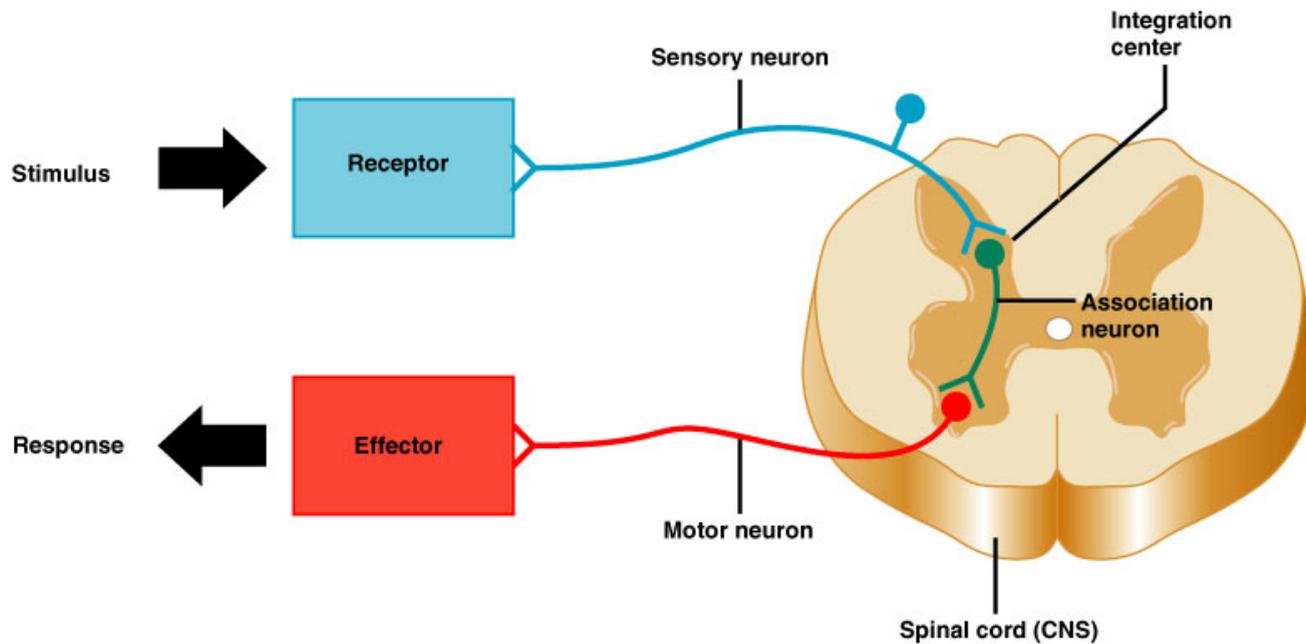
**Via cortico-spinale
laterale**

Via rubro-spinale

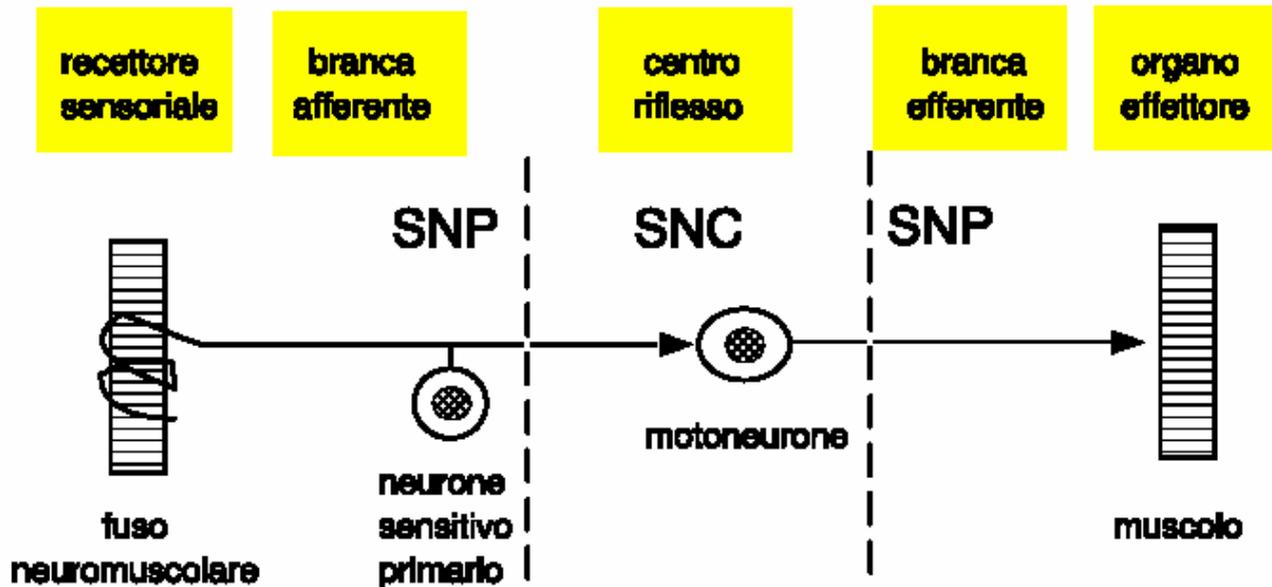
**Nucleo
rosso**

Movimenti RIFLESSI

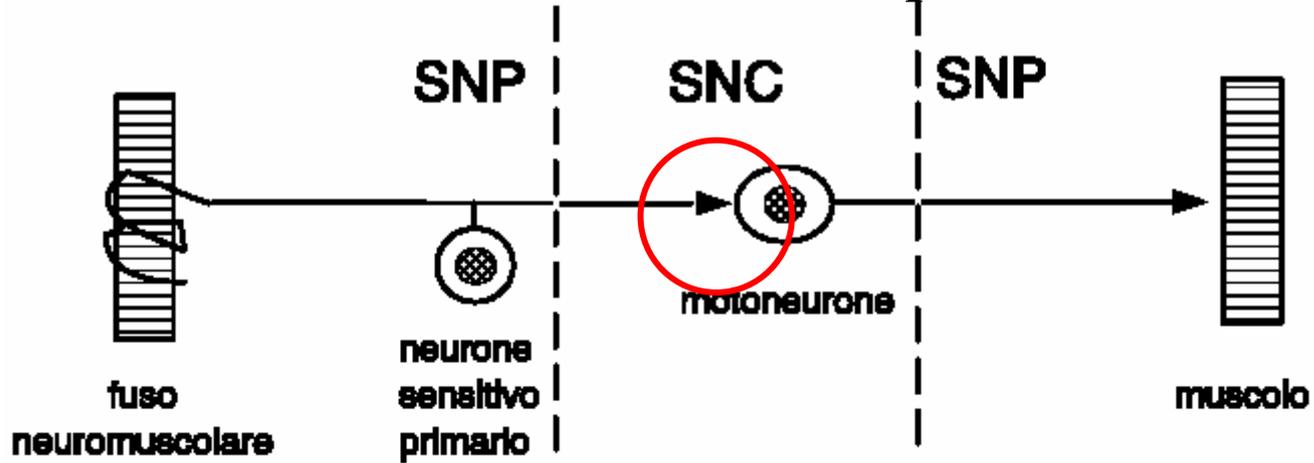
- “involontari”
- rapidi
- stereotipati
- innati
- specifici
- modulati da stimolo: l'intensità dello stimolo determina l'intensità del riflesso
- mediati dal midollo spinale e in parte dal tronco encefalico



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



riflesso monosinaptico



riflesso polisinaptico

