

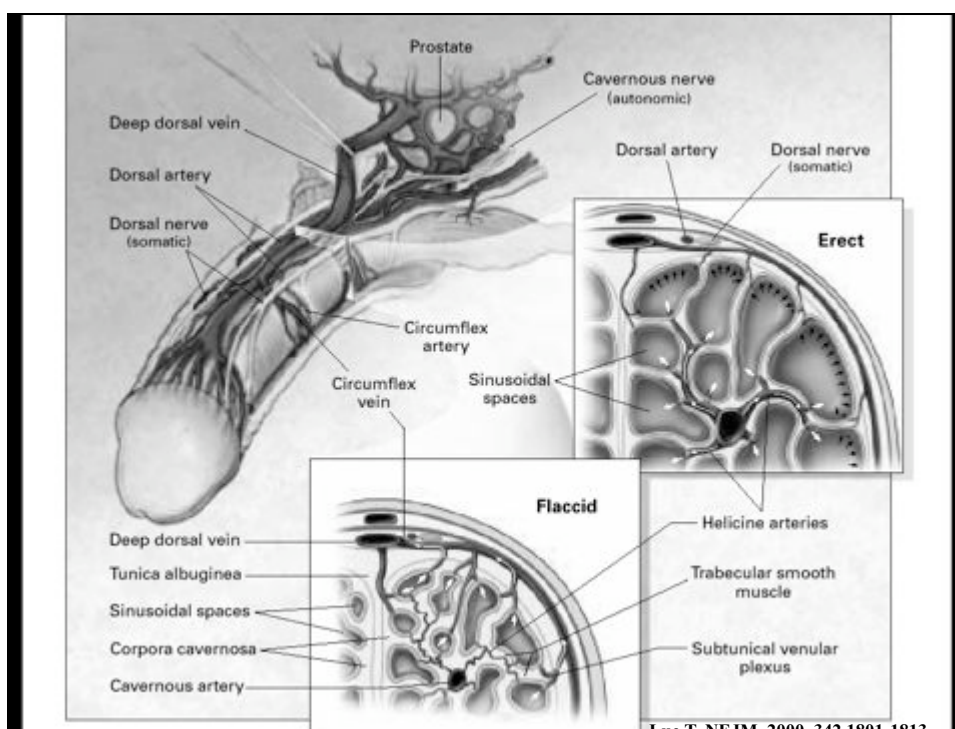
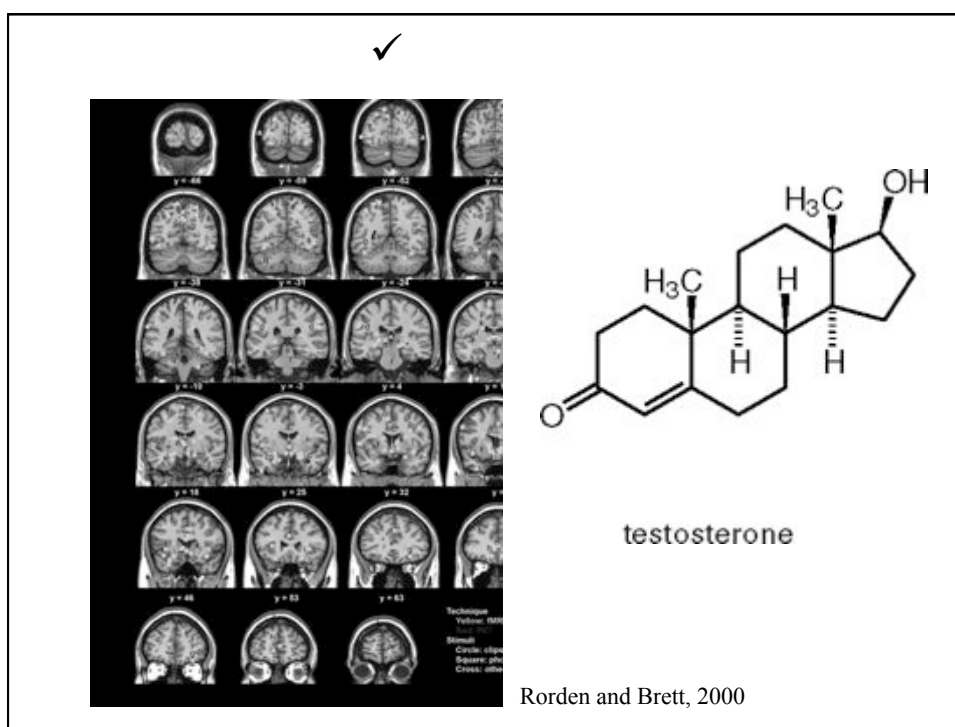
Physiologie de la sexualité masculine

F. GIULIANO

Neuro-Uro-Andrologie
Dept de Médecine Physique et Réadaptation
Hal Raymond Poincaré , Garches



- ✓ Désir
- ✓ Erection
- ✓ Ejaculation
- ✓ Orgasme



Mécanismes locaux de l'érection

Anatomie pénienne microscopique

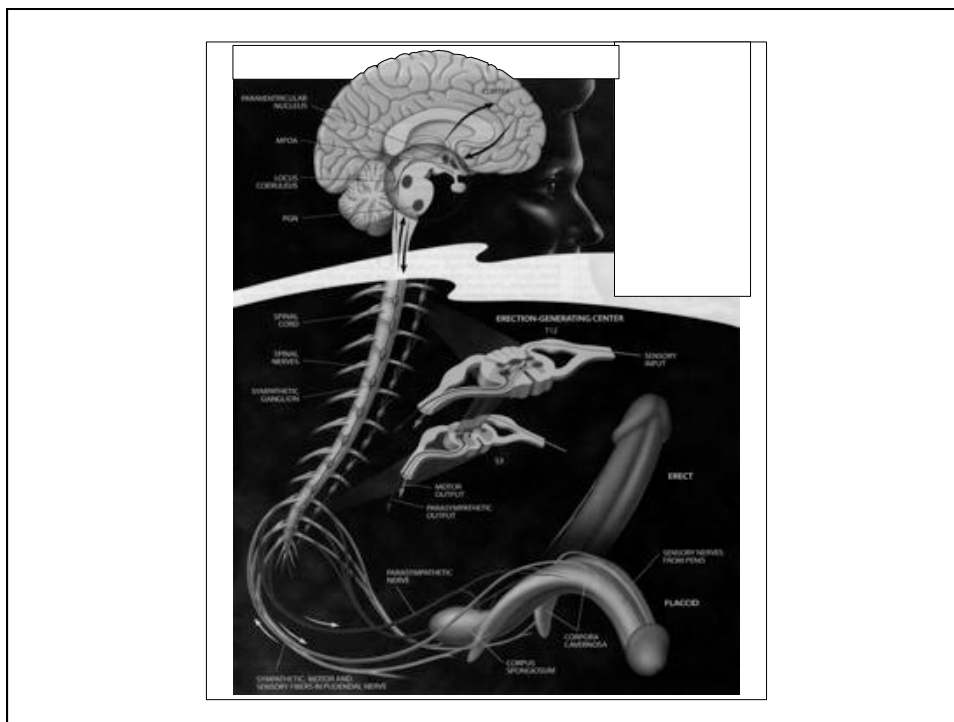
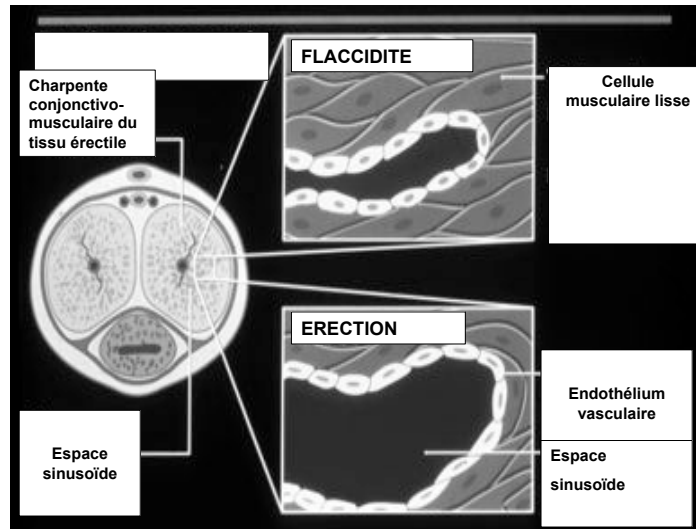
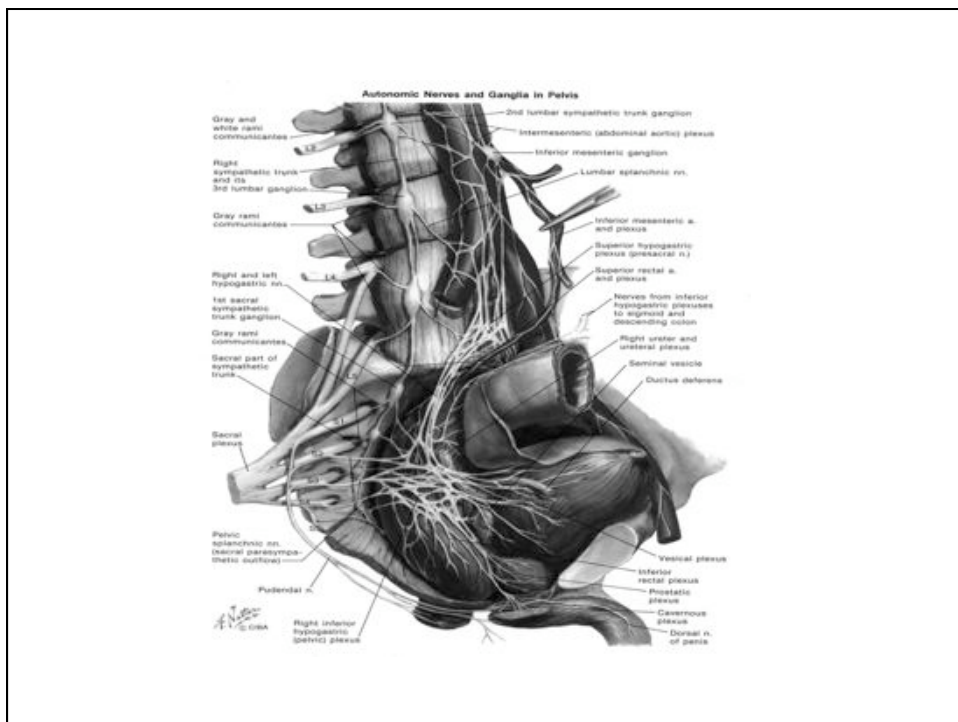
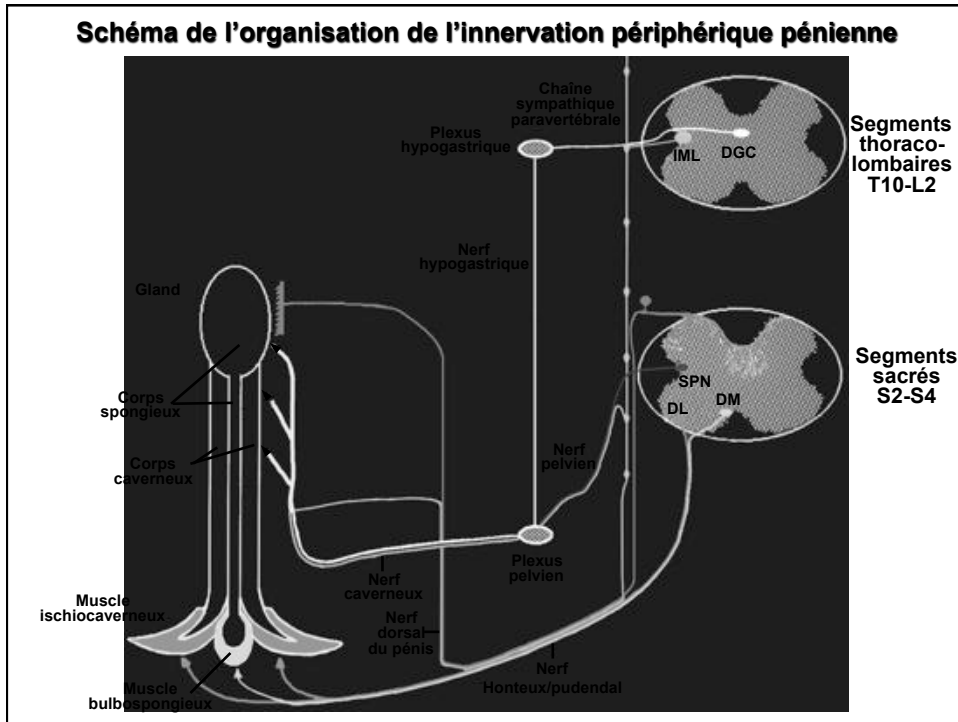
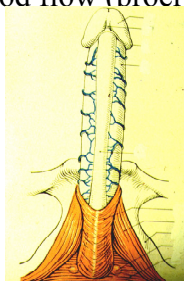


Schéma de l'organisation de l'innervation périphérique pénienne

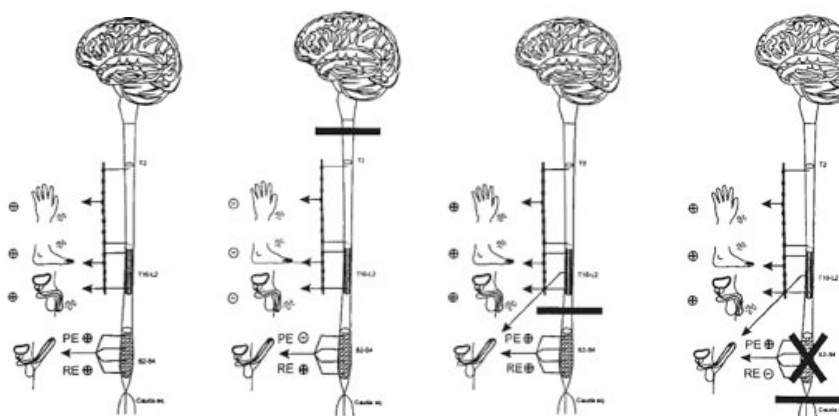


Peripheral neural control of erection

- Autonomic innervation
 - **Parasympathetic**
 - proerectile
 - **Sympathetic**
 - antierectile
 - regulation of the arterial blood flow (proerectile)
- Somatic innervation
 - penile rigidity
- Sensory innervation
 - reflexive erections



Blessés médullaires Dysfonction érectile



Schmid DM et al. NeuroUrol Urodyn. 2003;22(4):314-21

Définition physiologique de l'éjaculation

Série d'événements aboutissant à l'expulsion du sperme au méat urétral faisant intervenir :

- les fibres musculaires lisses de l'ensemble du tractus séminal et du bas appareil urinaire (col vésical, urètre),
- des sécrétions glandulaires,
- la musculature striée périnéale.

**L'éjaculation comprend deux phases
distinctes et successives :
l'émission et l'expulsion**

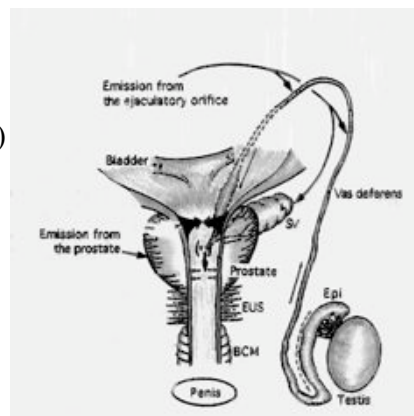
Emission

- **Sécrétion du liquide séminal par les glandes sexuelles accessoires**
- **Contraction du tractus séminal de l'épididyme à la prostate, vésicules séminales**
- **Fermeture du col vésical**

EMISSION

Composition du sperme :

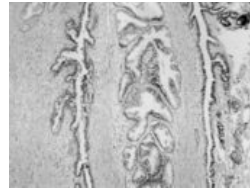
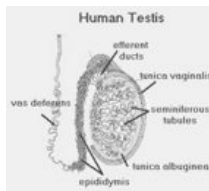
- vésicules séminales (50-80%)
- prostate (15-30%)
- glandes de Cowper
- testicules (<0.1%)



*Mann and Lutwak-Mann. Male reproductive function and semen.
Berlin:Springer-Verlag; 1981; pp 171-93.*

Emission

- **Secretion of seminal fluids from the accessory sex glands** parasympathetic
- **Contraction of the seminal tract from the epididymis to the prostate** sympathetic
- **Transport of seminal fluid to posterior urethra** sympathetic
- **Closure of the bladder neck** sympathetic
- **Nerves involved : Hypogastric and pelvic nerves** sympathetic
parasympathetic



Expulsion of sperm from the urethral meatus

- Bladder neck closure : **Sympathetic**
- Bulbospongiosus muscles contraction : **Somatic**
- Ischiocavernosus muscles contraction : **Somatic**

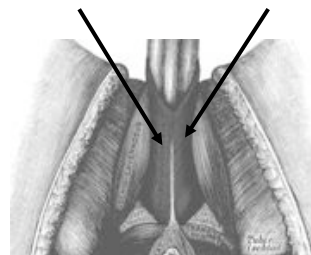


- Rhythmic/regular contractions of the striated perineal muscles (bulbospongiosus) +/- urethral smooth musculature which act to expel the

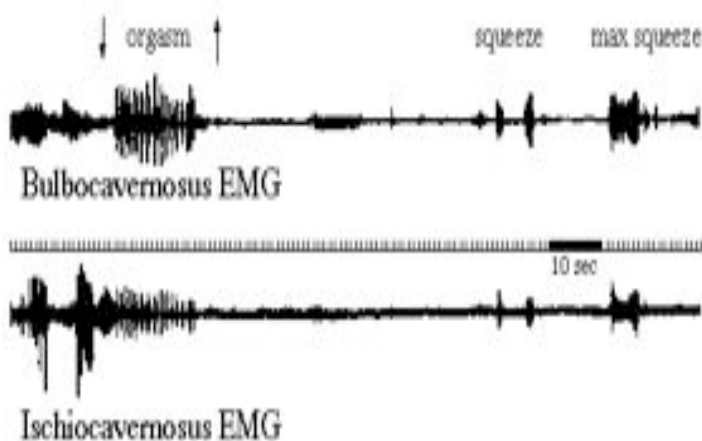
- **Semen** sympathetic
- **Nerves involved : hypogastric**

pudendal

somatic

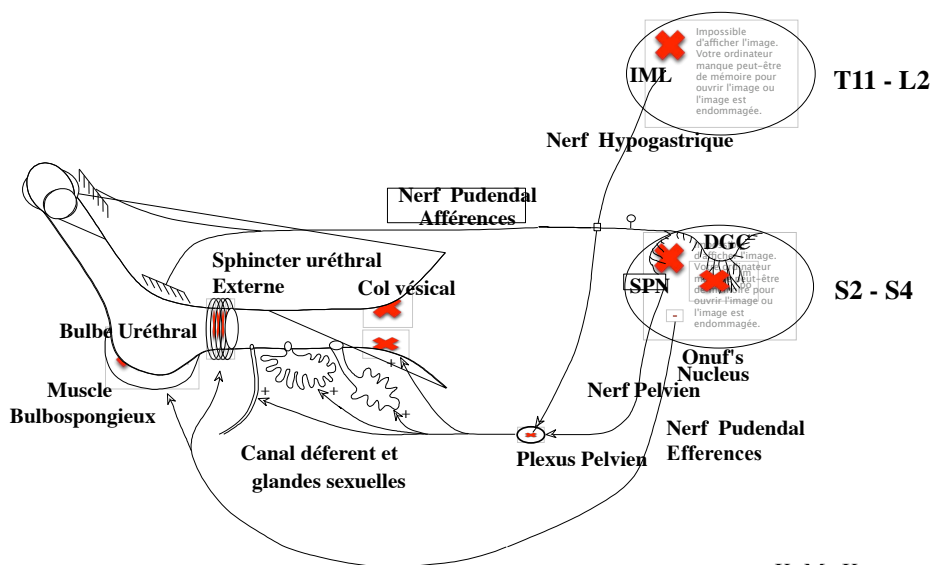


ACTIVITES MUSCULAIRES STRIEES COORDONNEES BULBOSPONGIEUX ET ISCHIOCAVERNEUX DURANT LA PHASE D'EXPULSION



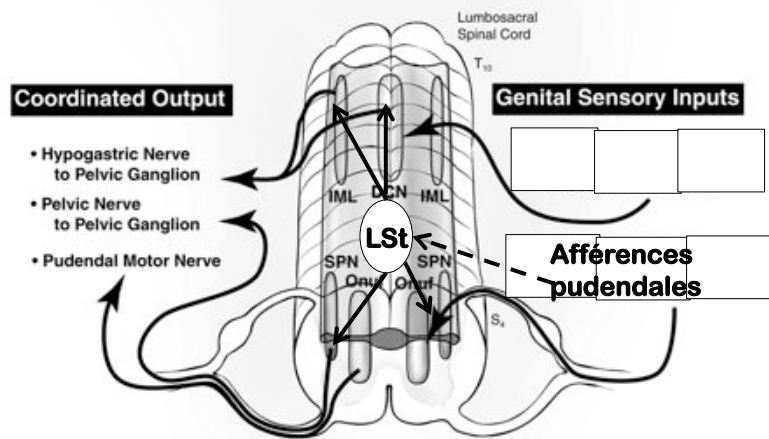
Gerstenberg et al., Br J Urol, 1990, 65: 395-402.

COMMANDE NERVEUSE PERIPHERIQUE DE L'EJACULATION



K. Mc Kenna

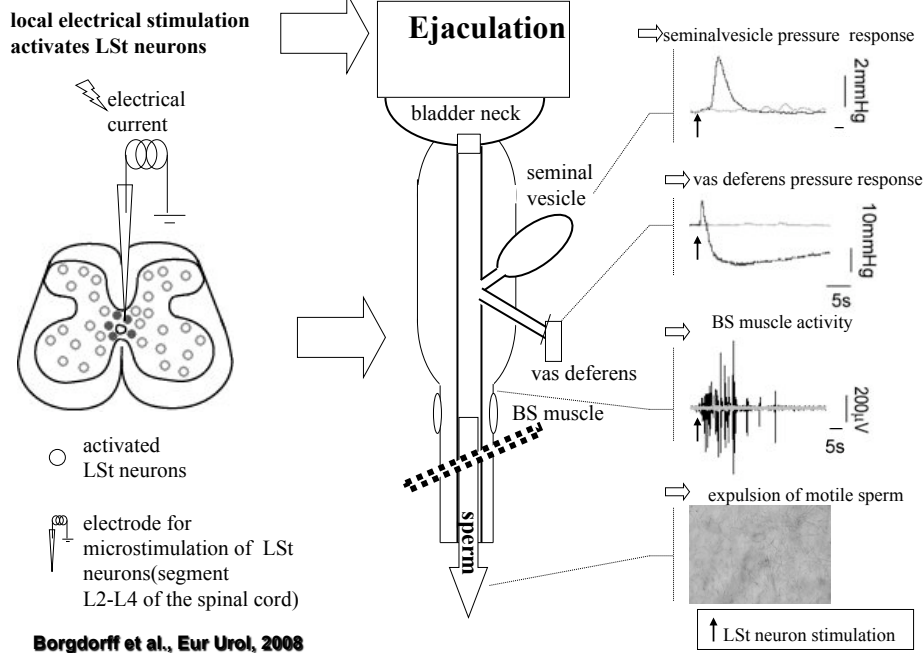
Commande spinale de l'éjaculation

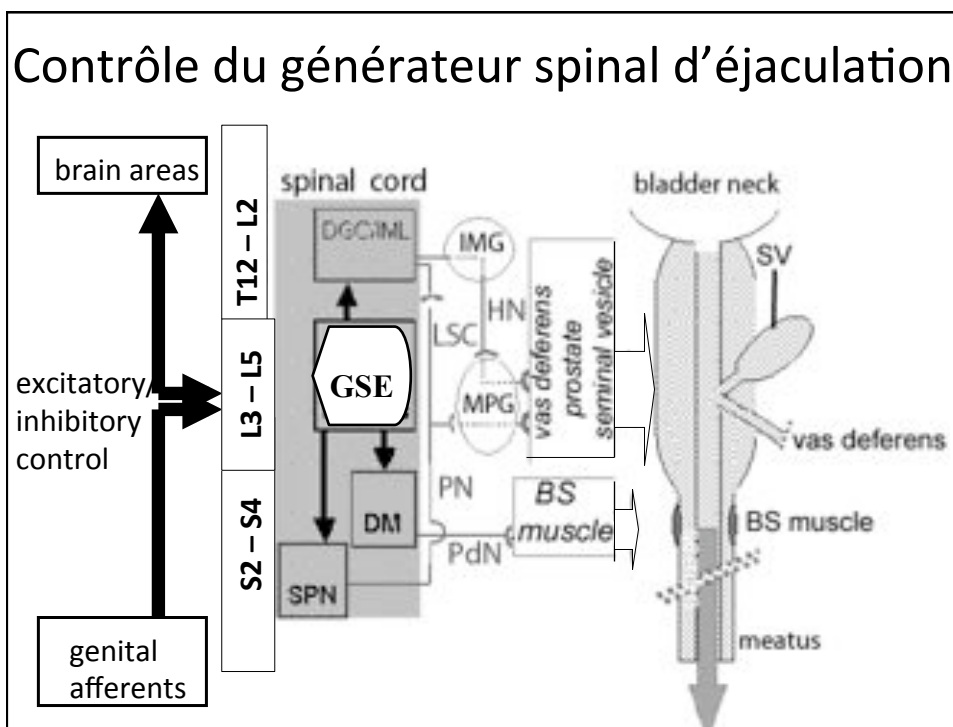


Générateur spinal d'éjaculation

Truitt W. A., Coolen L. M.. Science, 2002; 297:1566-69

GENERATEUR SPINAL D'EJACULATION





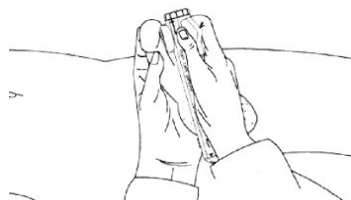
Ejaculation des blessés médullaires Revue systématique

-
-
- Lésion complète :
 - 14,9 % éjaculation en situation écologique
 - 45,7% éjaculation avec stimulation vibreur

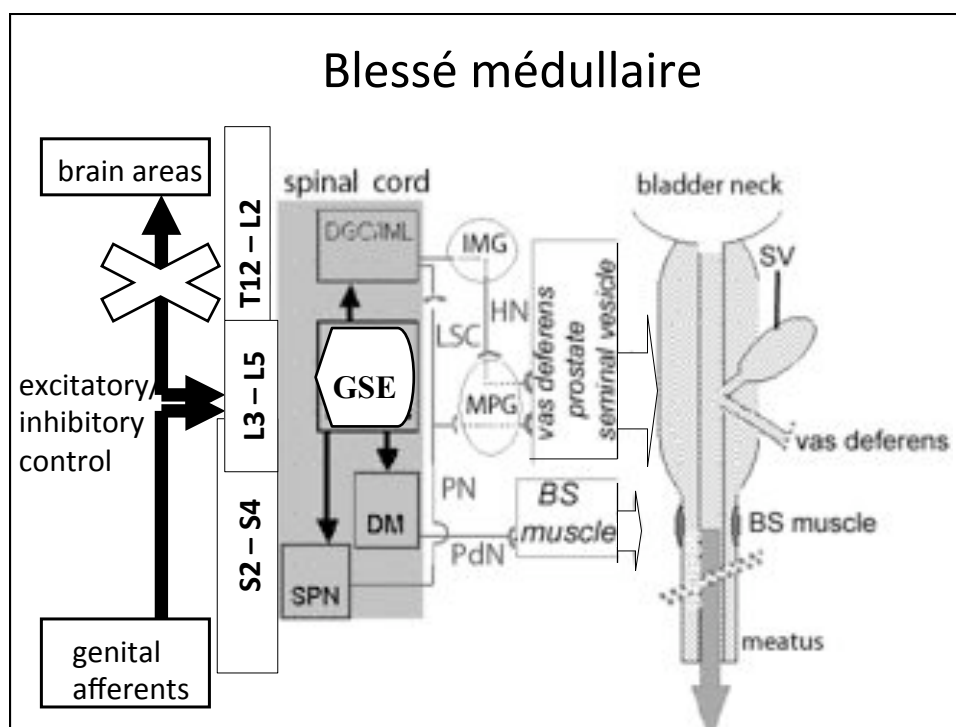
Chéhensse C. et al non publié

Recueil de sperme chez les blessés médullaires

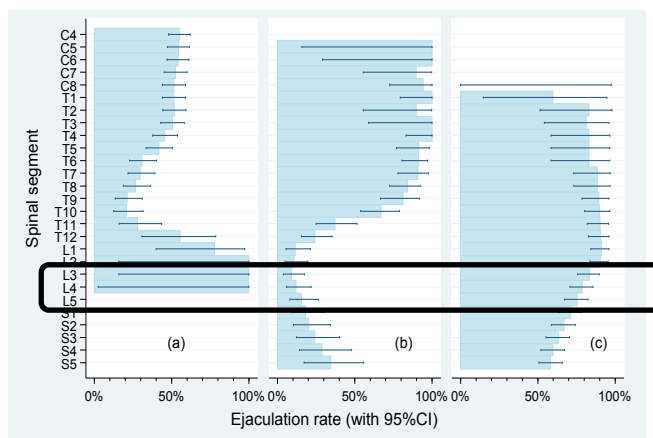
Stimulation vibratoire pénienne
amplitude et fréquence optimales :
2.5 mm et 100 Hz



Sonksen Paraplegia 1994



L3-L5 g n rateur spinal chez l'homme



• intrathecal prostigmine or sub cutaneous physostigmine in patients with complete spinal cord injury according to the status of each spinal segments irrespective of the others: a. supralesional thus intact b. completely injured c. infralesional .

Ch hensse C. et al non publi 

✓ Orgasme

British Journal of Urology (1979), 51, 114-120

The Effect on Erection and Orgasm of Cystectomy, Prostatectomy and Vesiculectomy for Cancer of the Bladder: A Clinical and Electromyographic Study

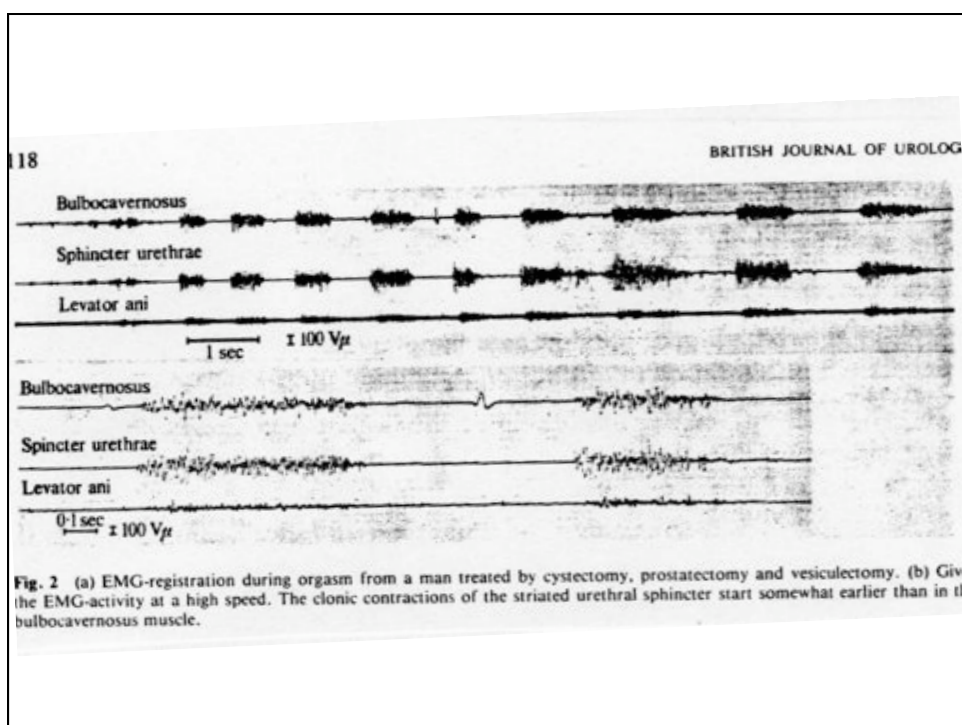
B. BERGMAN, S. NILSSON and I. PETERS N

Departments of Urology and Clinical Neurophysiology, Sahlgren Hospital, University of G teborg, G teborg, Sweden

Summary—Forty-three men who had been subjected to cystectomy and concomitant prostatectomy, vesiculectomy and urethrectomy were interviewed about their pre-operative and post-operative sexual activities at a mean of 3 (range 1 to 8) years after operation.

Twenty-eight of the 38 men (74%) who had been sexually active continued to have some form of sexual activity, 21 of them achieving orgasm. Only 3 men had penile erection; 2 of them had been subjected to prostatectomy and 1 to prostatic resection. One of these men treated by prostatectomy had also had urethrectomy.

Electromyographic registration from the striated external urethral sphincter, the bulbocavernosus muscle and the levator ani muscle showed normal duration of muscular contractions and length of interval between contractions after operation. The pattern of impulses during orgasm did not differ from that of normal men.

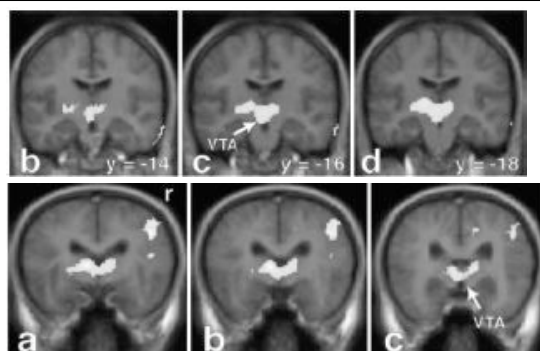


Behavioral/Systems/Cognitive

Brain Activation during Human Male Ejaculation

Gert Holstege,¹ Janniko R. Georgiadis,¹ Anne M. J. Paans,² Linda C. Meiners,³ Ferdinand H. C. E. van der Graaf,⁴ and A. A. T. Simone Reinders⁵¹Department of Anatomy and Embryology, University of Groningen, 9713 AV Groningen, The Netherlands, and ²Positron Emission Tomography Centre and Departments of ³Radiology, ⁴Neurology, and ⁵Biological Psychiatry, University Hospital Groningen, 9713 AV Groningen, The Netherlands

- Tomographie par émission de positrons (TEP)
- Augmentation locale du débit sanguin cérébral
- Masturbation par la partenaire du volontaire
- Comparaison avec la stimulation sexuelle seule (condition contrôle)



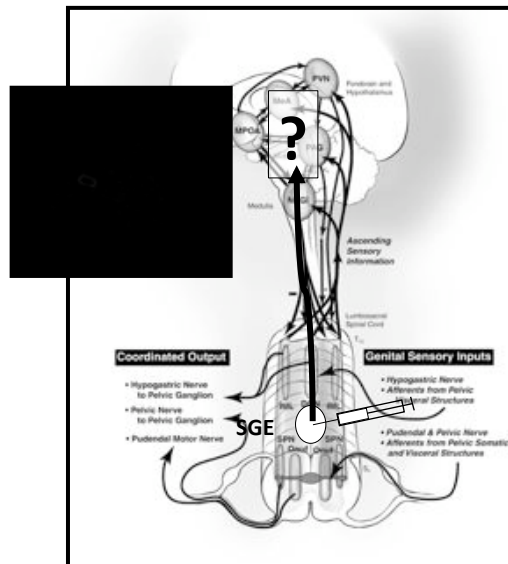
- (A10 dopaminergic cell group) et joue un rôle crucial dans les comportements de récompense

(McBride et al., 1999).

- Activation de VTA par cocaïne (Breiter et al., 1997) et héroïne (Sell et al., 1999) en TEP.
- Héroïnomanes rapportent des orgasmes lors de la consommation d'héroïne (De Leon and Wexler, 1973; Mirin et al., 1980; Seecof and Tennant, 1986).
- VTA apparaît comme une région cible pour l'héroïnomanie et l'orgasme.
- Support anatomique au caractère « motivant » de l'activité sexuelle.

Retrograde tracing technique for detecting neural connections from synapse in the lamina VII-X of L3-L4 spinal segments to soma in the brain

Retrograde axonal tracer : fluorogold dye



Clément P. et al ISSM 2010