

# Blessés médullaires, quoi de neuf depuis 2025 ?

Dr EHNY JP (CMPR BRETEGNIER, HERICOURT)

BIBLIOGRAPHIE

- What's new for 'spinal cord injury' in PubMed

20 articles Pubmed/semaine

Mot clef : SCI



• My NCBI [nih.gov](https://www.ncbi.nlm.nih.gov) >

Expéditeur : [efback@ncbi.nlm.nih.gov](mailto:efback@ncbi.nlm.nih.gov)



SORNEST 2025

Thème : AVC



SORNEST 2026

Thème : blessé médullaire

## BIBLIOGRAPHIE



Répartition des publications SCI en 2024

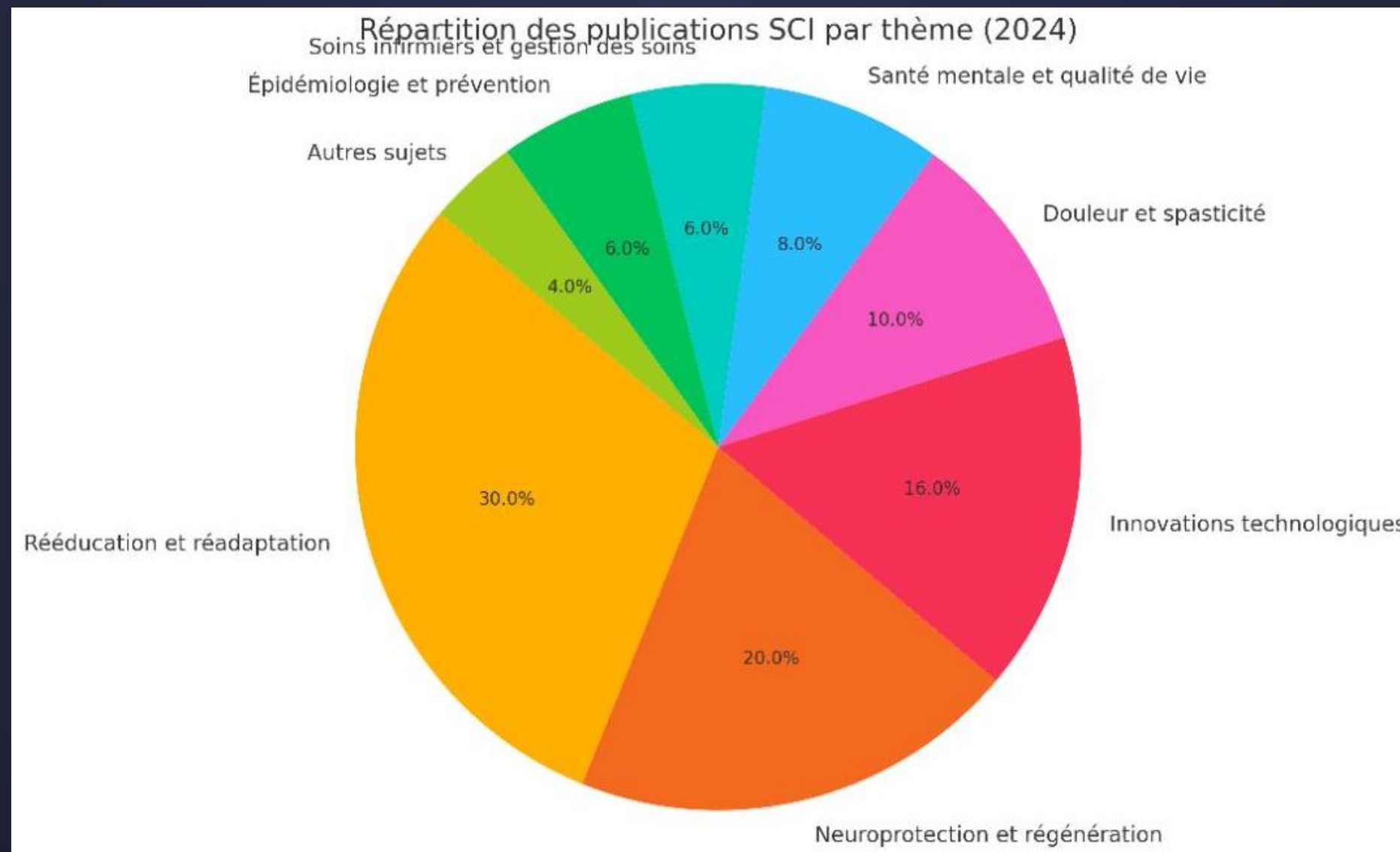
Durée de la recherche : 1 minute

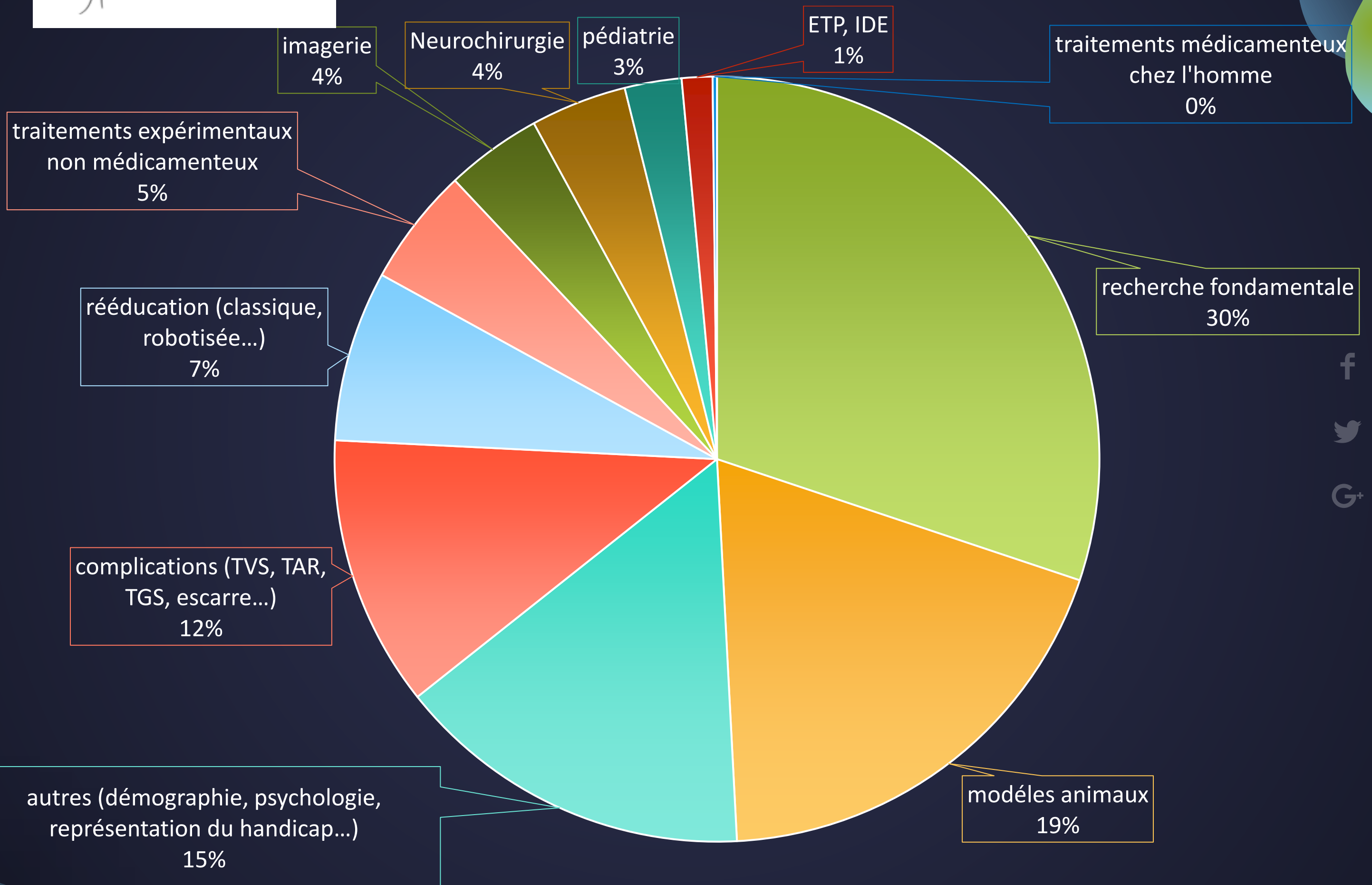
Nombre d'articles retenus : 1250

RESULTS BY YEAR



2025-2026





## Pourquoi il n'existe PAS de meilleure solution

Toute "automatisation externe" :

- violerait les conditions PubMed
- serait moins fiable
- serait moins défendable méthodologiquement

➔ Ta méthode + PubMed Alerts = gold standard.

## Ce que je te conseille concrètement

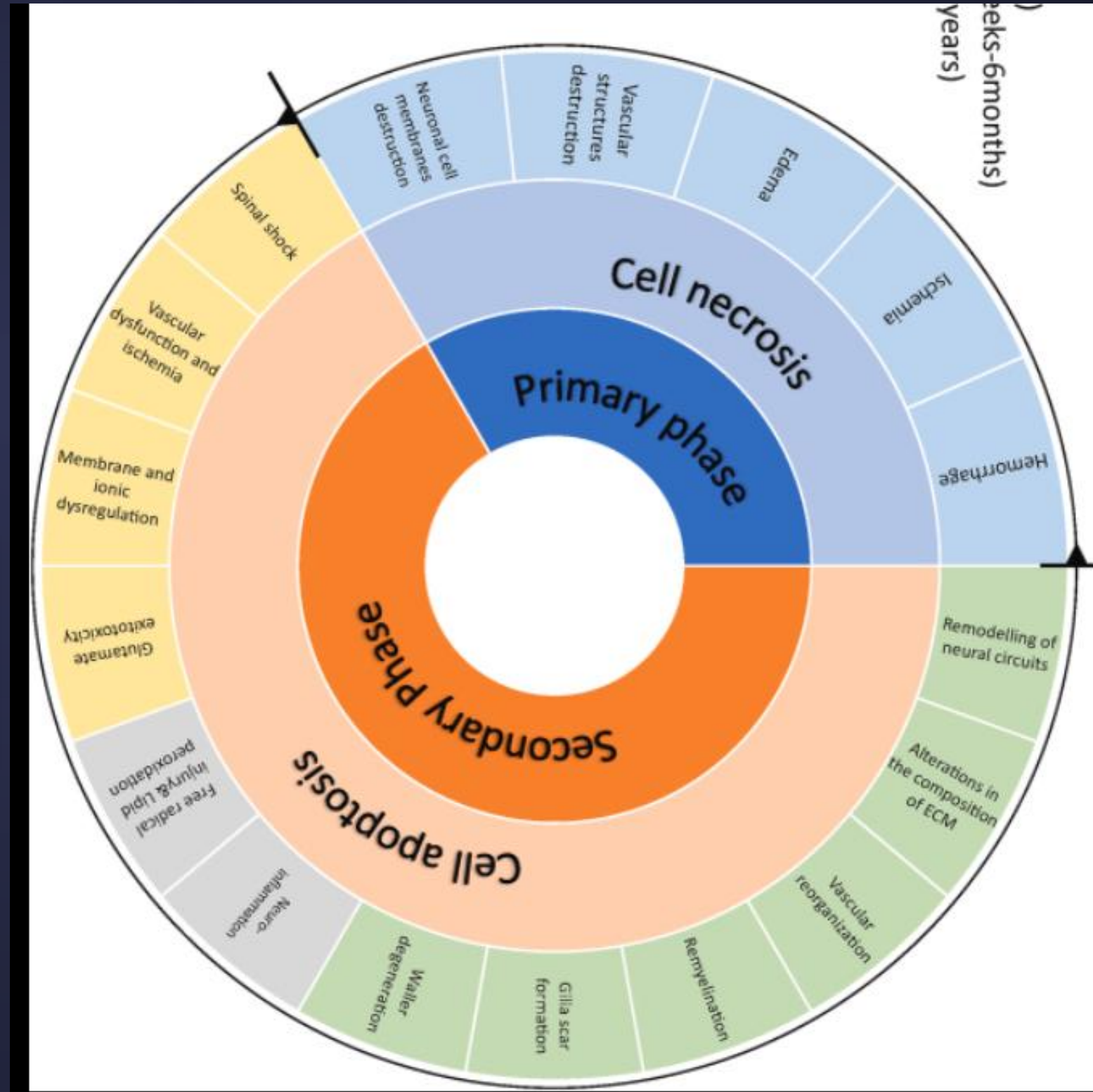
👉 Active l'alerte PubMed dès que possible

👉 Laisse PubMed travailler

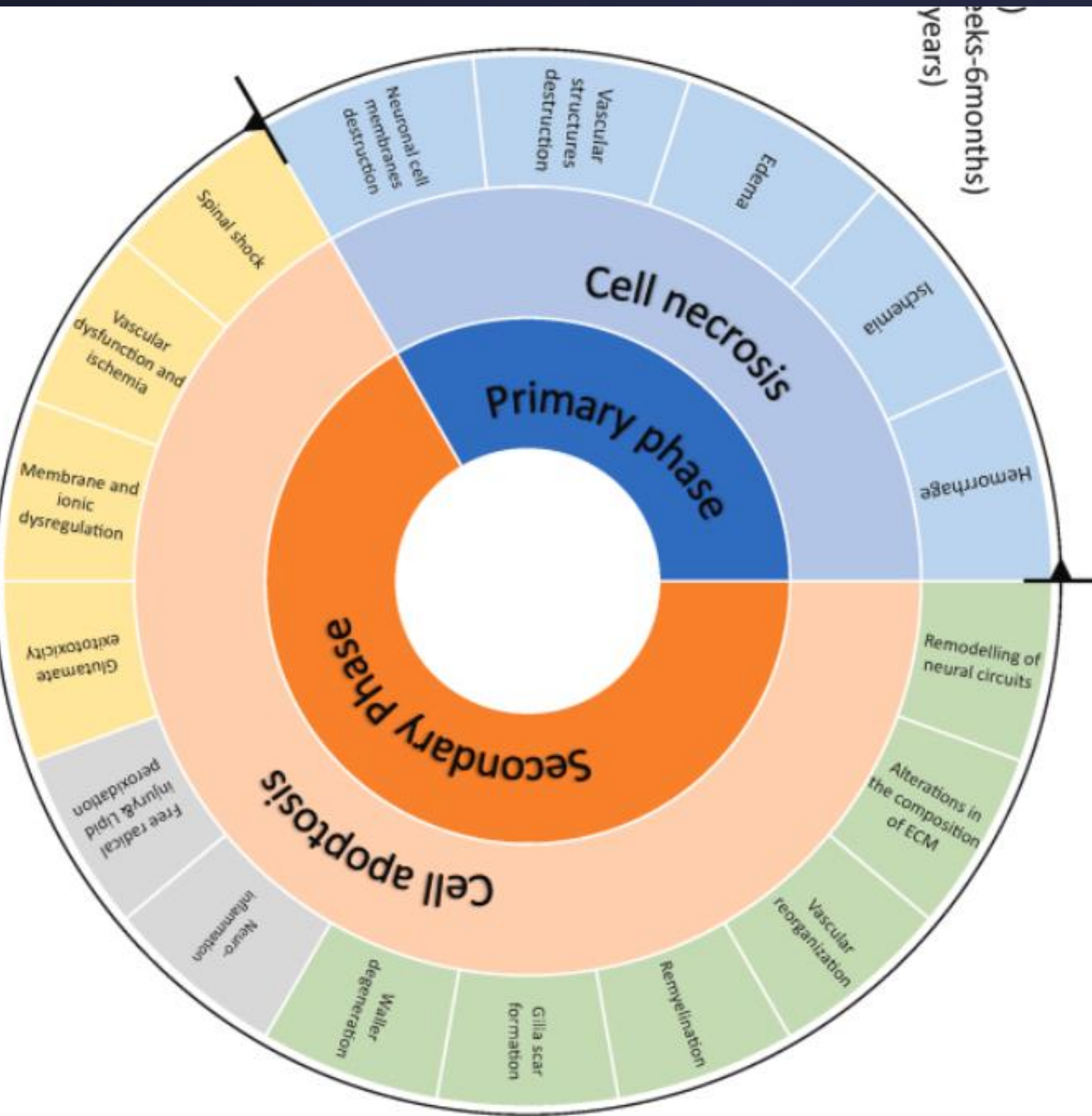
# Advances and New Therapies in traumatic SCI

Neuroprotection

Objectif : MAP 75-80mmHg (max 90-95)  
Laminectomie +/- duroplastie  
Chirurgie avant 24 h  
Échographie per opératoire ?



# Advances and New Therapies in traumatic SCI



## Neurorégénération

Nombreux abandons : minocycline, naloxone, nimodipine  
EPO, progesterone, vit D  
RILULOZE, G-CSF, Elezanumab  
Corticostéroïdes , cellules souches



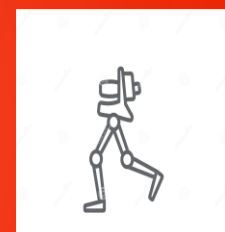
## Neuromodulation

- Stimulation épidurale
- Stimulation transcutanée



## Rééducation

- exosquelette
- Réalité virtuelle



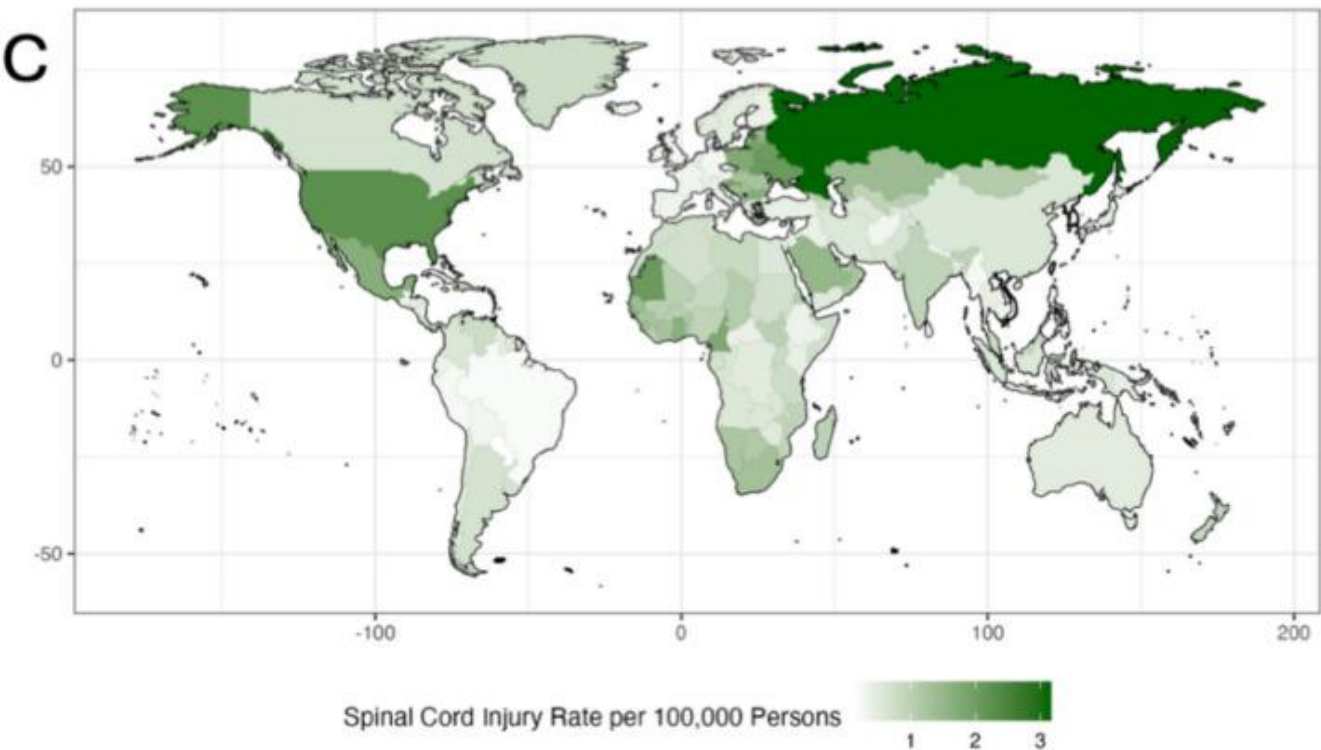
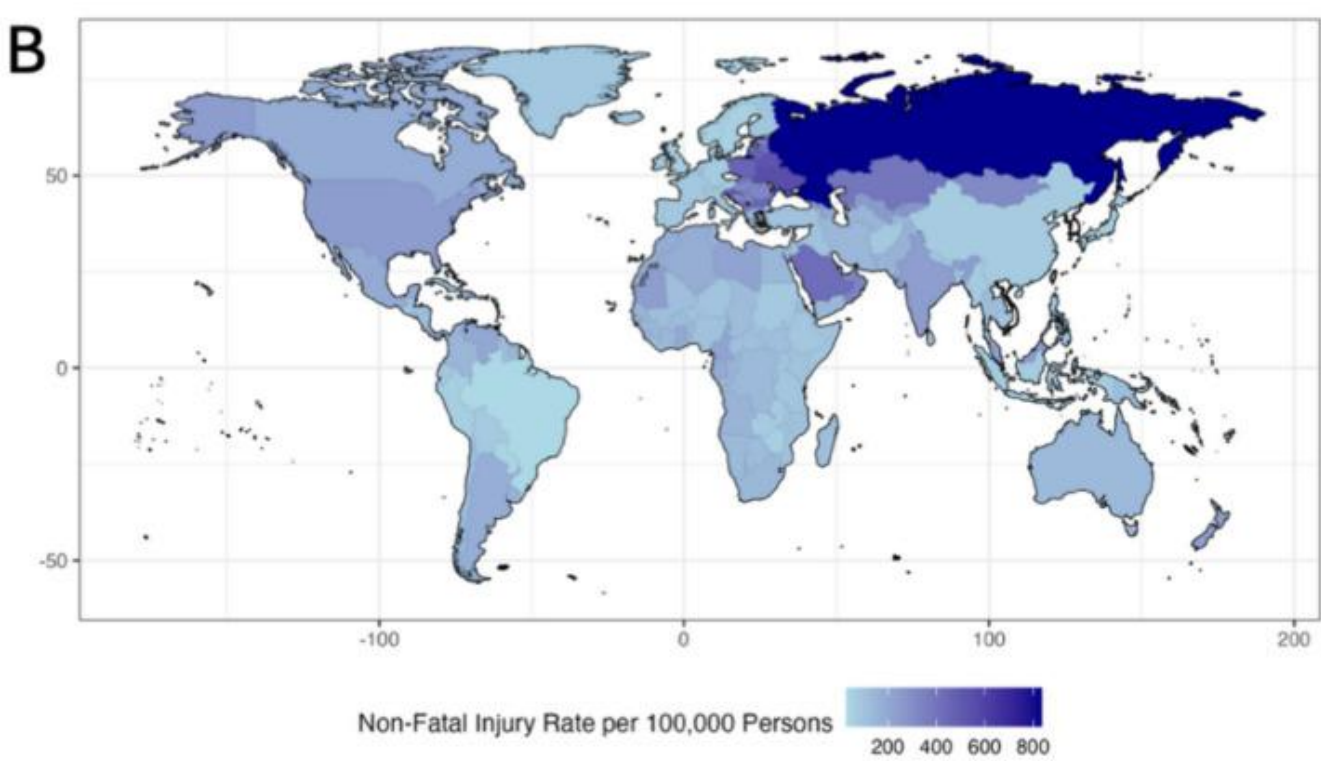
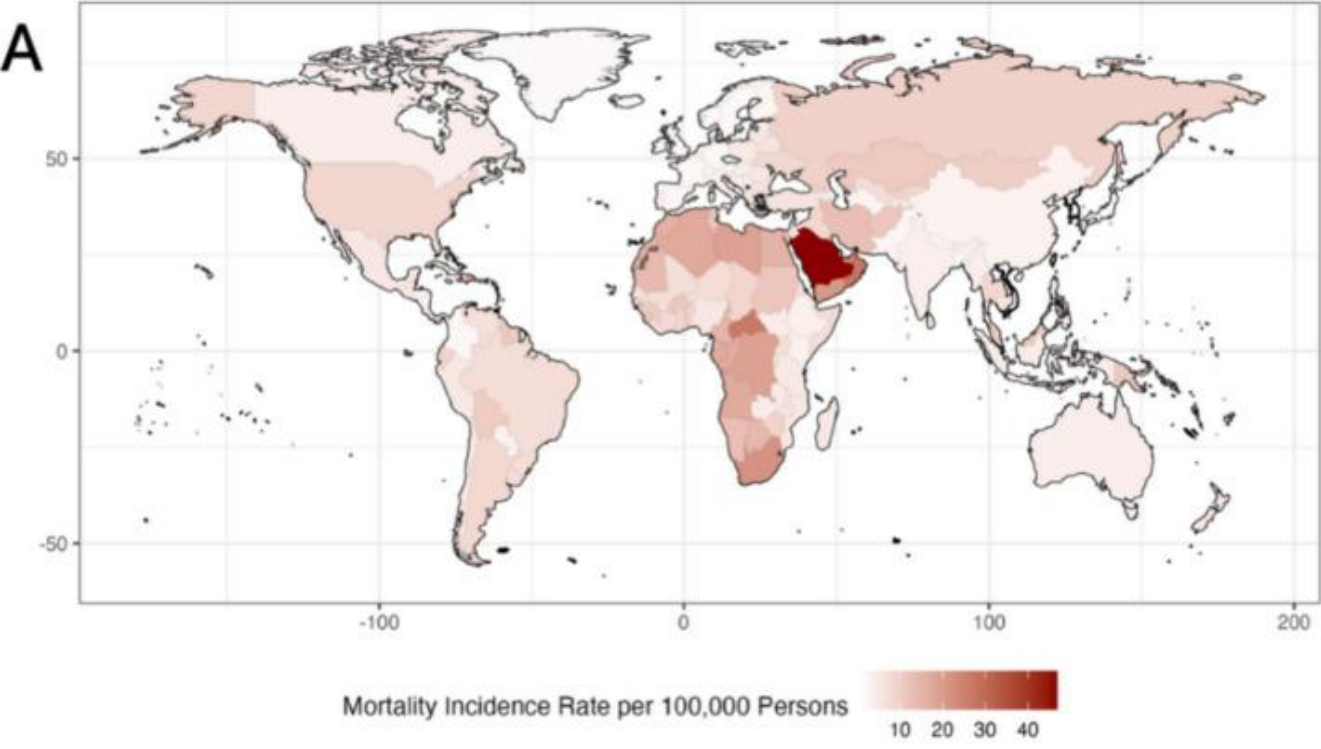
# Démographie

représentation du handicap

# Pronostic

↓

(N=82)

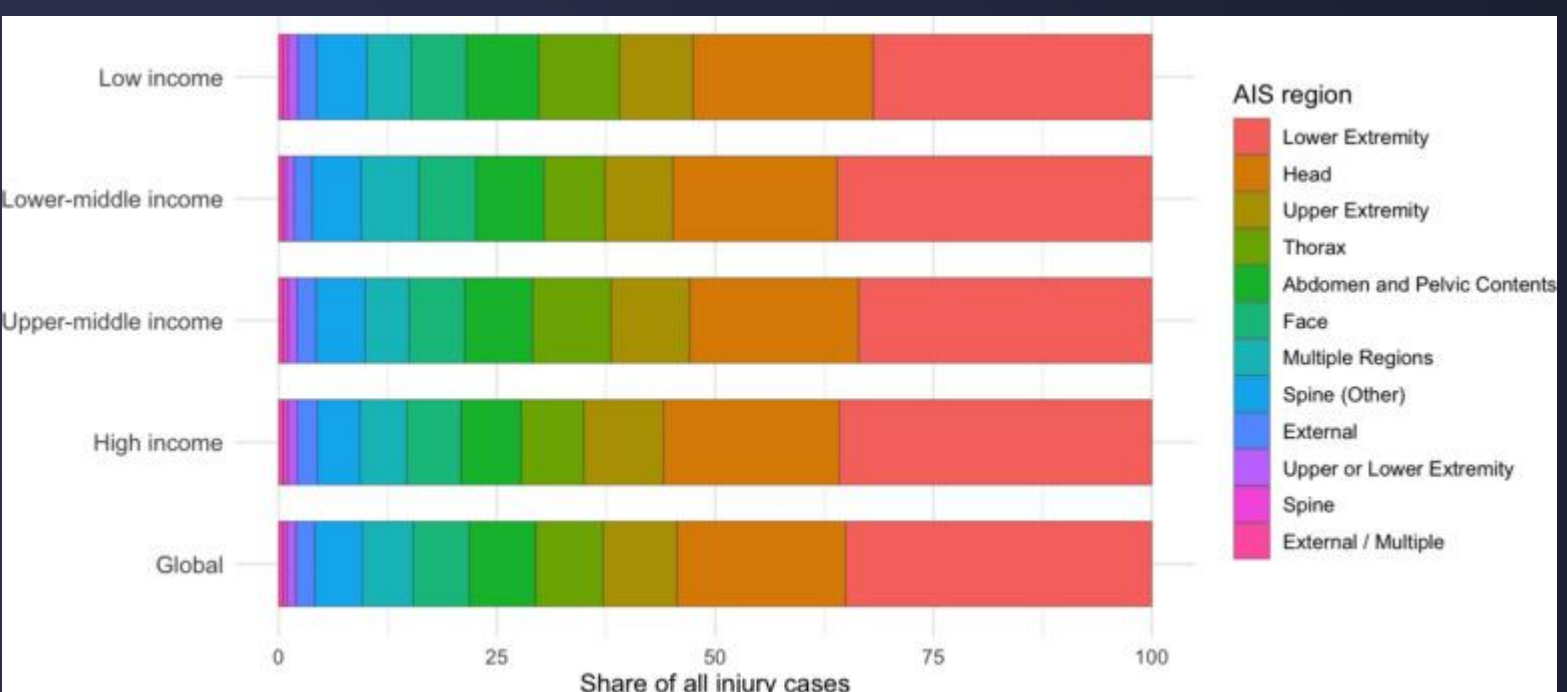


Spinal cord injury in the context of major motor vehicle collision trauma: a retrospective ecological analysis of global estimates across income groups.

Nutbeam T, Caterson J, Saunders CJ, Sawe HR, Jamaluddin SF, Roberts I, Smith JE, Ambunda P, Stassen W.

Scand J Trauma Resusc Emerg Med. 2025 Dec 27;34(1):22. doi: 10.1186/s13049-025-01536-7.

PMID: 41454409 [Free PMC article.](#)



# Web-based machine learning application for ambulation prognosis in the rehabilitation phase of spinal cord injury: a retrospective multicenter cohort study

Kyohei Matsuda <sup>1 2</sup>, Junji Nakano <sup>3</sup>, Osamu Uemura <sup>4</sup>

USA, 10 ans de recueil

2034 cas

Review > Spinal Cord. 2025 Dec 4. doi: 10.1038/s41393-025-01155-0. Online ahead of print.

## The application of artificial intelligence in the acute and sub-acute phases of spinal cord injury- a systematic review

Teleale F Gebeyehu <sup>1</sup>, Mohammad Amin Sabbaghilvani <sup>2</sup>, Giovanna Failla <sup>3</sup>, Ashmal S Kabani <sup>4</sup>, Yashvi Shah <sup>5</sup>, Alexander Kharichev <sup>6</sup>, Joshua A Dian <sup>4</sup>, Stavros Matsoukas <sup>4</sup>, Alexander R Vaccaro <sup>4 7</sup>, Gregory D Schroeder <sup>4 7</sup>, Srinivas K Prasad <sup>4</sup>, Jack Jallo <sup>4</sup>, Joshua E Heller <sup>4</sup>, Michael G Fehlings <sup>8</sup>, James S Harrop <sup>4</sup>

Affiliations + expand

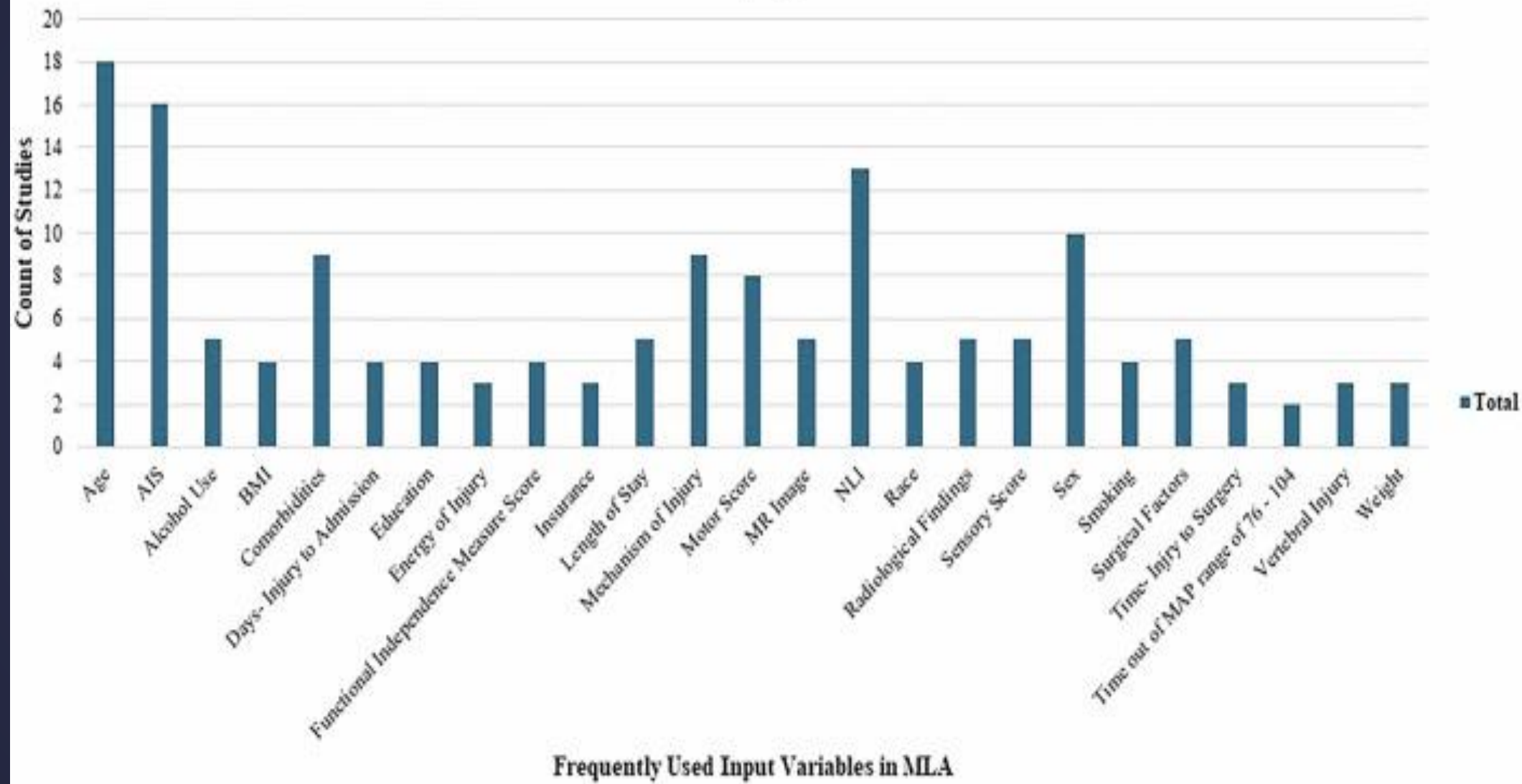
PMID: 41345782 DOI: 10.1038/s41393-025-01155-0

WWW.WEBSITE.COM

Revue de bibliographie

23 études portant sur 120.931 personnes

## Frequently Used Inputs in Machine Learning Algorithm for Patients with Spinal Cord injury



# Predicting Spinal Cord Injury Prognosis Using Machine Learning: Systematic Review and Meta-Analysis

Linxing Zhong <sup>1</sup>, Qiying Huang <sup>1</sup>, Hao Zhang <sup>1</sup>, Liang Xue <sup>1</sup>, Yehuang Chen <sup>1</sup>, Jianwu Wu <sup>1</sup>, Liangfeng Wei <sup>1</sup>

> PM R. 2026 Jan 3. doi: 10.1002/pmrj.70045. Online ahead of print.

## Outcomes comparative analysis of concurrent traumatic brain injury and traumatic spinal cord injury versus isolated traumatic brain injury and isolated traumatic spinal cord injury

McKenna Hamm<sup>1</sup>, Elsa Alvarez-Madrid<sup>1</sup>, Kelly E Gartner<sup>2</sup>, Julian Marcet<sup>3</sup>, Axler Jean Paul<sup>1</sup>, Maxwell Boakye<sup>1 2</sup>, Camilo Castillo<sup>2 4</sup>, Beatrice Ugiliweneza<sup>1 5</sup>, Darryl Kaelin<sup>2 4</sup>

> J Spinal Cord Med. 2025 Oct 24:1-12. doi: 10.1080/10790268.2025.2571822. Online ahead of print.

## Risk factors for complications in traumatic spinal cord injury: A retrospective analysis of a cohort of patients identified from administrative data

Michael Bond<sup>1</sup>, Aidan Beresford<sup>1</sup>, Vanessa K Noonan<sup>2</sup>, Naama Rotem-Kohavi<sup>2</sup>, Nader Fallah<sup>2</sup>, Marcel F Dvorak<sup>3 4</sup>, Brian K Kwon<sup>3 5</sup>, Guiping Liu<sup>1</sup>, Jason M Sutherland<sup>1</sup>

B S I

> J Neurosurg Spine. 2025 Jun 27;43(3):375-383. doi: 10.3171/2025.3.SPINE241470. Print 2025 Sep 1.

## Association between concomitant traumatic brain injury and unfavorable 1-year outcomes in patients with traumatic spinal cord injury

Vikas N Vattipally<sup>1</sup>, Carlos A Aude<sup>1</sup>, Kathleen R Ran<sup>1</sup>, Kelly Jiang<sup>1</sup>, Sruthi Ranganathan<sup>2</sup>, Carly Weber-Levine<sup>1</sup>, Jawad Khalifeh<sup>1</sup>, Liam P Hughes<sup>1</sup>, Jacob Jo<sup>1</sup>, Saad Javeed<sup>3</sup>, James P Byrne<sup>4</sup>, Timothy Chryssikos<sup>5</sup>, Gary Schwartzbauer<sup>5</sup>, Daniel Lubelski<sup>1</sup>, Ali Bydon<sup>1</sup>, Timothy Witham<sup>1</sup>, Nicholas Theodore<sup>1</sup>, Tej D Azad<sup>1</sup>

↳ QoI

↳ MIF

↗ depression

↗ réhospitalisation

↗ douleurs





# Imagerie

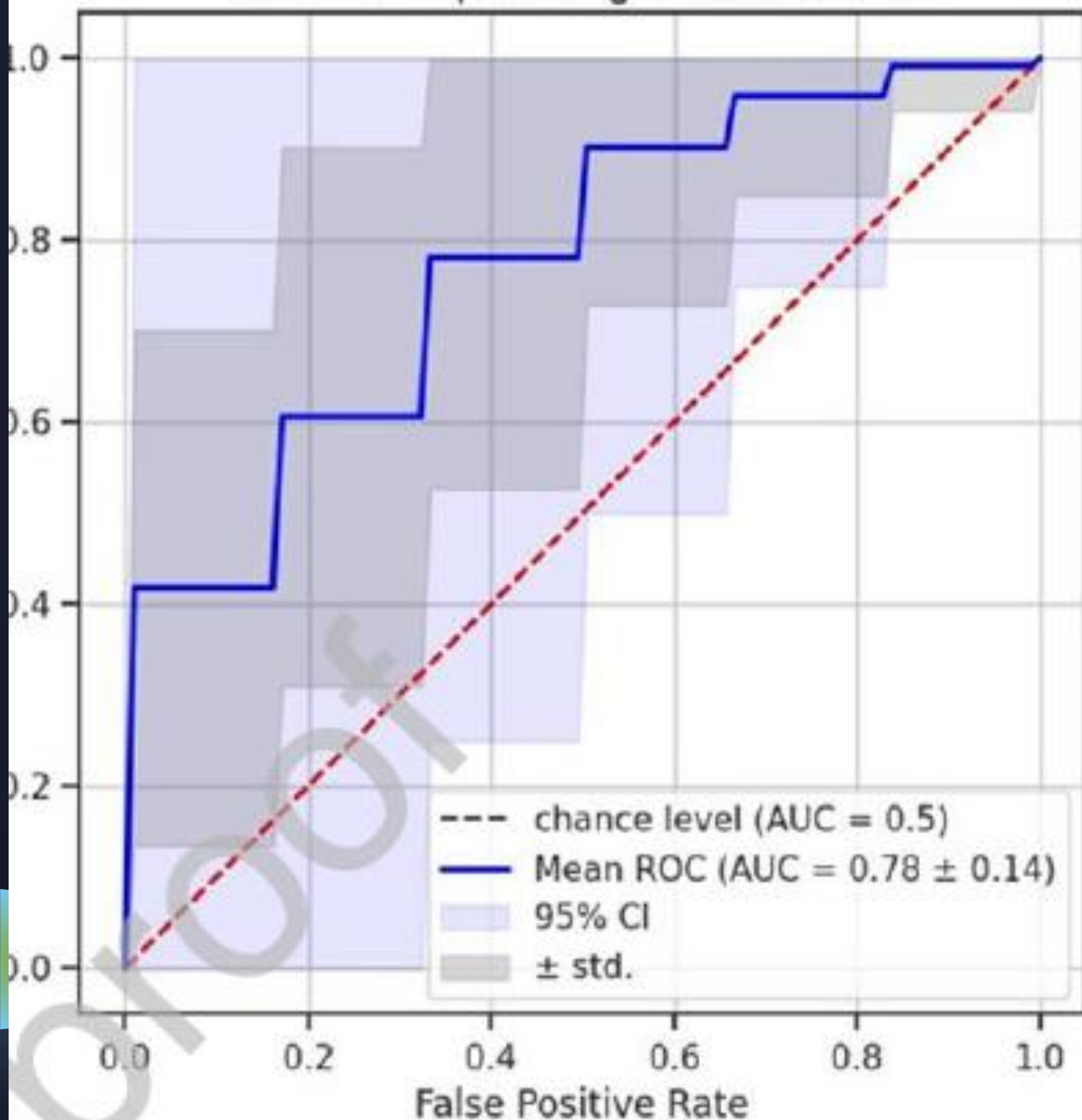
(N=22)



# Normalizing Spinal Cord Compression Measures in Degenerative Cervical Myelopathy

Sandrine Bédard<sup>1\*</sup>, Jan Valošek<sup>1 2 3 4\*</sup>, Maryam Seif<sup>5 6</sup>, Armin Curt<sup>5</sup>,  
Simon Schading-Sassenhausen<sup>5</sup>, Nikolai Pfender<sup>5</sup>, Patrick Freund<sup>5 6 7</sup>, Markus Hupp<sup>5</sup>,  
Julien Cohen-Adad<sup>1 2 8 9</sup>  


## B. Normalization Receiver operating characteristic



AIDE AU DIAGNOSTIC

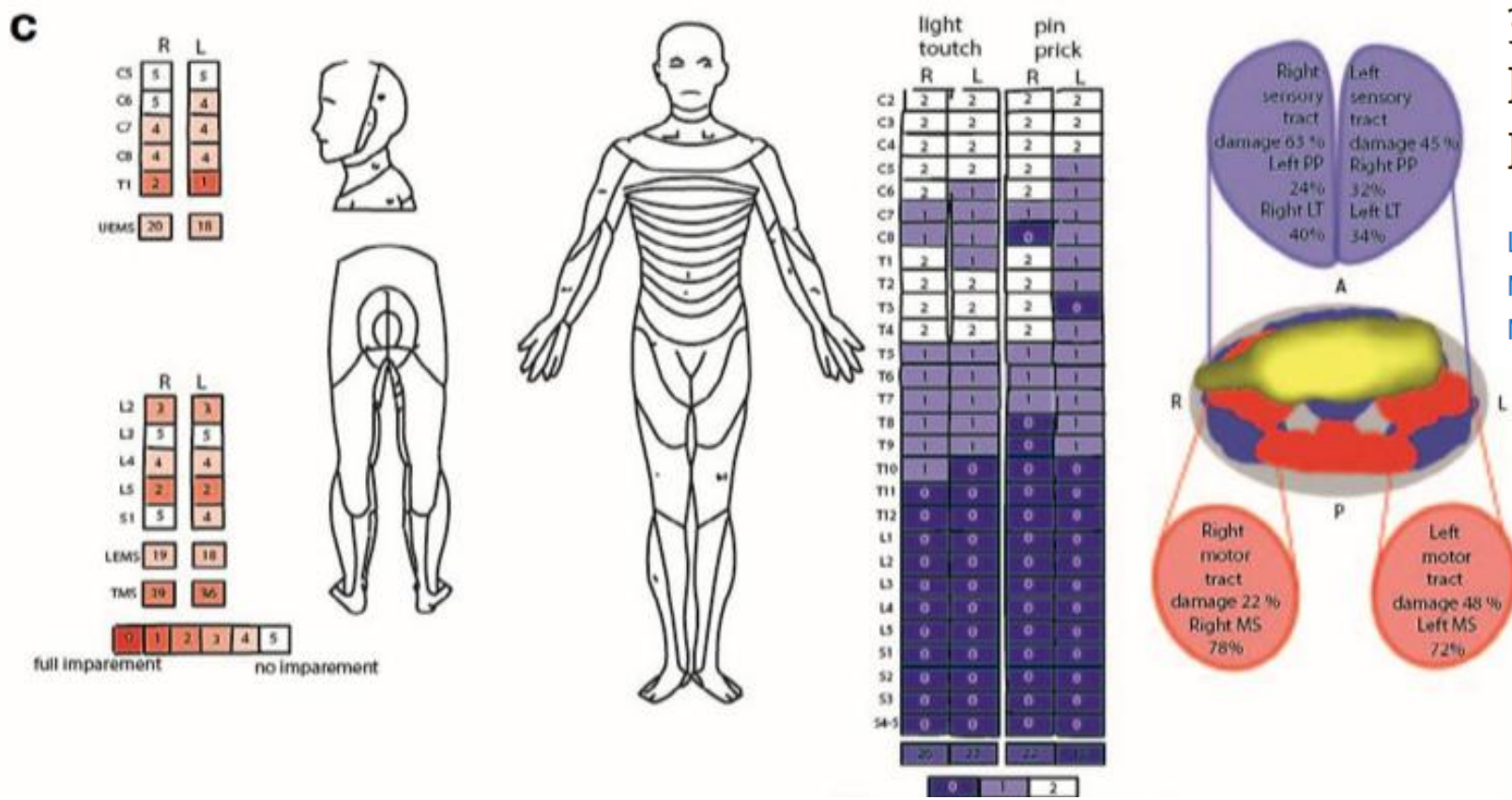
## Indice automatisé de compression maximale

Oct 2016- Dec 2022 : 120 DCM

Objectif : creation d'un modèle prédictif de décision thérapeutique (conservatrice : 0 ; chirurgie :1)  
100 patients DCM avec compression moyenne (sd subjectif essentiellement), compression C5+++ 

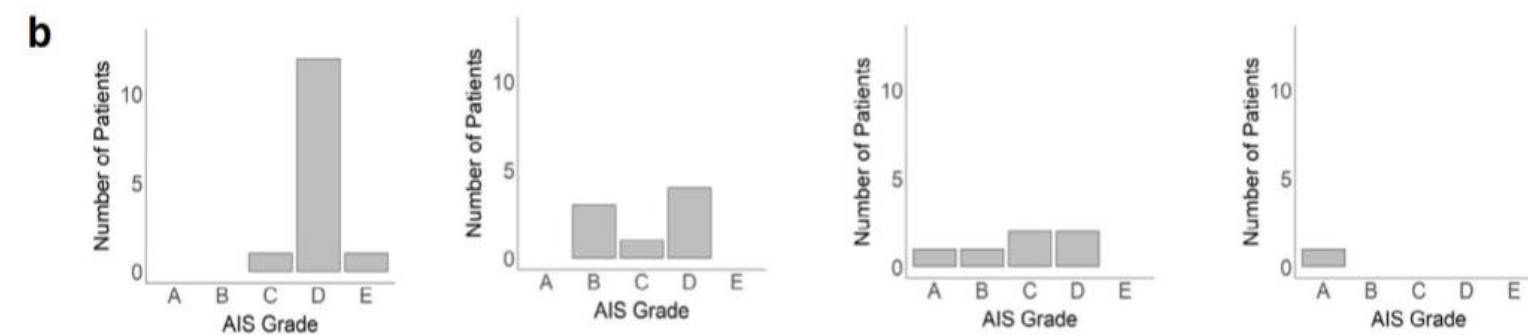
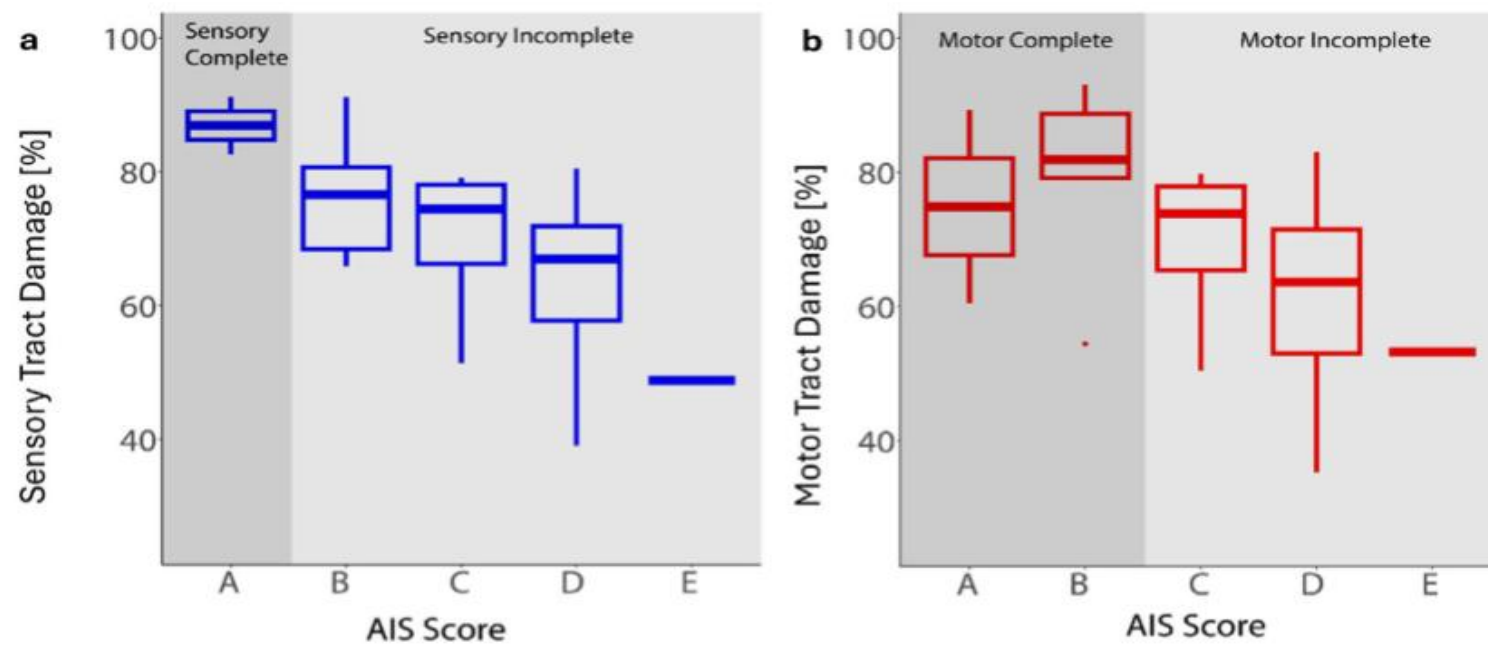
Demographics	
Age	55.28 ± 12.80
Sex (M: male/F: female)	M: 64% F: 36%
Height (m)	1.70 ± 0.10
Weight (kg)	74.93 ± 14.17
Clinical data	
Previous surgery (yes/ no)	6%   94%
Therapeutic decision (conservative/operative)	40%   60%
T2w hyperintensity (yes/no)	38%   62%
Number of stenoses	2.09 ± 0.97





# 3D MRI Tract-Specific Spinal Cord Lesion Pattern Improves Prediction of Distinct Neurological Recovery

Lynn Farner<sup>1</sup>, Tim M Emmenegger<sup>1 2</sup>, Simon Schading-Sassenhausen<sup>1</sup>, Julia Berroth<sup>1</sup>, Maryam Seif<sup>1 3</sup>, Armin Curt<sup>1</sup>, Patrick Freund<sup>1 3 4</sup>; Nogo Inhibition in Spinal Cord Injury Study Group

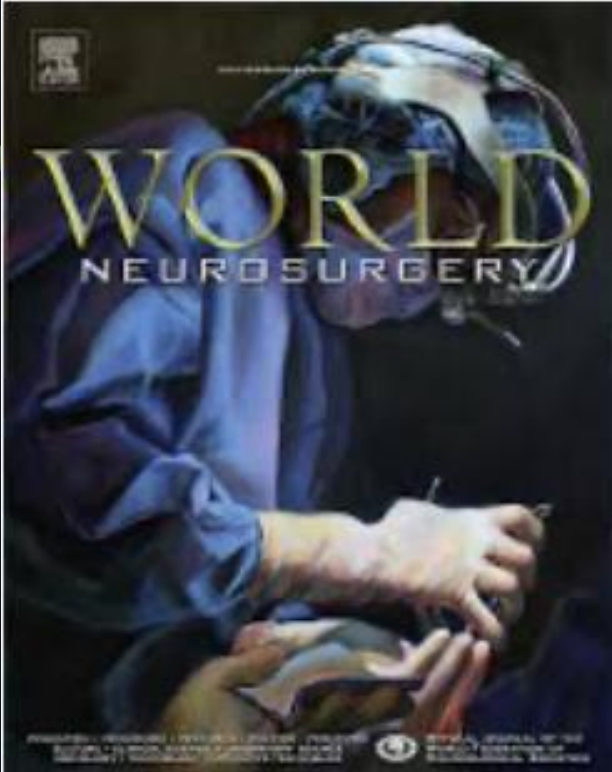


**FIGURE 2** | Lesion types identified on a midsagittal T2-weighted MRI scan. (a) MRI scans illustrate the four lesion types: central, ventral, dorsal, and complete lesions (b) the corresponding bar plot below depicts the distribution of AIS grades for each lesion type, showing that centrally located lesions are generally associated with less impairment compared to complete lesions.

# Traitement chirurgical

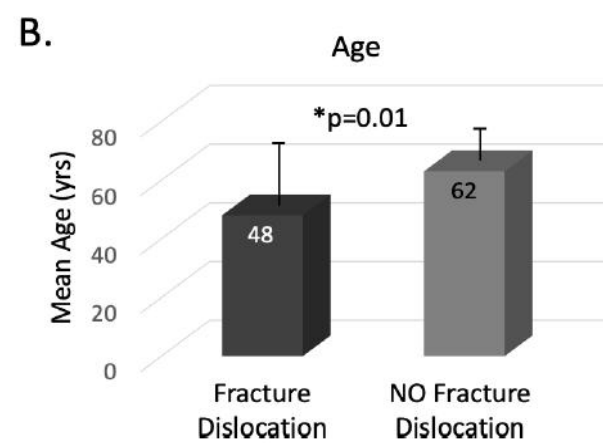
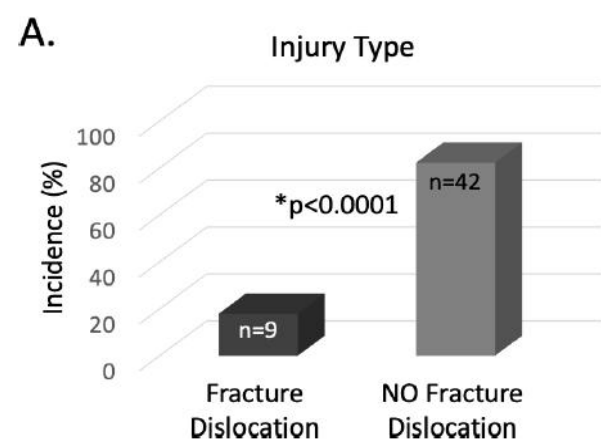
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JOURNAL PRE-PROOF

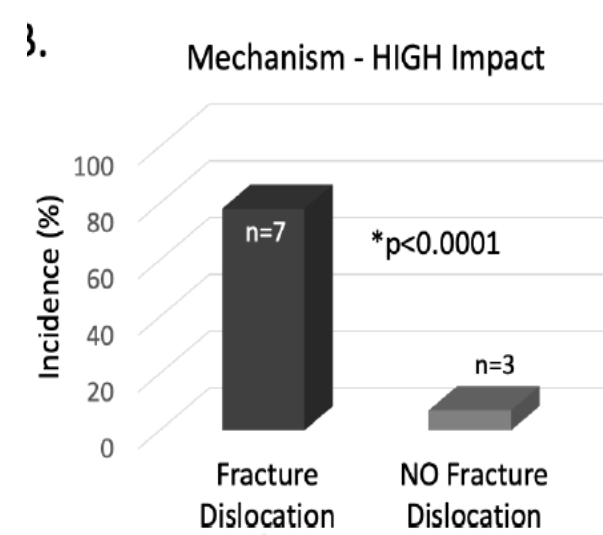
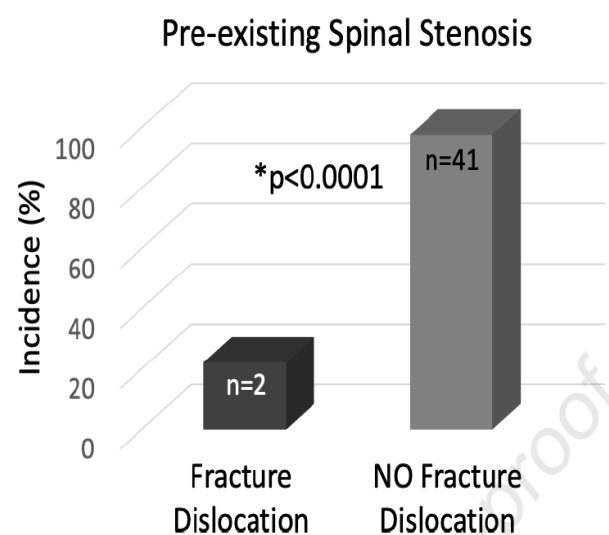
## Spinal Cord Injury in the 21<sup>st</sup> Century : A new demographic



Recensement des patients BM sur un an (n=51)  
 18% BM avec fracture > âge median 48+/-22 ans  
 82% BM sans fracture > âge median 62 +/- 12 ans

2021 – centre traumatique de niveau 1

Sd de Schneider : déplacement de la substance grise de la moelle épinière dans le plan axial



Fracture luxation : mécanisme en cisaillement axonal dans la plan sagittal.

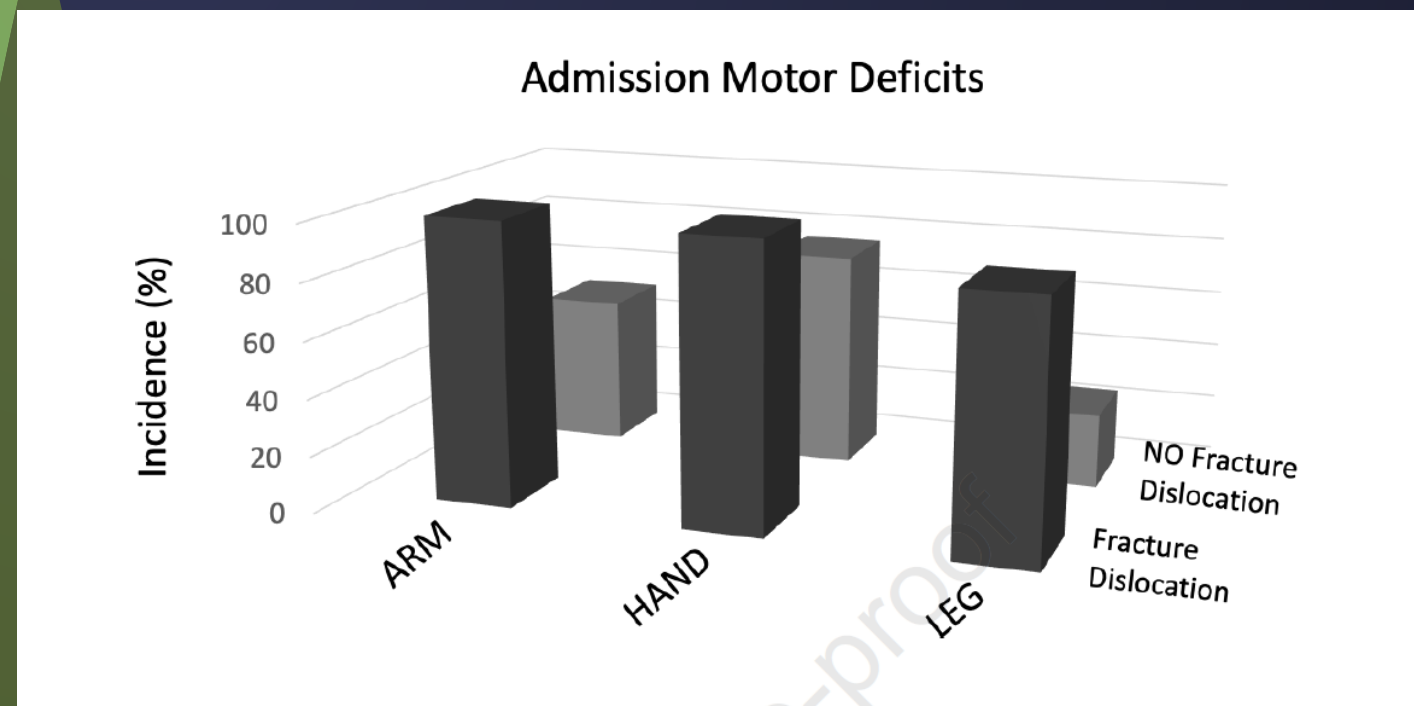
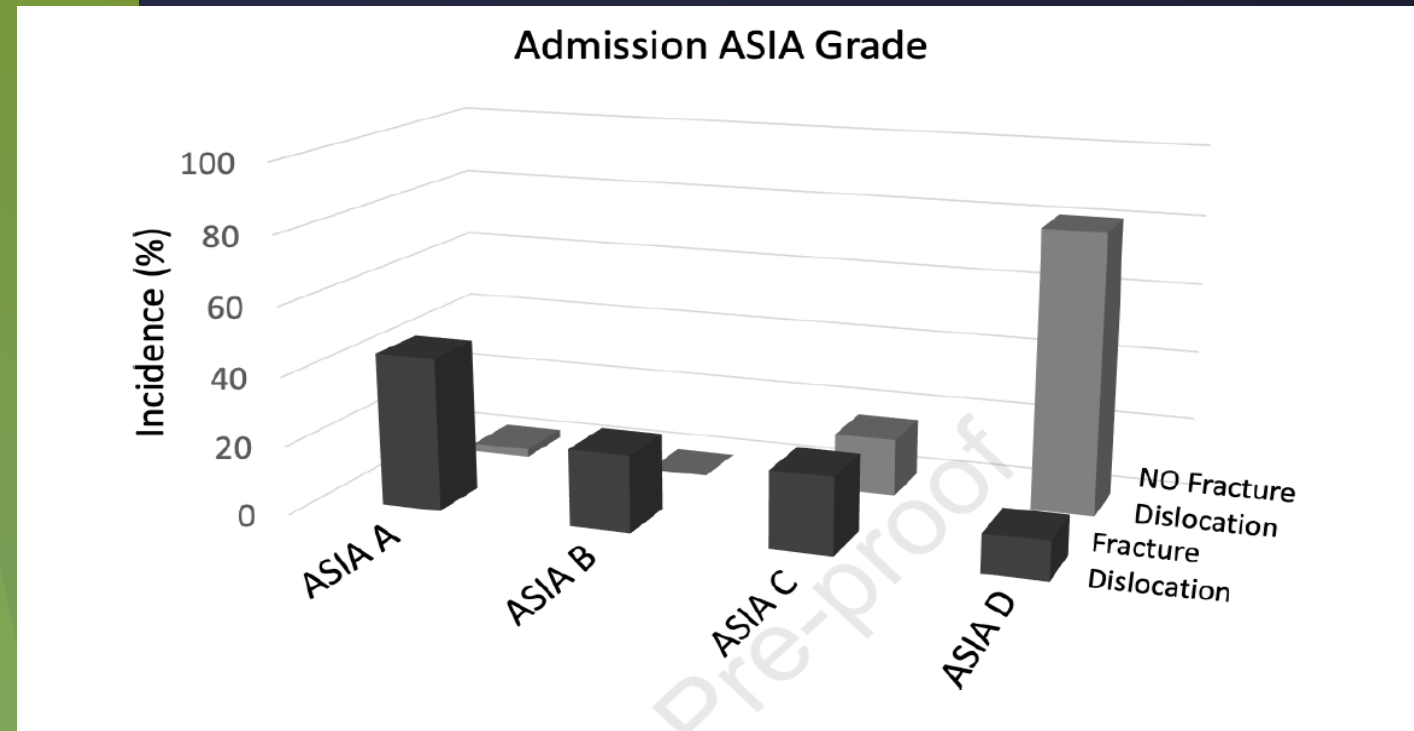


Ne pas extrapoler les indications des compressions aiguës sur rachis sain aux syndromes de Schneider sur myélopathie pré-existante !!



# Atteinte motrice

## ISNCSCI



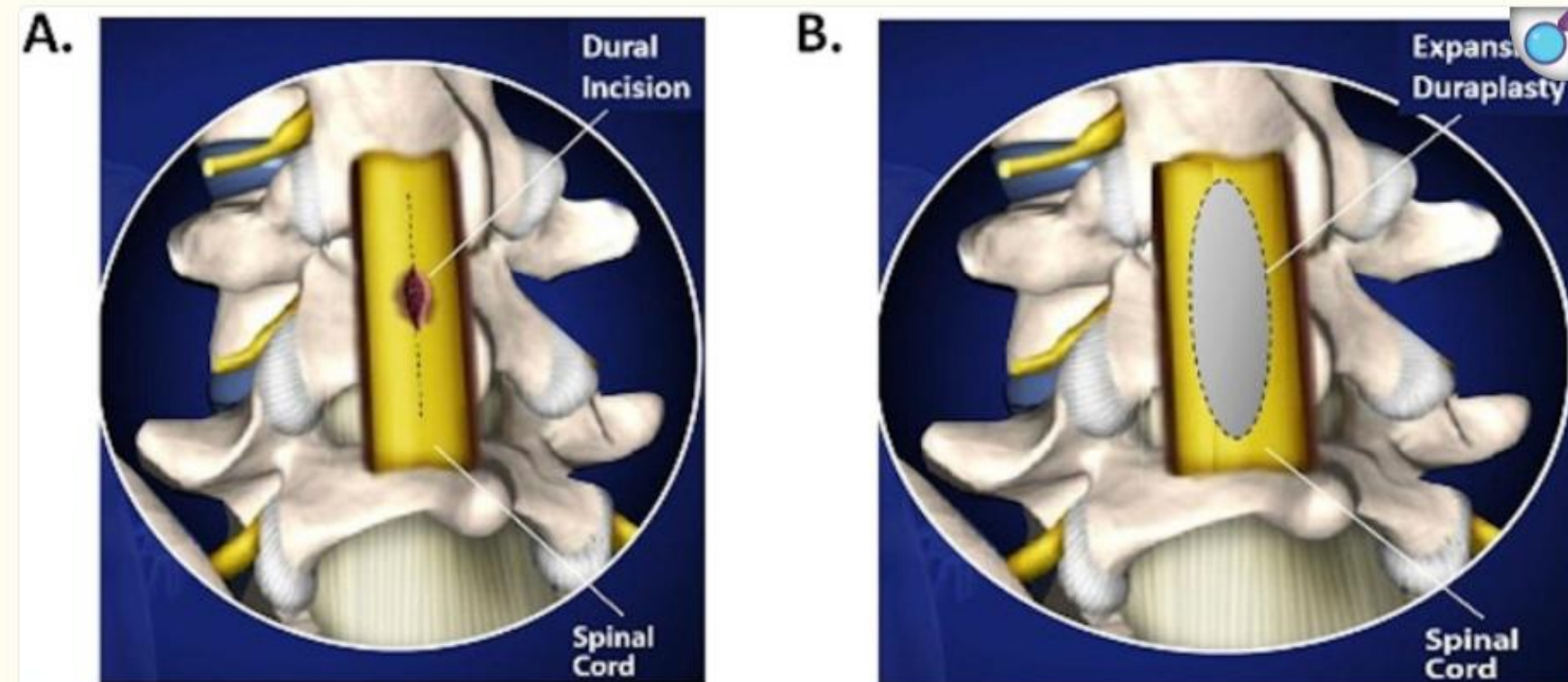
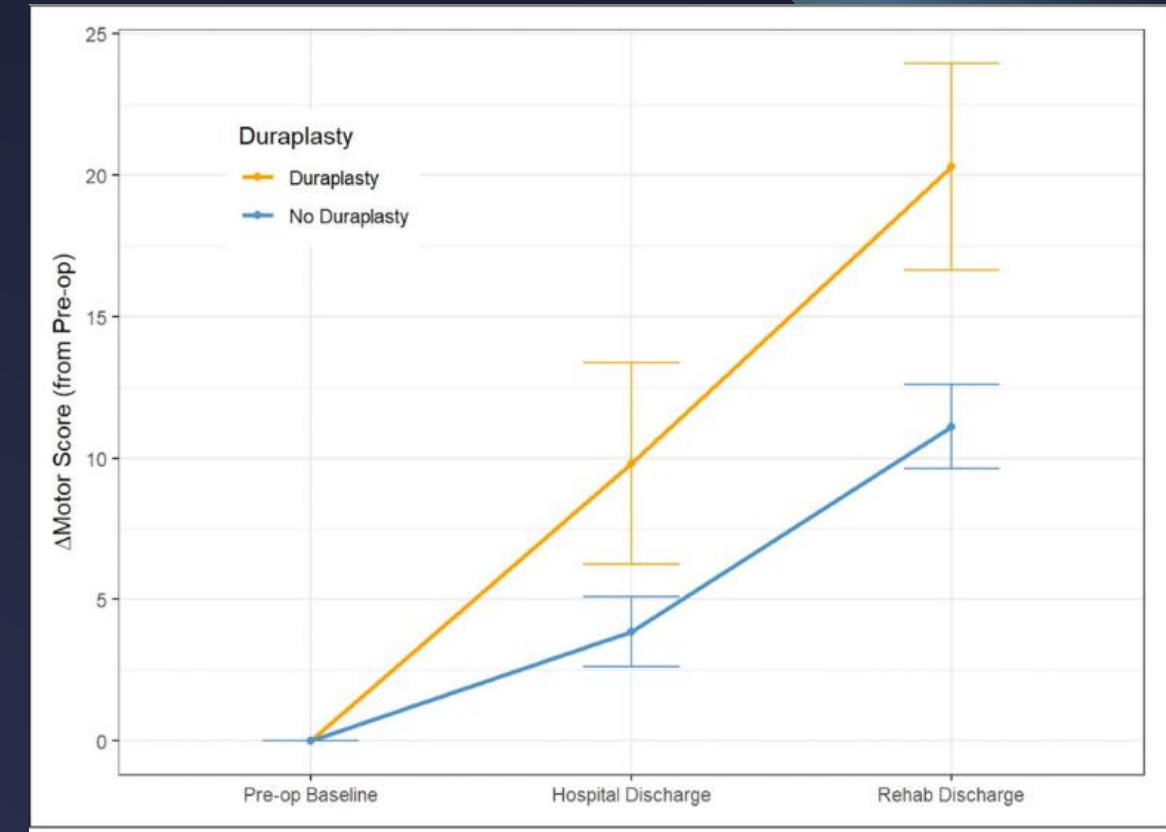
> Eur Spine J. 2025 Nov;34(11):4891-4899. doi: 10.1007/s00586-025-08811-2. Epub 2025 Mar 28.

## Duraplasty in acute spinal cord injury: a systematic review

Tej D Azad<sup>1</sup>, Ahmet Kartal<sup>2</sup>, Mahnoor Shafi<sup>1</sup>, Daniel Lubelski<sup>1</sup>, Nicholas Theodore<sup>1</sup>, Ali Bydon<sup>1</sup>, Timothy F Witham<sup>1</sup>

## Retrospective Analysis of Expansile Duraplasty as Surgical Adjunct After Acute Traumatic Spinal Cord Injury

Madeline E Greil<sup>1</sup>, Emily R Hunt<sup>2</sup>, Abel Torres Espin<sup>3,4,5</sup>, Rajiv Saigal<sup>5,✉</sup>



[Open in a new tab](#)

Surgical Technique for Expansile Duraplasty (A) Left: After Performing Laminectomies, the Dura Over the Injured Spinal Cord is Carefully Opened With a Midline, Linear Incision (B) Right: An Acellular, Expansile Patch is Sutured to the Surrounding Dura to Expand the Intrathecal Space

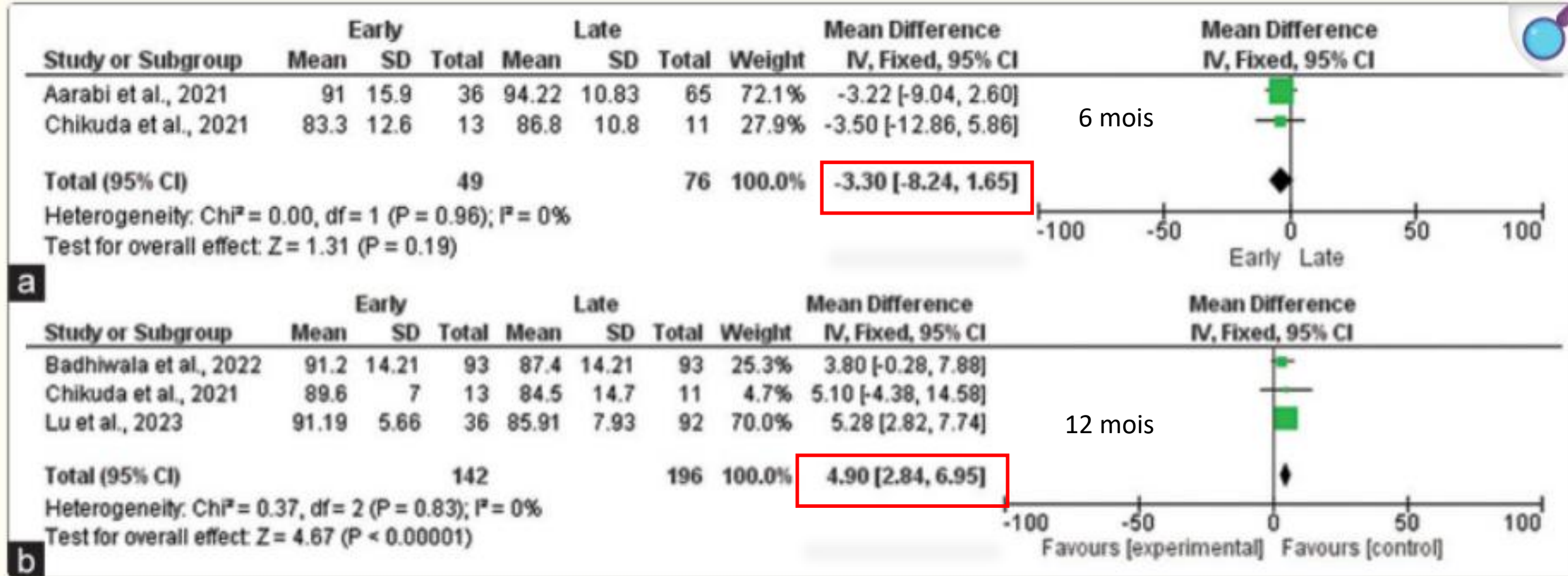
► Surg Neurol Int. 2025 Aug 29;16:368. doi: [10.25259/SNI\\_678\\_2025](https://doi.org/10.25259/SNI_678_2025)

## Evaluating the role of surgical timing on clinical outcomes in traumatic spinal cord injury: A systematic review and meta-analysis

Tommy Alfandy Nazwar<sup>1,\*</sup>, Farhad Bal'afif<sup>1</sup>, Donny Wisnu Wardhana<sup>1</sup>, Fachriy Bal'afif<sup>1</sup>, Christin Panjaitan<sup>1</sup>

22 études

2395 patients



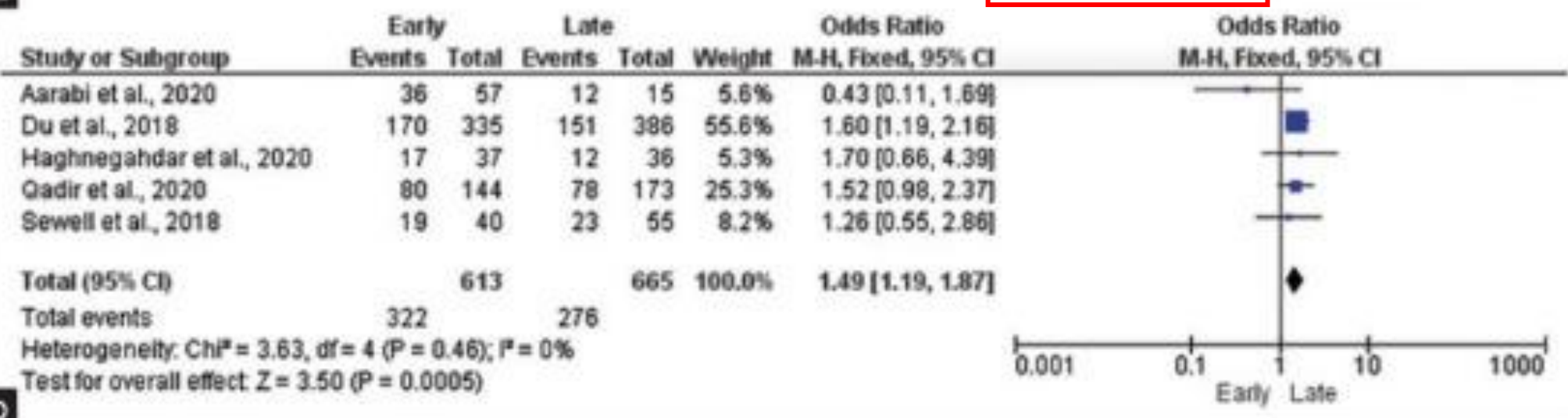
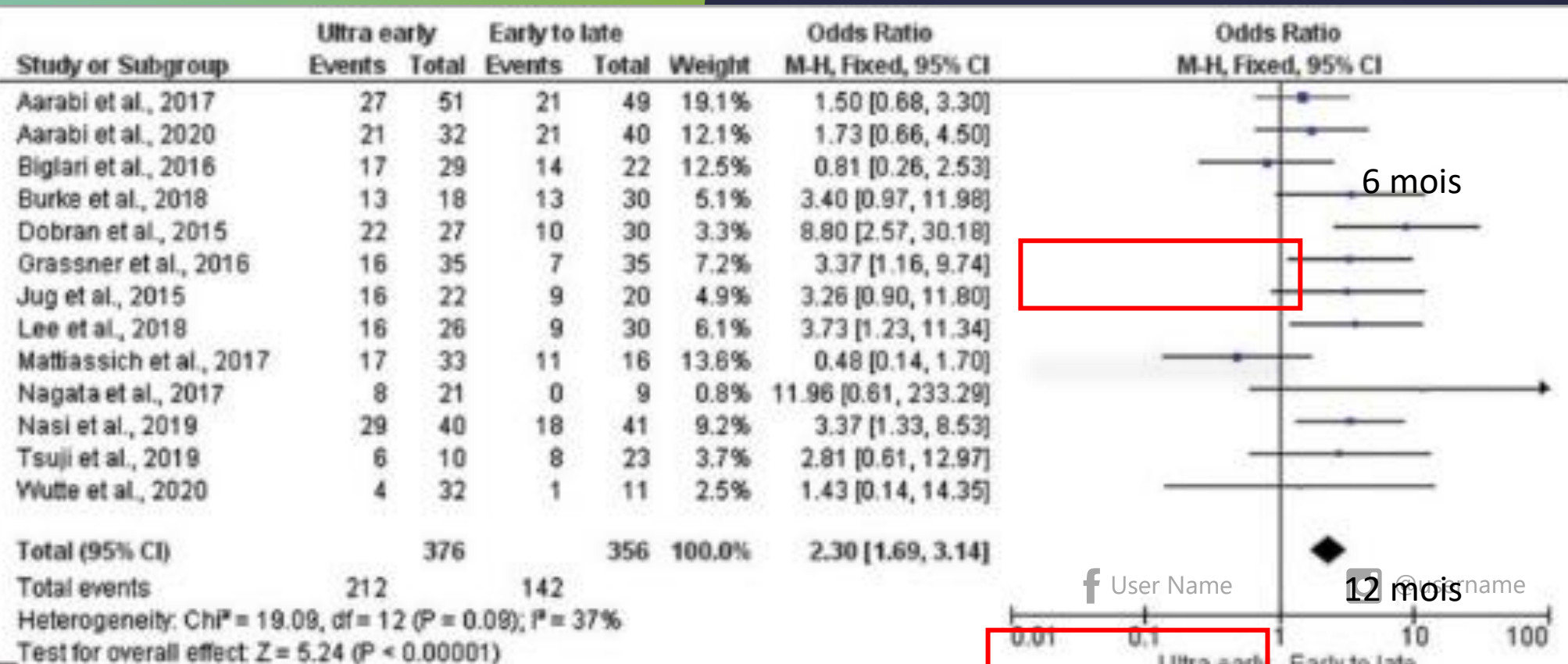
► Surg Neurol Int. 2025 Aug 29;16:368. doi: [10.25259/SNI\\_678\\_2025](https://doi.org/10.25259/SNI_678_2025)

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Tommy Alfandy Nazwar<sup>1,\*</sup>, Farhad Bal'afif<sup>1</sup>, Donny Wisnu Wardhana<sup>1</sup>, Fachriy Bal'afif<sup>1</sup>, Christin Panjaitan<sup>1</sup>

22 études

2395 patients



## Early versus late surgical decompression in acute traumatic spinal cord injury: does it impact the quality of life?

Patrick Romijn<sup>1</sup>, Paul G P Kussige<sup>2</sup>, Miranda L van Hooff<sup>2,3</sup>, Nathan Evaniew<sup>4</sup>,  
van de Meent<sup>5</sup>, Joost J van Middendorp<sup>2</sup>, Martin H Pouw<sup>2</sup>, Allard J F Hosman<sup>2</sup>

Domain	Treatment group		Difference late vs early decompression	
	Early decompression (≤12 h after injury)	Late decompression (>12 h after injury)	Difference (95% CI)	Adjusted P- value
	Mean (95% CI)	Mean (95% CI)		
<b>WHOQOL Physical</b>				
6 months	61.6 (54.4; 68.8)	60.9 (53.8; 68.1)	0.7 (-6.4; 7.7)	1.000
1 year	65.7 (58.5; 72.9)	63.8 (56.6; 71.0)	2.0 (-5.1; 9.1)	1.000
<b>WHOQOL General Q2</b>				
6 months	3.5 (2.9; 4.1)	3.5 (2.9; 4.0)	0.0 (-0.4; 0.5)	1.000
1 year	3.6 (3.0; 4.1)	3.5 (3.0; 4.1)	0.0 (-0.4; 0.5)	1.000

[Open in a new tab](#)

A total of 197 patients with complete data were included in the analysis.

# Rééducation

(N=39)



Protocole 6 semaines :  
THERAPIE VIRTUELLE + EXERCICE  
PHYSIQUE

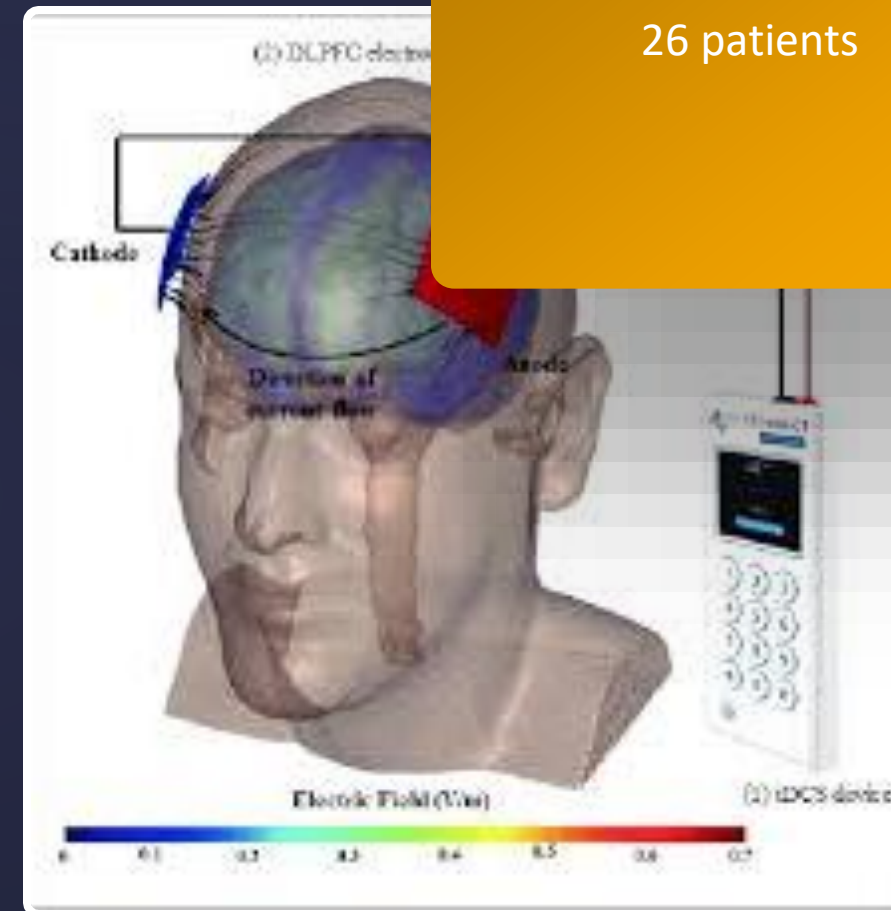


Patients incomplets

- Réduction de la spasticité et de la douleur à court terme
- Pas de modification du tonus

EXOSQUELETTE + tDCS

26 patients



Patients incomplets

- Majoration de l'activité de l'aire motrice primaire + AMS
- Corrélation + avec WISCI-II

## Comparative efficacy of robotic exoskeleton and conventional gait training in patients with spinal cord injury: a meta-analysis of randomized controlled trials

[Shengye Liu](#)<sup>1,#</sup>, [Fangyuan Chen](#)<sup>2,#</sup>, [Jianqiao Yin](#)<sup>3,#</sup>, [Guanqi Wang](#)<sup>2</sup>, [Liyu Yang](#)<sup>1,✉</sup>

### MARCHE

- T6M + T10 M : idem
- TUG amélioré
- WISCI II amélioré

### METABOLIQUE

- ↗ diamètre du mollet
- + 14,5 % DMO tibia
- ↘ 5 % du tissu adipeux SC et IM
- Pas d'effet sur les douleurs neuropathiques

### RESPIRATION

- Amélioration VEMS

### MOTRICITE

- modification des scores moteurs (LEMS)

+14 m  
Équilibre ↗

↗VEMS  
↔CVF  
↔DEP

15/595

14,5%

Avant ou après 6  
mois

## Practical Guide: Inspiratory muscle training for people with spinal cord injury

Keira E Tranter<sup>1</sup>, Claire L Boswell-Ruys<sup>2</sup>, Joanne V Glinsky<sup>1</sup>

Question	Recommendation
Who is IMT for?	A person with SCI above T12 (ie, have a degree of respiratory muscle weakness)  People with SCI C4 to T6 with motor-complete and C1 to T6 motor-incomplete injuries are high priority for IMT  Acute or chronic SCI
When should you start IMT?	As soon as tolerated
How do you deliver IMT?	Threshold device preferable with a nose peg if able  Directly via the mouth via mouthpiece or via a tracheostomy with the use of an appropriate respiratory filter (cuff deflated if appropriate)
How intense should IMT be?	30 to 40% of MIP if training twice daily  > 40% of MIP if training once daily
How much IMT should be done?	12 breaths 3 to 5 sets 5 days per week (twice daily if 30 to 40% MIP, once daily if > 40% MIP)
How long do I train for?	Benefits may be seen with > 4 to 6 weeks of training  Training needs to be lifelong to maintain benefits



Effet bénéfique indirect sur le tonus postural assis

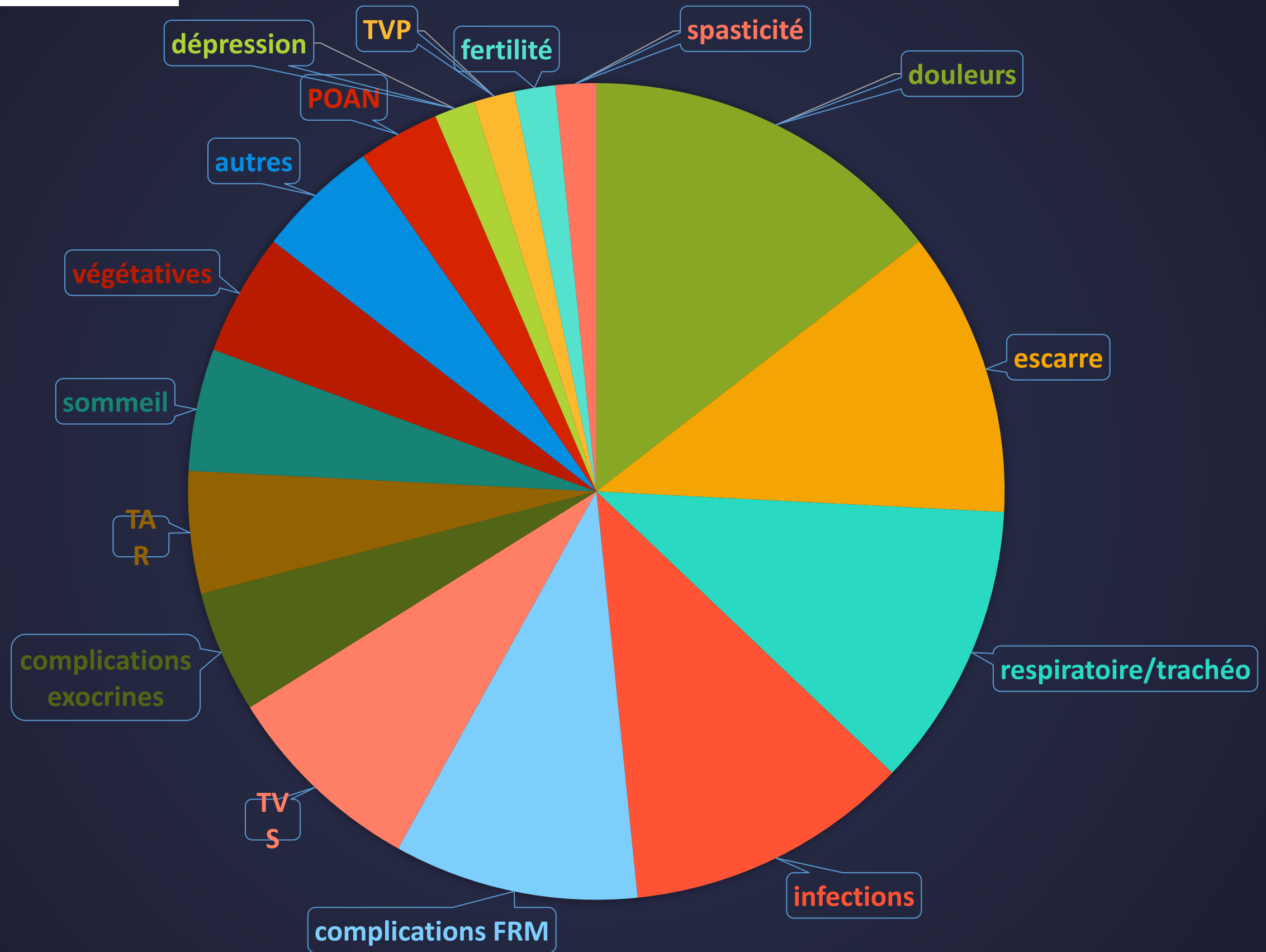
# Complications

(escarre, TVS, TGS, TAR ...)

(N=62)



# Complications (N=62)

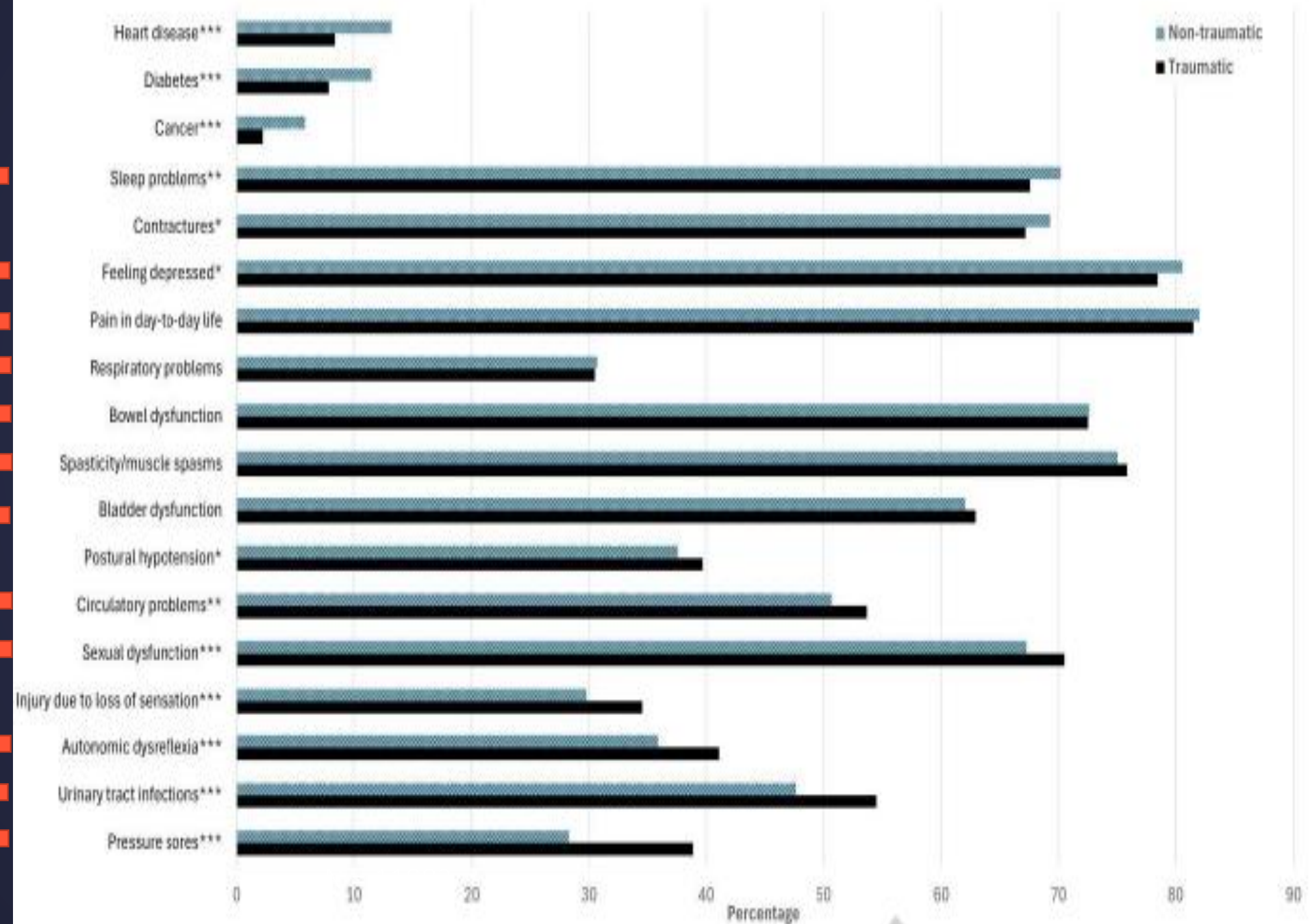


# Self-reported secondary health conditions in relation to age and time living with spinal cord injury: Results from the second International Spinal Cord Injury Community Survey

Vegard Strøm<sup>1</sup>, Norbert Weidner<sup>2</sup>, Cristina Sadowsky<sup>3</sup>, Khin Myo Hla<sup>4</sup>, Taslim Uddin<sup>5</sup>, Christina-Anastacia Rapidi<sup>6</sup>; InSCI

Nombre d'articles

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**Surgical and conservative treatment of lower limb fractures in patients with chronic spinal cord injury**

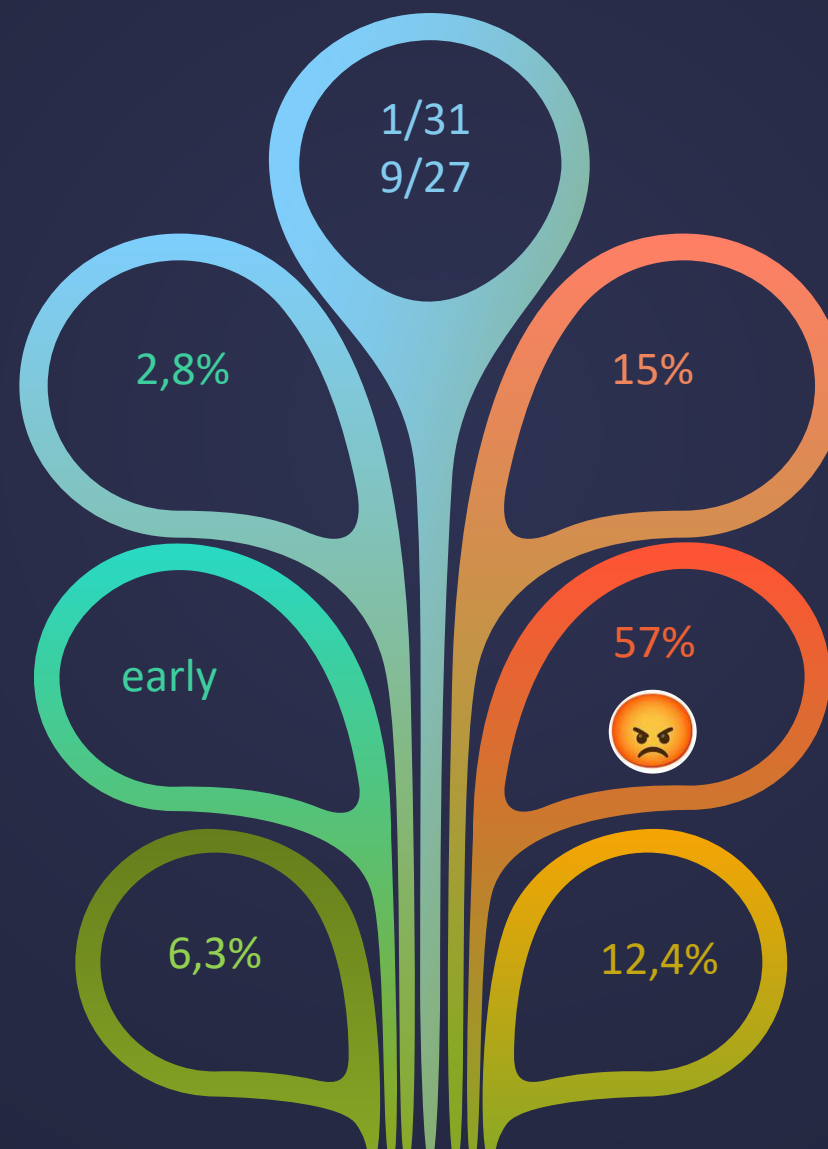
WWW.SITE.COM

**Risk Factors for Lower Extremity Deep Vein Thrombosis by Spinal Cord Injury Level: A Population-Based Analysis**

**Timing of Tracheostomy After Anterior Cervical Decompression in Traumatic Cervical Spinal Cord Injury: A Systematic Review and Meta-Analysis**

**Infections associated with intrathecal baclofen therapy: a multicentre case-control study**

K Jaffal <sup>1</sup>, C Wemmert <sup>2</sup>, H Belaid <sup>3</sup>, V Zarrouk <sup>4</sup>, C Moreau <sup>1</sup>, S Prat <sup>1</sup>, V Ichbia <sup>1</sup>, C Duran <sup>1</sup>, H Staquet <sup>5</sup>, A Dinh <sup>6</sup>



**Insomnia in spinal cord injury: A meta-analysis of observational studies**

**Prevalence of neuropathic pain following spinal cord injury: An updated systematic review and meta-analysis**

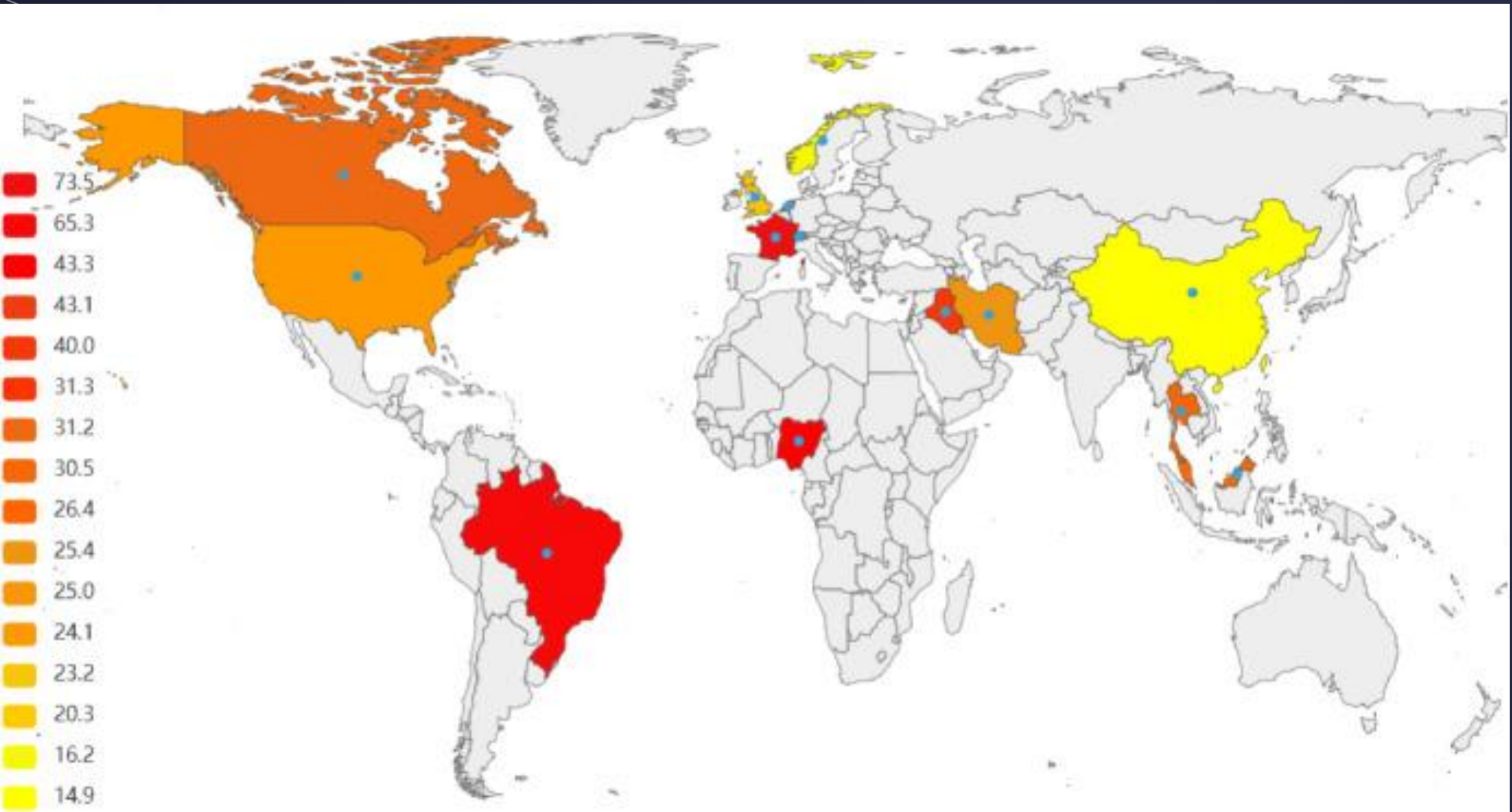
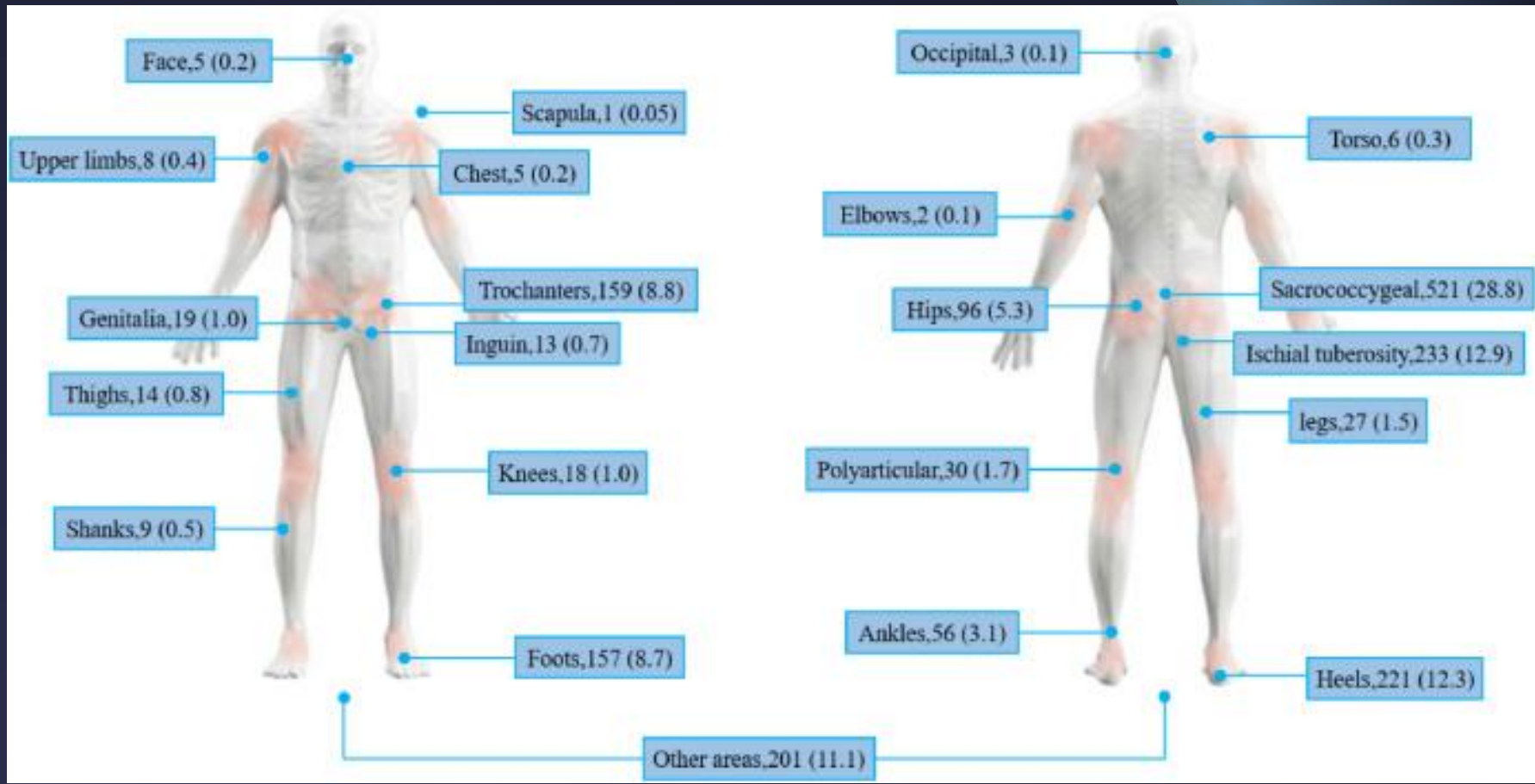
**Chronic Pain Modulates Empathic Responses in People with Spinal Cord Injury**

**Recurrence of neurogenic heterotopic ossification after surgical excision and preventive strategies: A systematic review and meta-analysis**

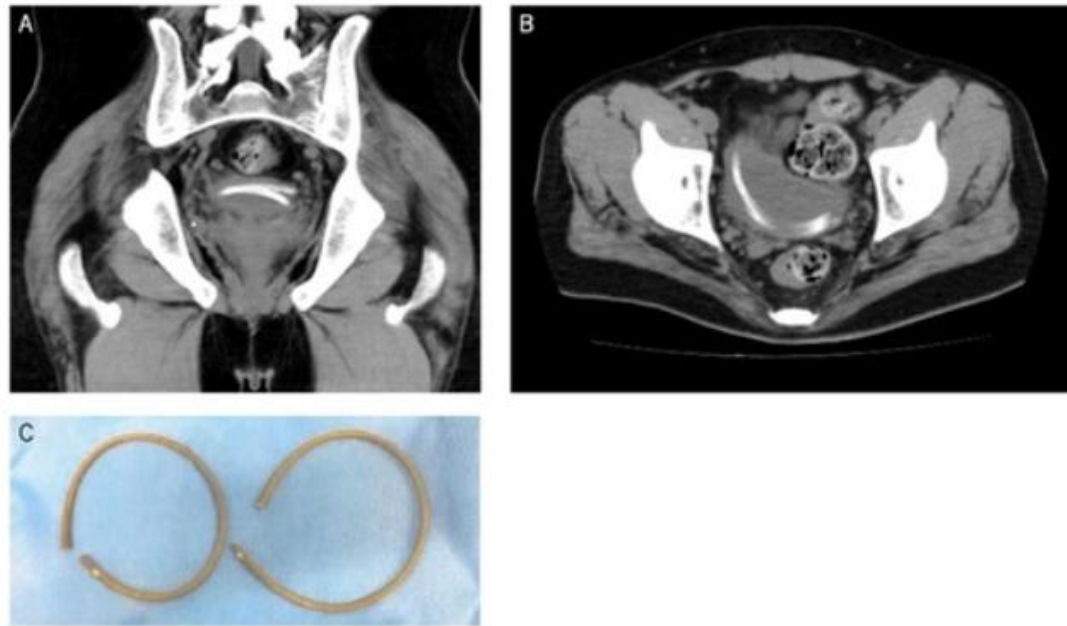
# Incidence of pressure injuries in patients with spinal cord injury: A systematic review and meta-analysis

Jie Xu <sup>a1</sup>, Yanxia Jiao <sup>b1</sup>, Ning Wang <sup>b</sup>, Xinyue Xu <sup>a</sup>, Limei Yang <sup>b</sup>, Lin Han <sup>a c 2</sup>  
 Lin Lv <sup>a b 2</sup>

Included 35 studies with over 150,000 participants, adding significant weight to the analysis.  
 The combined incidence of PIs in 150,391 patients with SCI was 28.8 percent.



**Figure 2.** Imaging examinations. Abdominal CT scan demonstrated the presence of a high-density tubular structure within the bladder (a) Coronal image (b) Axial image (c) Two urinary catheters removed from the bladder.



# ETP, rôle de l'IDE

(N=7)



# EDUCATION

**Effects of Web-Based Education Program for Self-  
Urination Management of Patients with Spinal Cord  
Injuries in Community: Preliminary Study**

Hyeon Jeong Jin<sup>1</sup>, Minkyung Gu<sup>2</sup>, Nam Kyung Oh<sup>1</sup>, Sohyune Sok<sup>3</sup>

**A comparative study of ChatGPT and DeepSeek in spinal  
cord injury patient education: Can artificial intelligence  
“speak” spinal cord injury?**

Jia Yi Sandra Lau, Gui Ren Gerald Sng, Ruoxi Cao & Jing Chen  
Published online: 12 Sep 2025

- Haut niveau de sécurité et de fiabilité (p=0,014)
- DeepSeek V3 supériorité pour la cohérence et la clarté des explications

**Prevention and Management of Urinary Tract  
Infections Among Persons With a Spinal Cord Injury:  
Implications for Nurses**

**Health Priorities and Participation in Peer-Led Active  
Rehabilitation Camps Among Persons with Spinal  
Cord Injury: A Prospective Cohort Study**

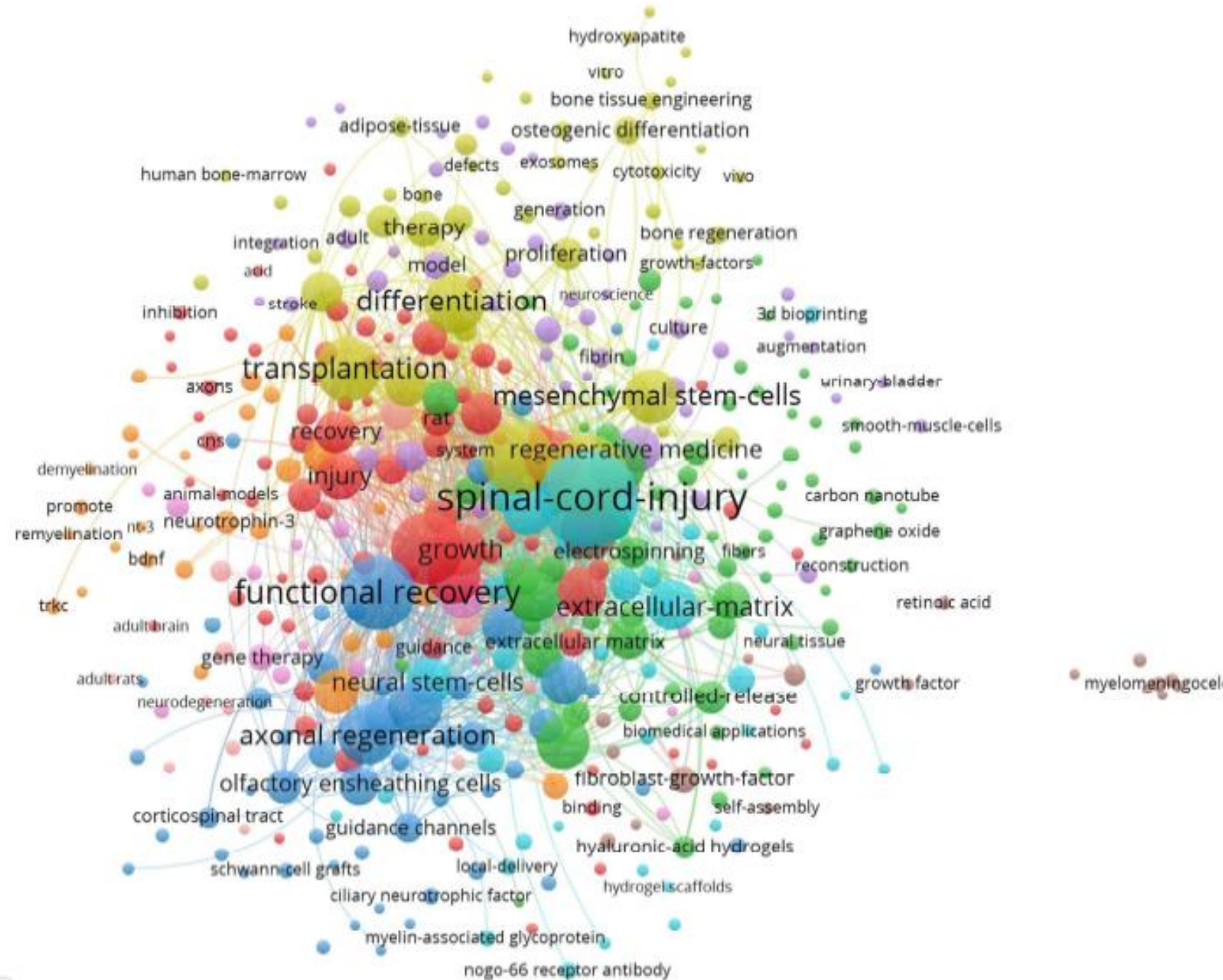
- Gain de compétences FRM
- Tétraplégiques : + autonomie AVQ et AHE
- Confiance et satisfaction sexuelle

# Recherche fondamentale

(N=163)



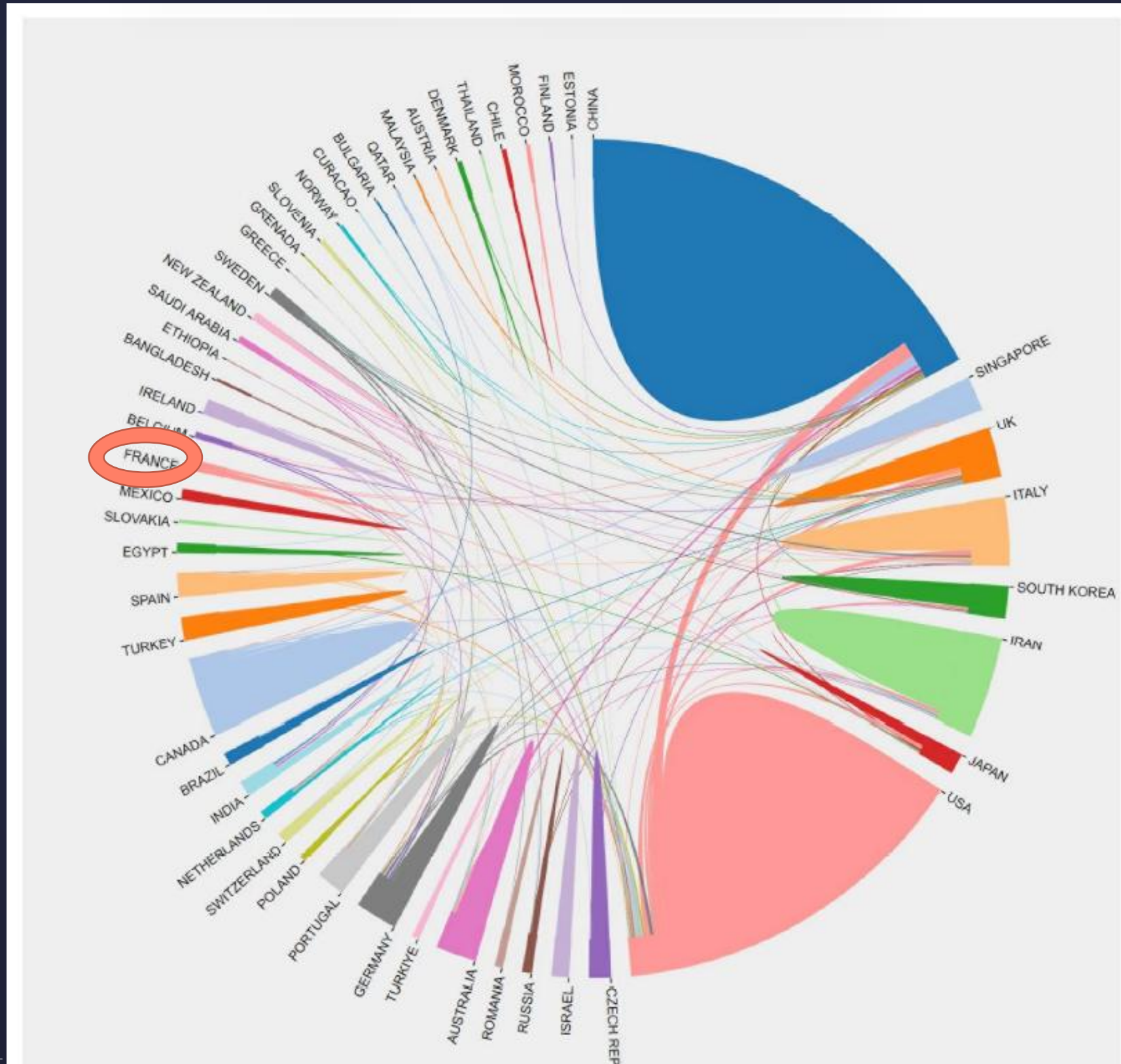
# RECHERCHE FONDAMENTALE



Viewer

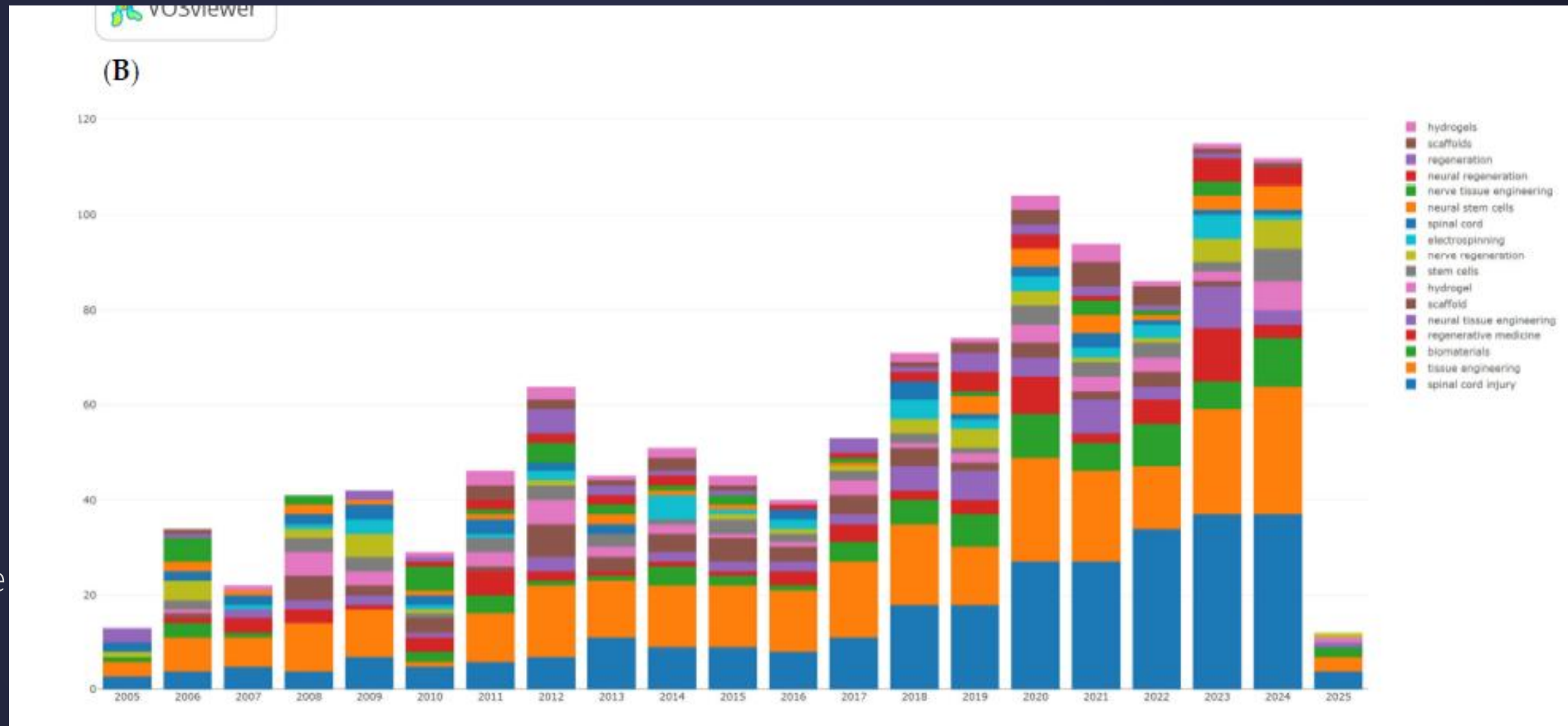
QUOI DE NEUF ?

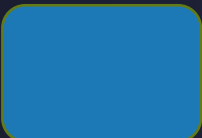



# RECHERCHE FONDAMENTALE



QUOI DE NEUF ?

# RECHERCHE FONDAMENTALE



-  Spinal cord injury
-  Ingénierie tissulaire
-  Biomatériaux
-  Médecine régénérative

# Ingénierie tissulaire



## Hydrogels

- Faible teneur en eau
- rôle vecteur + échafaudage
- Peuvent être injectés localement (bonne biocompatibilité, bonne porosité, et stabilité)



## Echafaudages bio-conçus

- en complément de greffe de cellule souche



## Collagène

- composant de la matrice extracellulaire
- échafaudage pour promouvoir l'adhésion, la migration des cellules souches, réguler l'environnement local, réduire la formation de cicatrices et faciliter la récupération des blessures.



## Microsphères

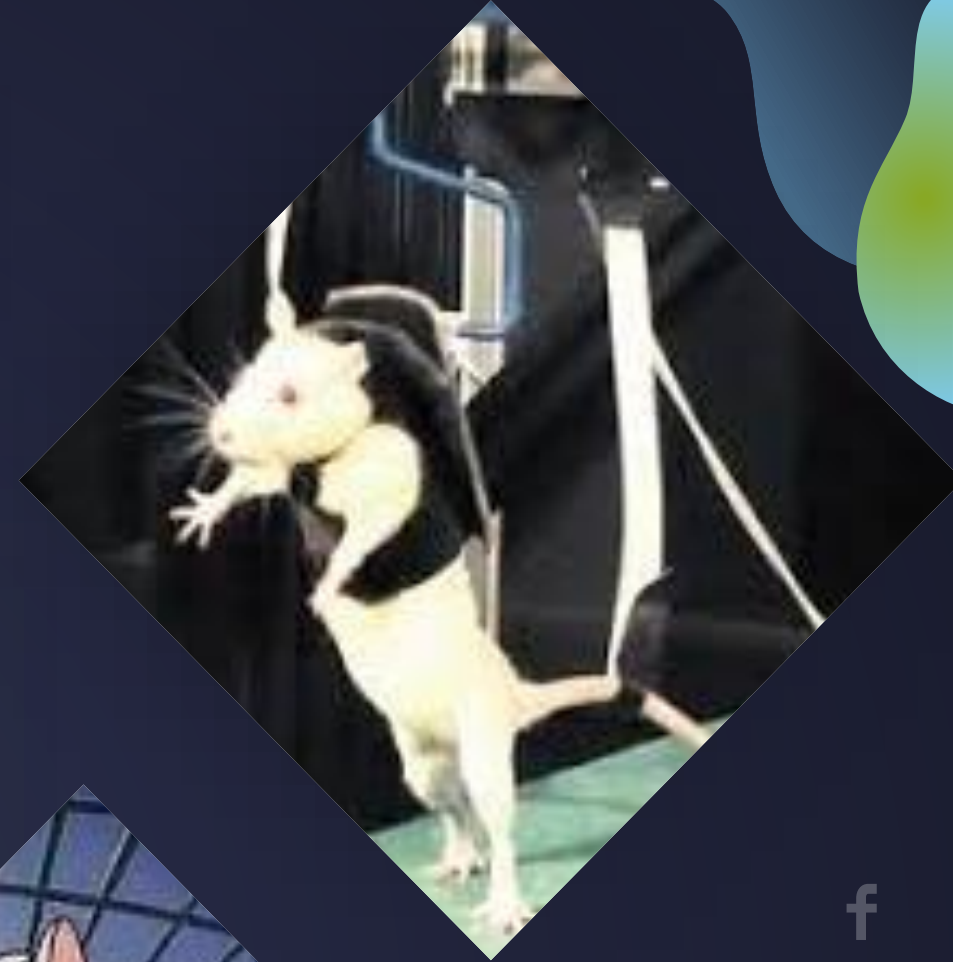
- Vecteur +++
- peut pénétrer dans la cellule sous influence des ultra-sons



# Modèles animaux

(N=103)





CONCLUSION

\*\*\* represents an innovative and promising therapeutic strategy for SCI, warranting further investigation into its long-term efficiency and potential clinical translation.

optimizing the larval zebrafish model



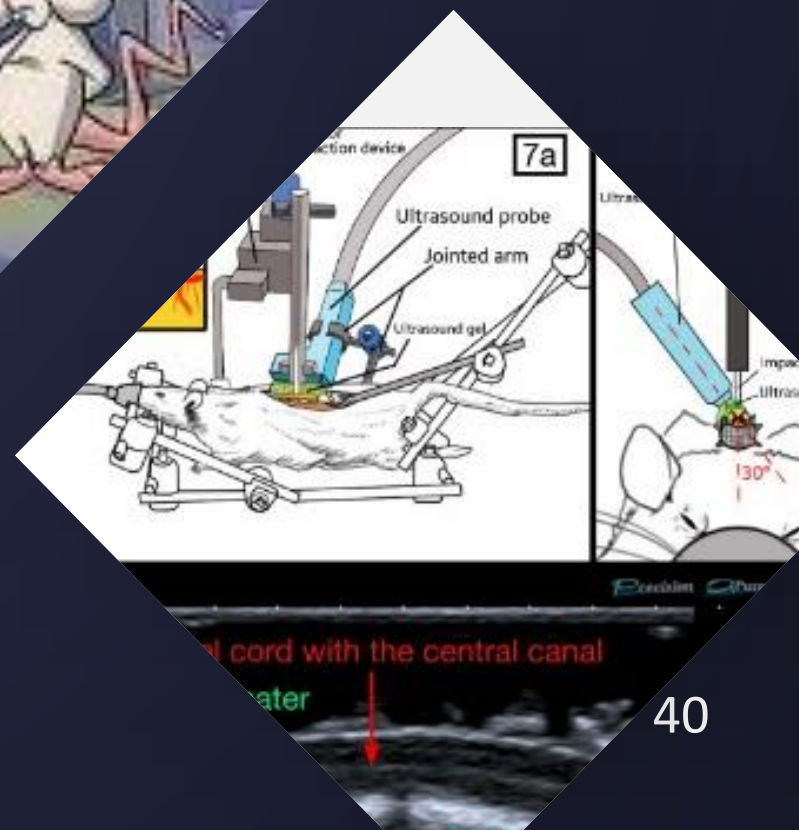
Chondroitinase ABC-37

Salvia przewalskii

METTL3

NF-κB inhibition

TLR4/MyD88/NF-κB pathway



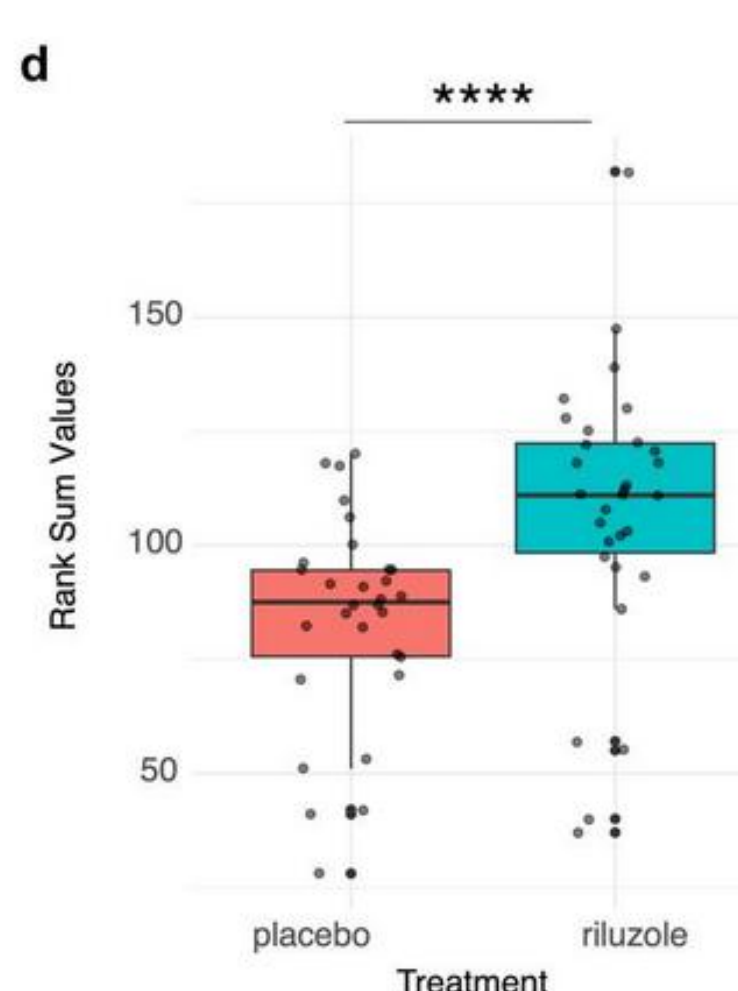
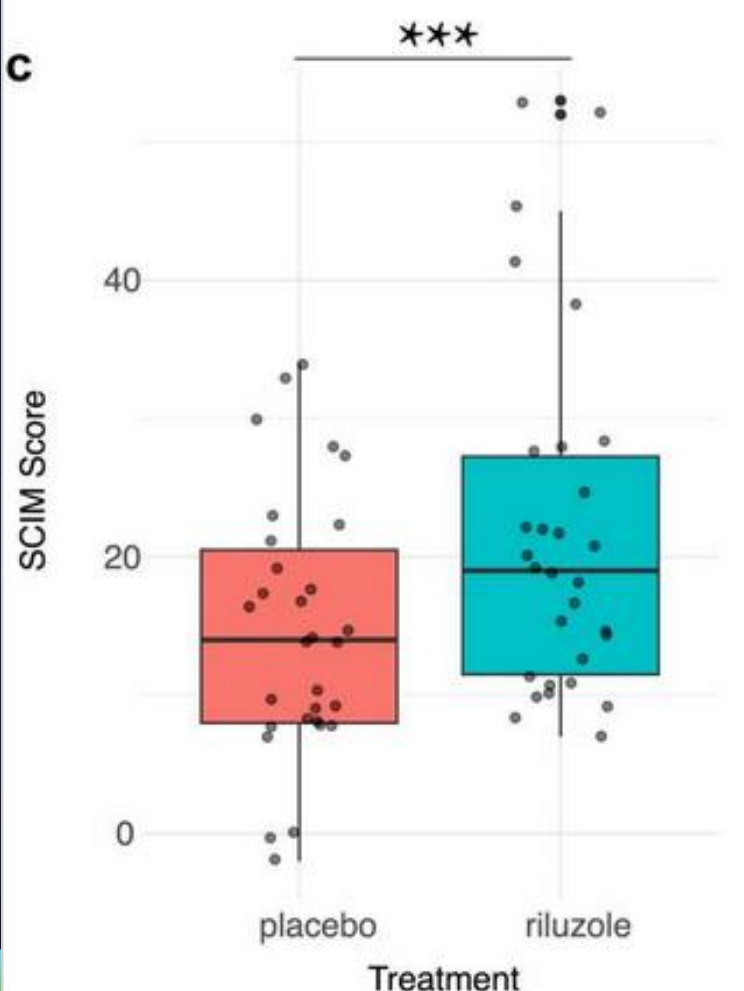
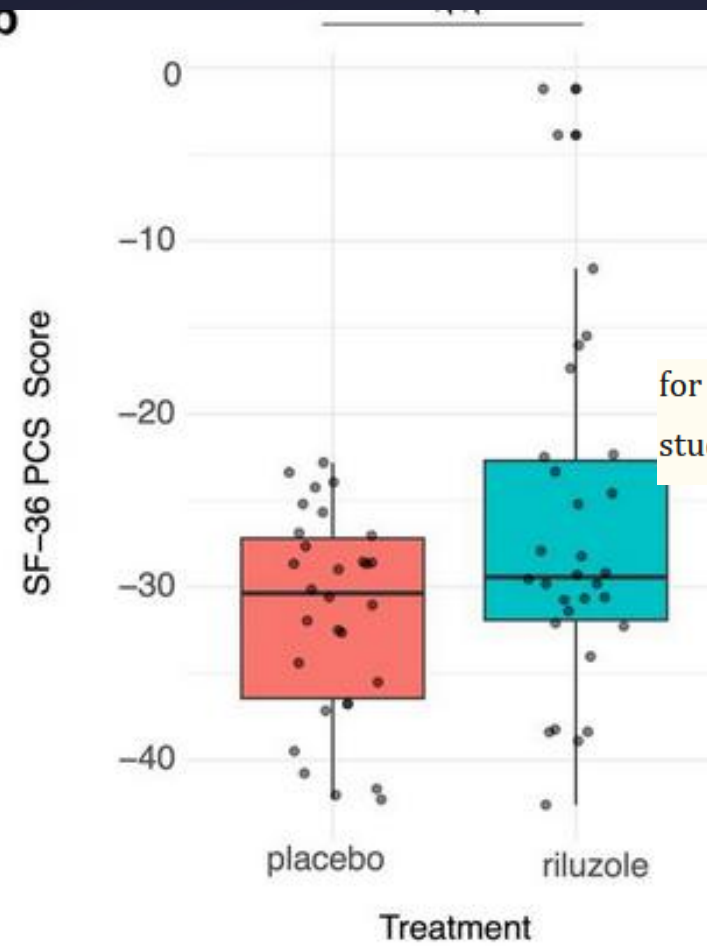
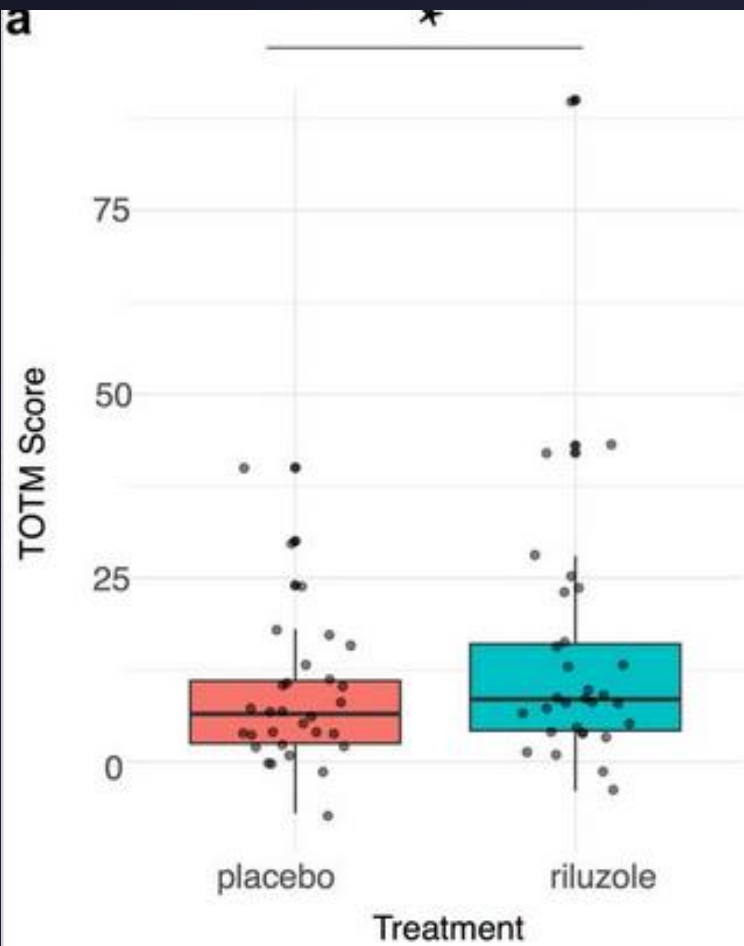
# Essai thérapeutique

(N=1)



# RILUZOLE

for comparative purposes. \*p = 0.26 by student t-test, \*\*p = 0.84 by student t-test, \*\*\*p = 0.78 by student t-test, and \*\*\*\*p = 0.02 by O'Brien modified t-test.



**131** patients

ASIA A : 49,6%  
ASIA B : 20,6%  
ASIA C : 19%

Gain significatif : p = 0,02

Analyse post-hoc  
Score GST composite : SF36, score moteur ASIA, SCIM

Effet plus prononcé dans le groupe ASIA A (classification INSSCI).



Randomisation : essai en double aveugle : RILUZOLE dans les 12 heures

# Traitements expérimentaux non médicamenteux

(N=27)

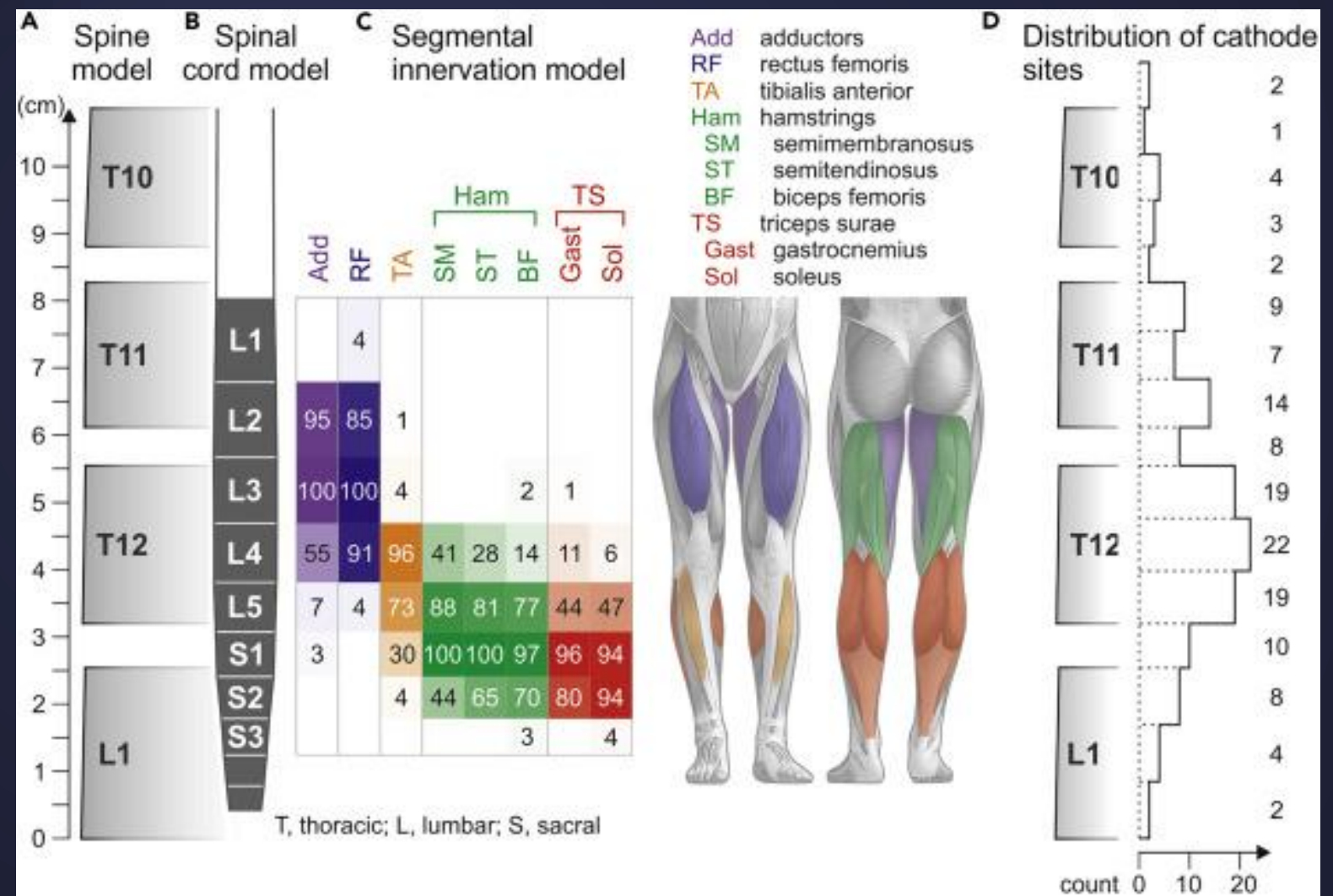
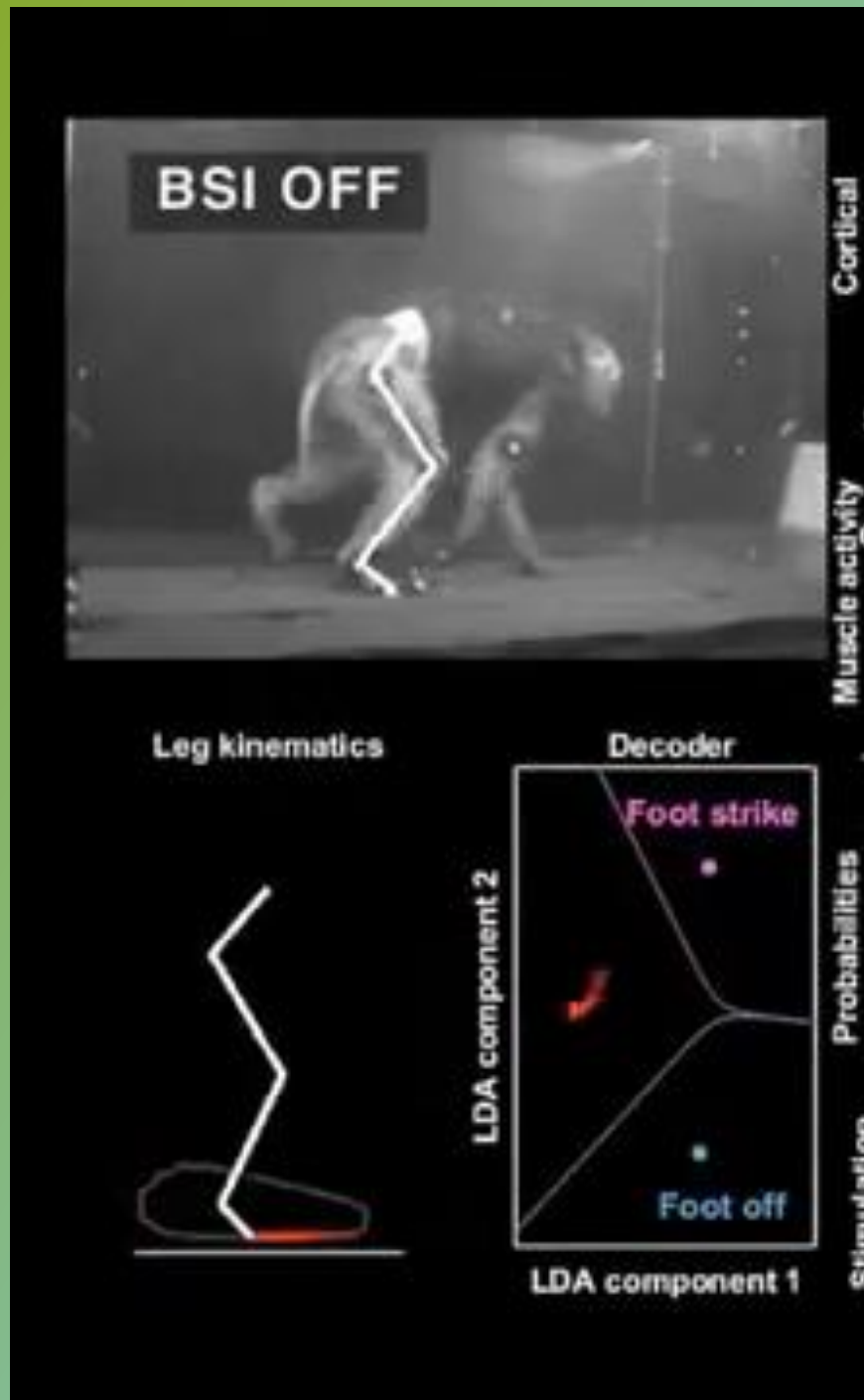


## Advances in Neuromodulation and Digital Brain-Spinal Cord Interfaces for Spinal Cord Injury

Phillip Jaszczuk<sup>1,\*</sup>, Denis Bratelj<sup>2</sup>, Crescenzo Capone<sup>2</sup>, Marcel Rudnick<sup>2</sup>, Tobias Pötzel<sup>2,3</sup>, Rajeev K Verma<sup>3,4</sup>, Michael Fiechter<sup>2,3</sup>



### Modèle animal



# Combined Epidural Stimulation and Virtual Reality Rehabilitation for Comprehensive Neuromotor Recovery Following Spinal Cord Injury: A Single Arm Study

Surbhi Kaura<sup>1</sup>, Shahiduz Zafar<sup>1,✉</sup>, Pritam Majumdar<sup>2</sup>

15 patients  
ASIA C ou D

1. Traumatic SCI with lesions between T6 and T10\*
2. Chronic injury (>1 year post-injury)
3. Neurologically stable
4. No contraindications for ESCS

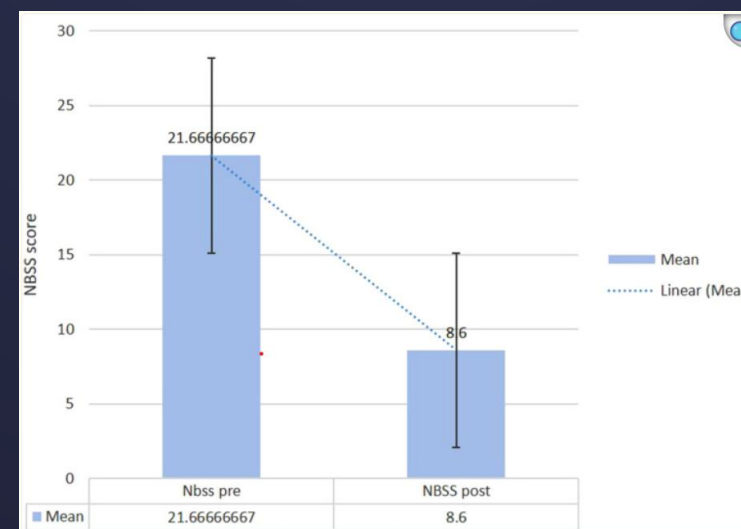


Amélioration de la force musculaire, équilibre, TVS, spasticité, marche, station assise

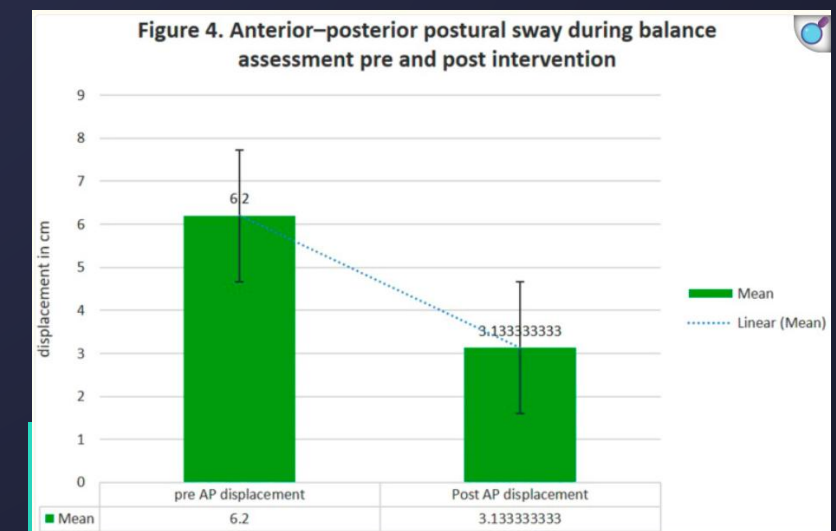
## Couplage stimulation épидurale + plateforme d'équilibre



Score WISCI



Score NBSS



Équilibre AP

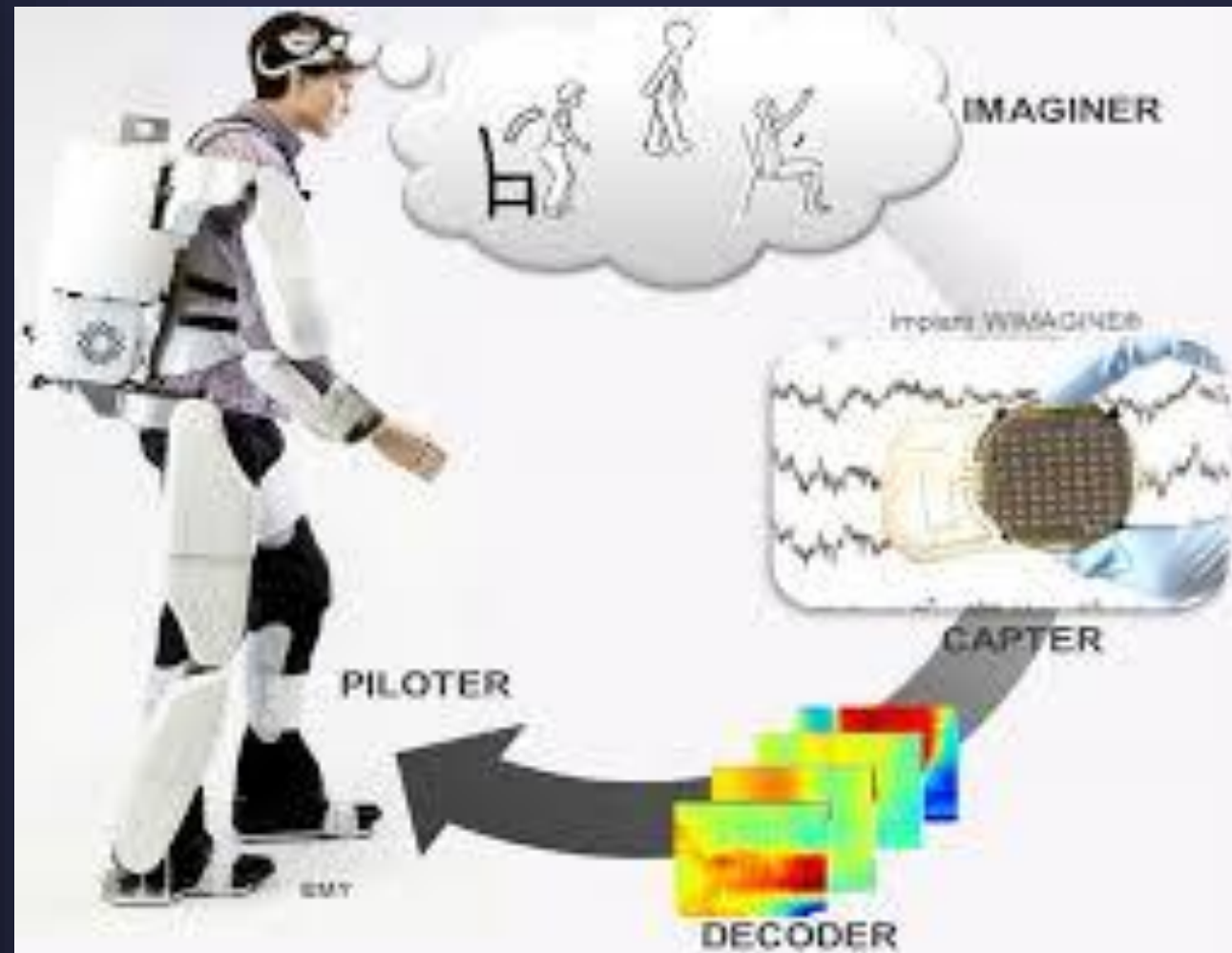
## Brain-Computer Interface-Controlled Exoskeleton Training for Lower-Limb Rehabilitation in Spinal Cord Injury: A Pilot Randomized Clinical Trial

Xuantao Hu <sup># 1 2</sup>, Na Li <sup># 3</sup>, Mao Pang <sup># 1 2</sup>, Shuwen Bai <sup># 4 5</sup>, Jian Mo <sup>1 2</sup>, Senyu Yao <sup>1 2</sup>, Yubao Lu <sup>1 2</sup>, Mudan Huang <sup>1 2</sup>, Jiawei Di <sup>1 2</sup>, Yu Kang <sup>1 2</sup>, Juliang Tang <sup>1 2</sup>, Haojie Zhang <sup>1 2</sup>, Tianlun Zhao <sup>1 2</sup>, Jiale He <sup>1 2</sup>, Lei He <sup>1 2</sup>, Renjie Xie <sup>4 5</sup>, Bin Liu <sup>1 2</sup>, Guanghua Xu <sup>4 5</sup>, Xiquan Hu <sup>3</sup>, Limin Rong <sup>1 2</sup>

BCI versus exosquelette



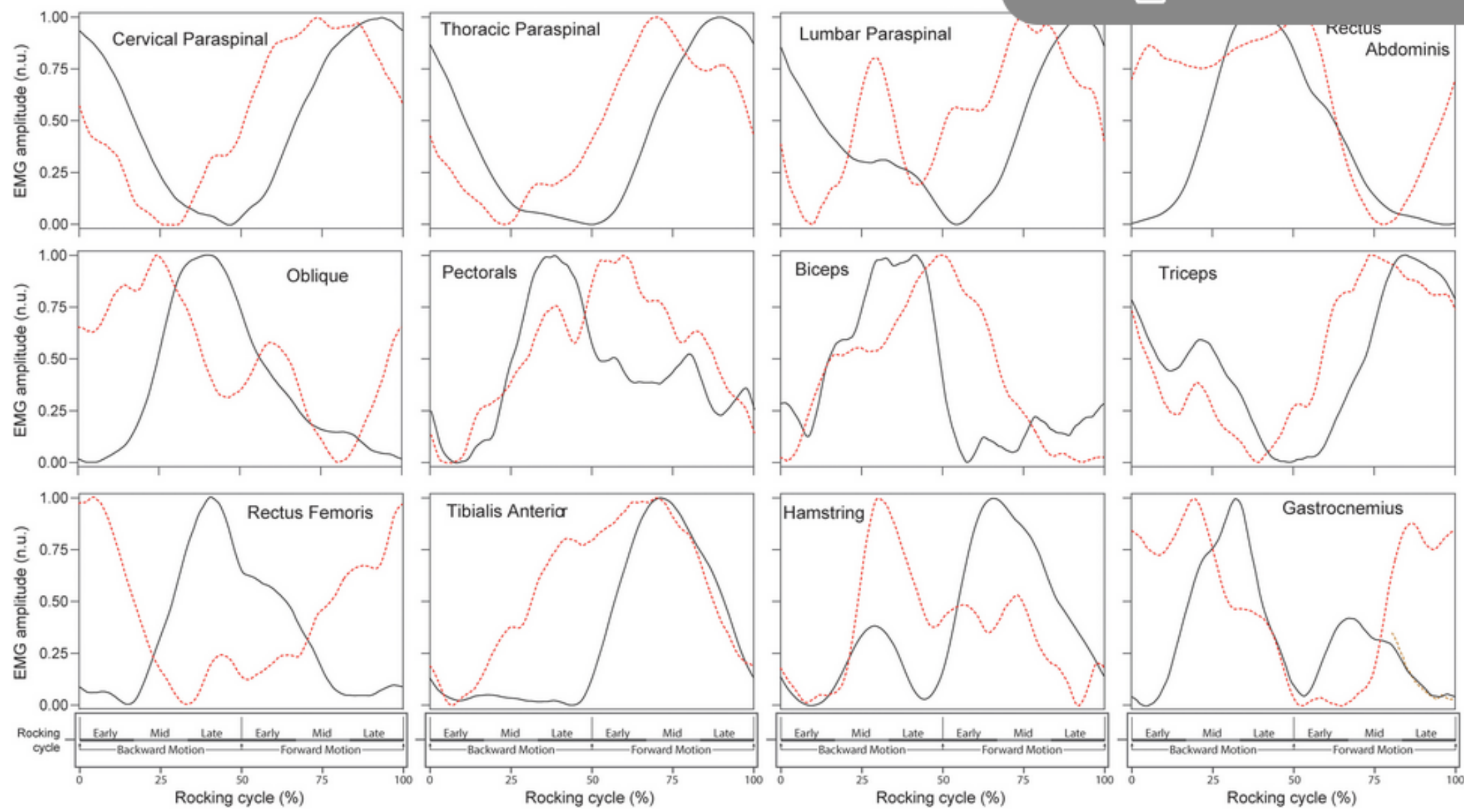
- Score LEMS (p=0,003)
- Gain de vitesse et endurance
- Effet dépression  
Ⓢ



# Pédiatrie

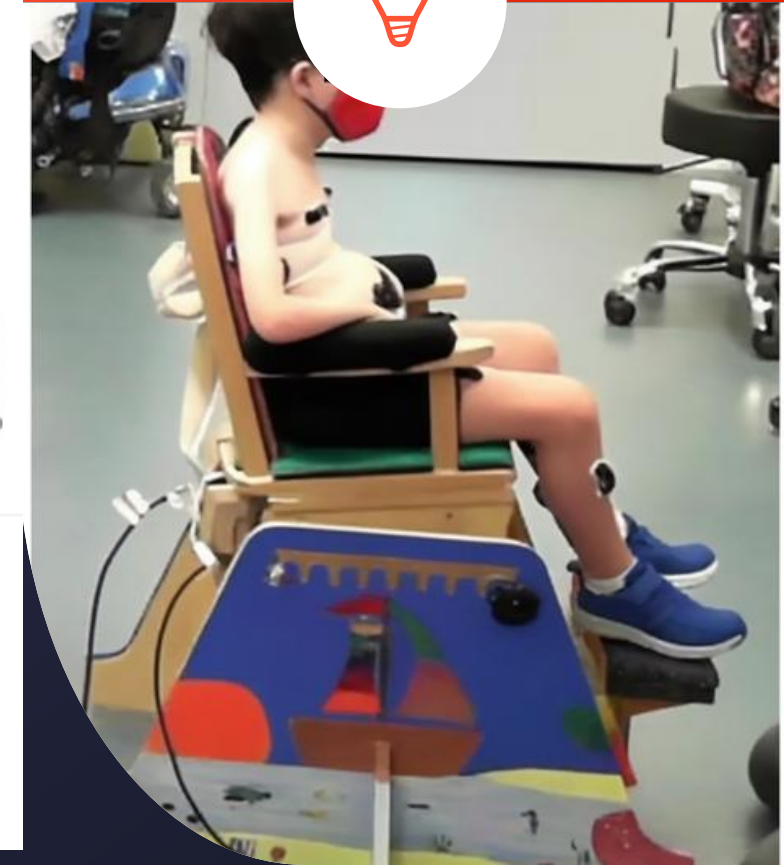
(N=13)





[OPEN IN VIEWER](#)

**11 SCI**  
 EFFET DEPLACEMENT EN FRM SUR  
 ACTIVATION MUSCULAIRE DU TRONC ET DES  
 MI



**Figure 4.** Averaged muscle activation during rocking in children; x-axis is one full rocking cycle; y-axis is normalized to the amplitude of  $EMG_{RMS}$  in the rocking cycle; n.u. = Normalized units; EMG = Electromyography; RMS = Root mean square; SCI = Spinal cord injury; TD = Typically developing.

# Merci

POUR VOTRE ATTENTION

