

Welcome and Presentation

Tuesday, November 20th

PRE-MEETING WORKSHOP

**Practical Training of Neurostimulation with Transcranial
Direct Current Stimulation and TMS**

13:30

Registration

14:00

Welcome and Presentation
GIUSEPPE VALLAR

with the unconditional support of
E.M.S., INTEGRATED SOLUTIONS FOR NEUROSCIENCES

Increasing role in neurology, neuropsychology and cognitive neuroscience of **Non-Invasive Brain Stimulation (NIBS)**

- **NIBS (Transcranial Magnetic Stimulation, TMS, and transcranial Electrical Stimulation, tES) may**
 - *Interfere with a variety of neurological functions*
 - («**VIRTUAL LESION EFFECT**») from elementary sensorimotor to higher-order cognitive motivational-emotional processes
 - *Increase performance level of a variety of neurological functions in both healthy participants and brain-damaged patients*
- **More generally, NIBS modulates behavior**

Increasing role in neurology, neuropsychology and cognitive neuroscience of **Non-Invasive Brain Stimulation (NIBS)**. Evidence from

- VIRTUAL LESION EFFECTS

- IMPROVEMENT OF PERFORMANCE LEVEL

- MODULATION OF BEHAVIOR BY NIBS (TMS, tES)

are relevant for

- *Advance of knowledge about brain-behaviour relationships*

- *Neurological and neuropsychological rehabilitation*

Brain stimulation: Handbook of Clinical Neurology

edited by Andres M. Lozano, Mark Hallett, 2013.

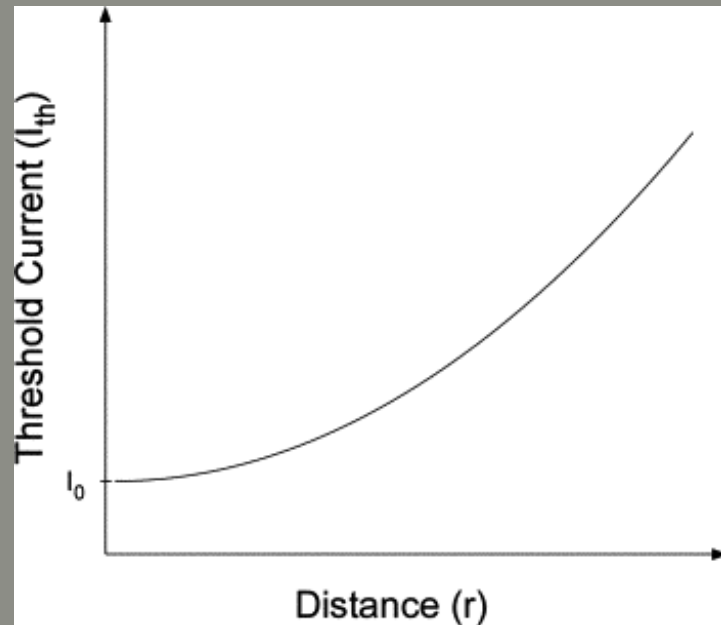
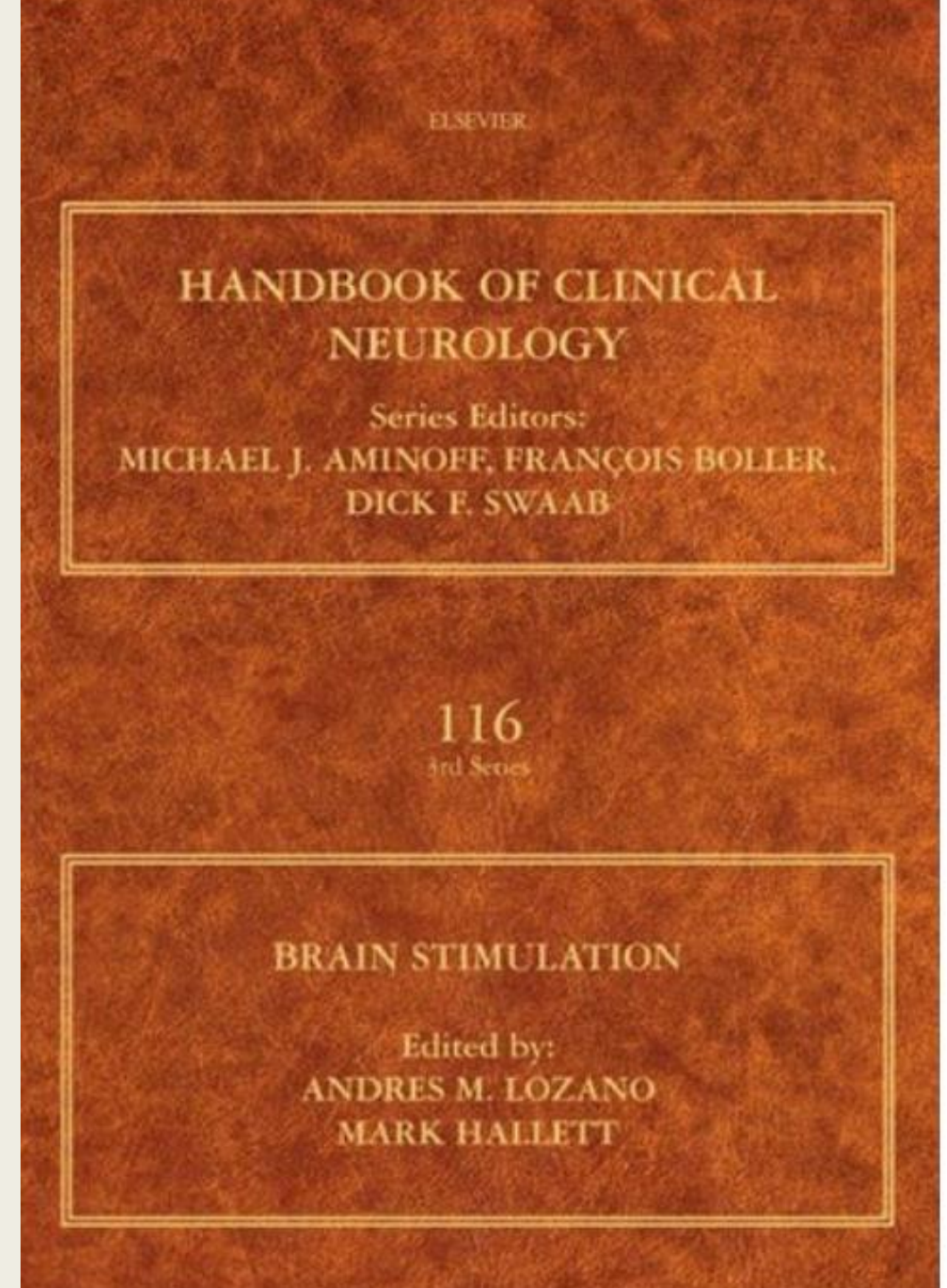


Fig. 1.8. **Current–distance relationship.** The current needed to excite a neuronal element increases with the square of its distance away from the stimulating electrode (Brocker & Grill Principles of electrical stimulation of neural tissue)



STIMOLARE IL CERVELLO

Manuale di stimolazione cerebrale non invasiva

a cura di
**Nadia BOLOGNINI &
Giuseppe VALLAR**

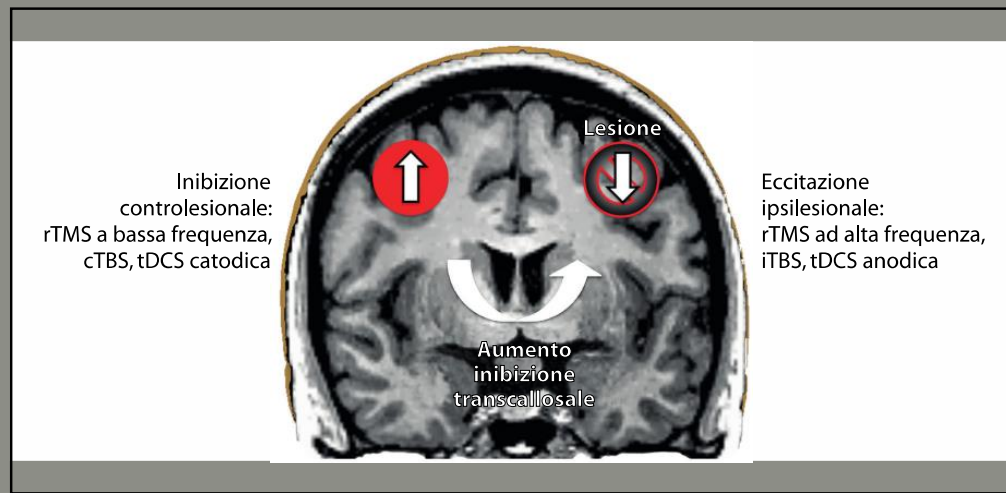
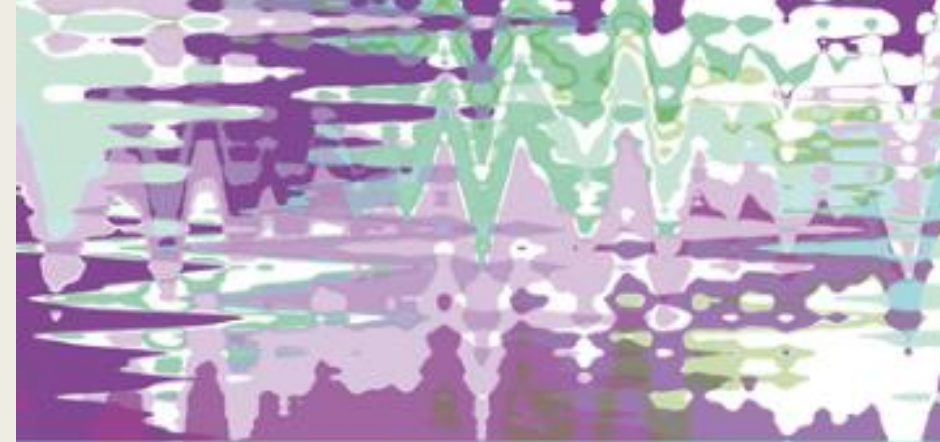


fig. 5.4. NIBS nella riabilitazione postictus. Dopo un ictus vi sono un aumento dell'attività nell'emisfero sano (l'emisfero sinistro nella figura) e una diminuita attività nell'emisfero lesio (l'emisfero destro), con un aumento dell'inibizione transcallosale (freccia bianca) dall'emisfero sano all'emisfero lesio. Il recupero motorio può essere favorito aumentando l'eccitabilità dell'emisfero lesio (con la TMS ripetitiva – rTMS – ad alta frequenza, con la Theta Burst intermittente – iTBS, o con la tDCS anodica) o riducendo l'iperattività dell'emisfero sano (con la



Stimolare il cervello

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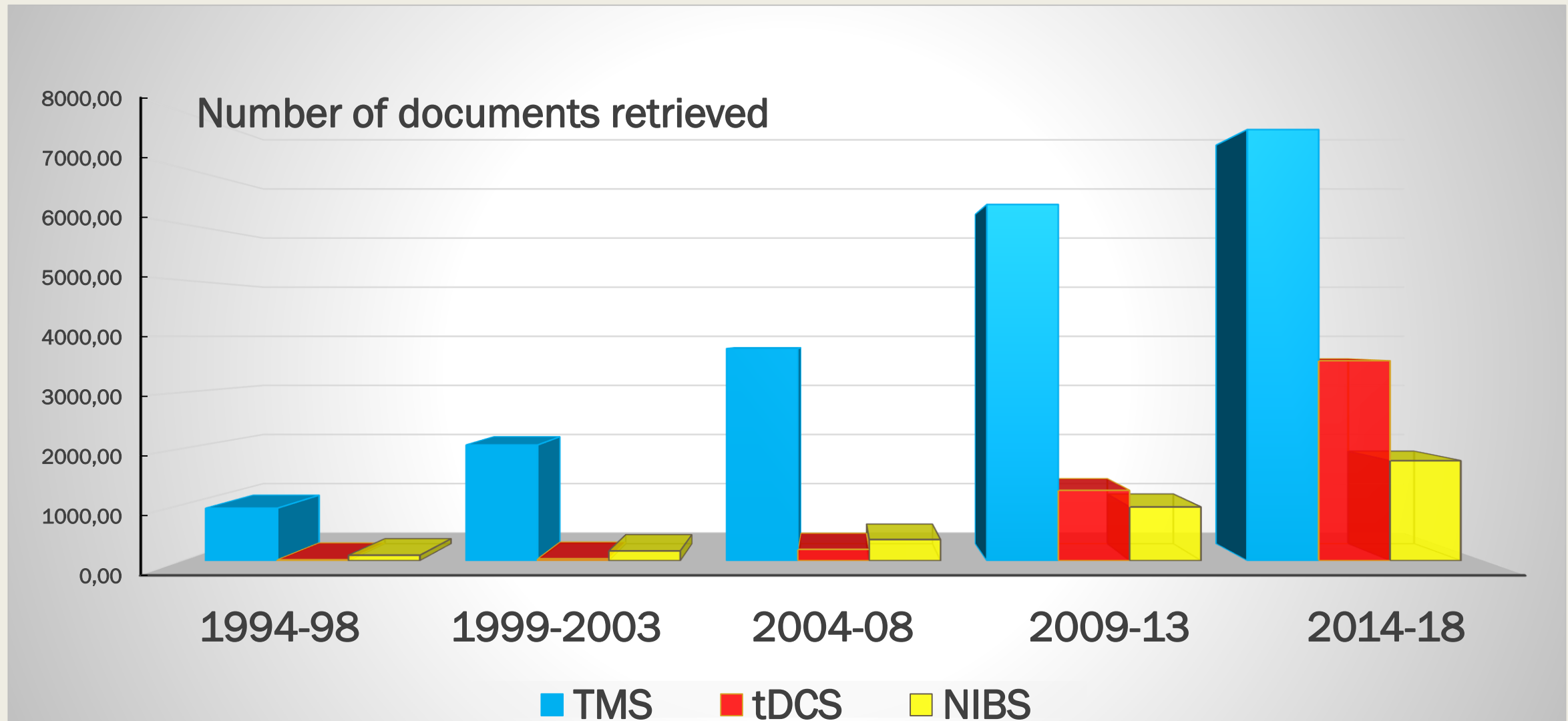
A CURA DI
**NADIA BOLOGNINI
GIUSEPPE VALLAR**

il Mulino Itinerari

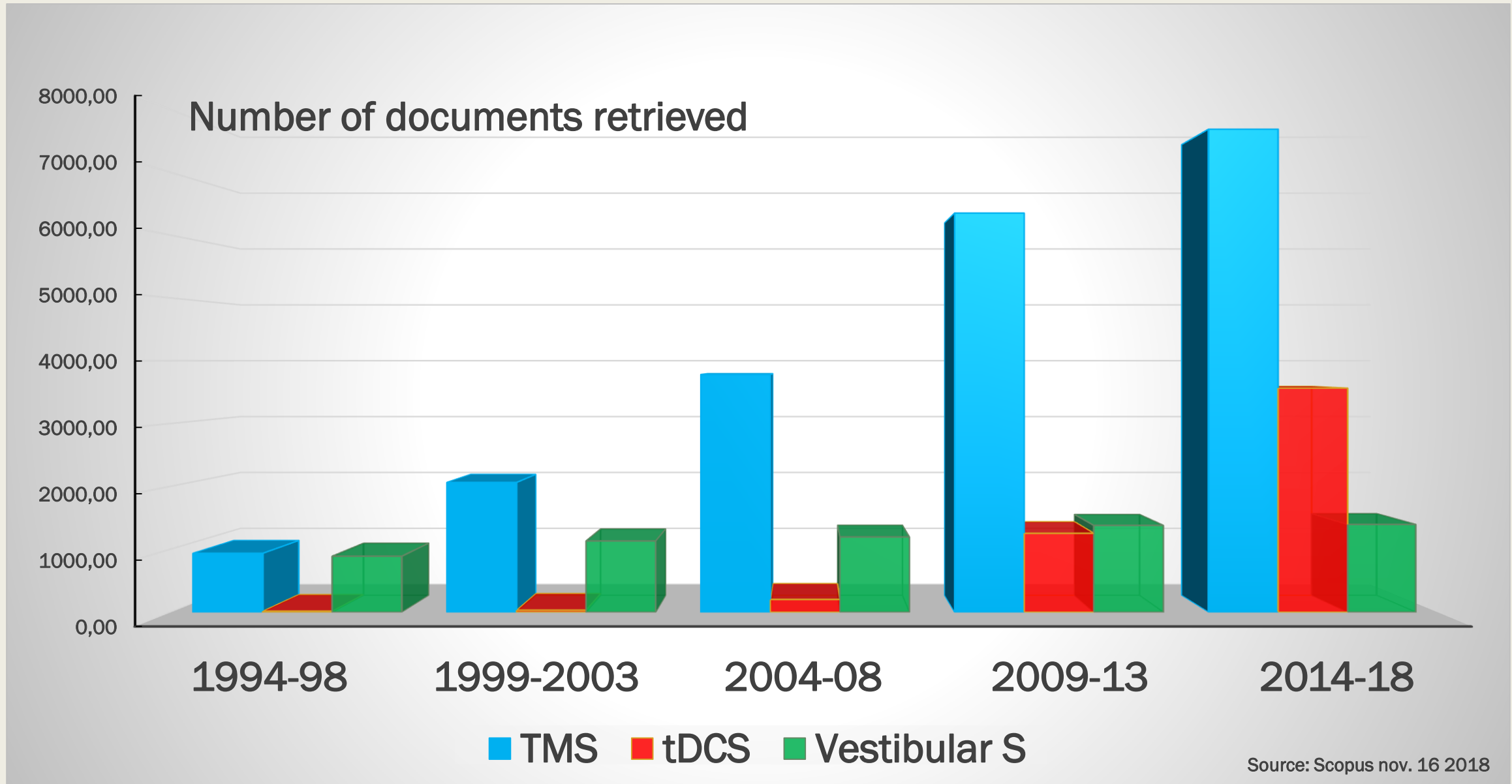
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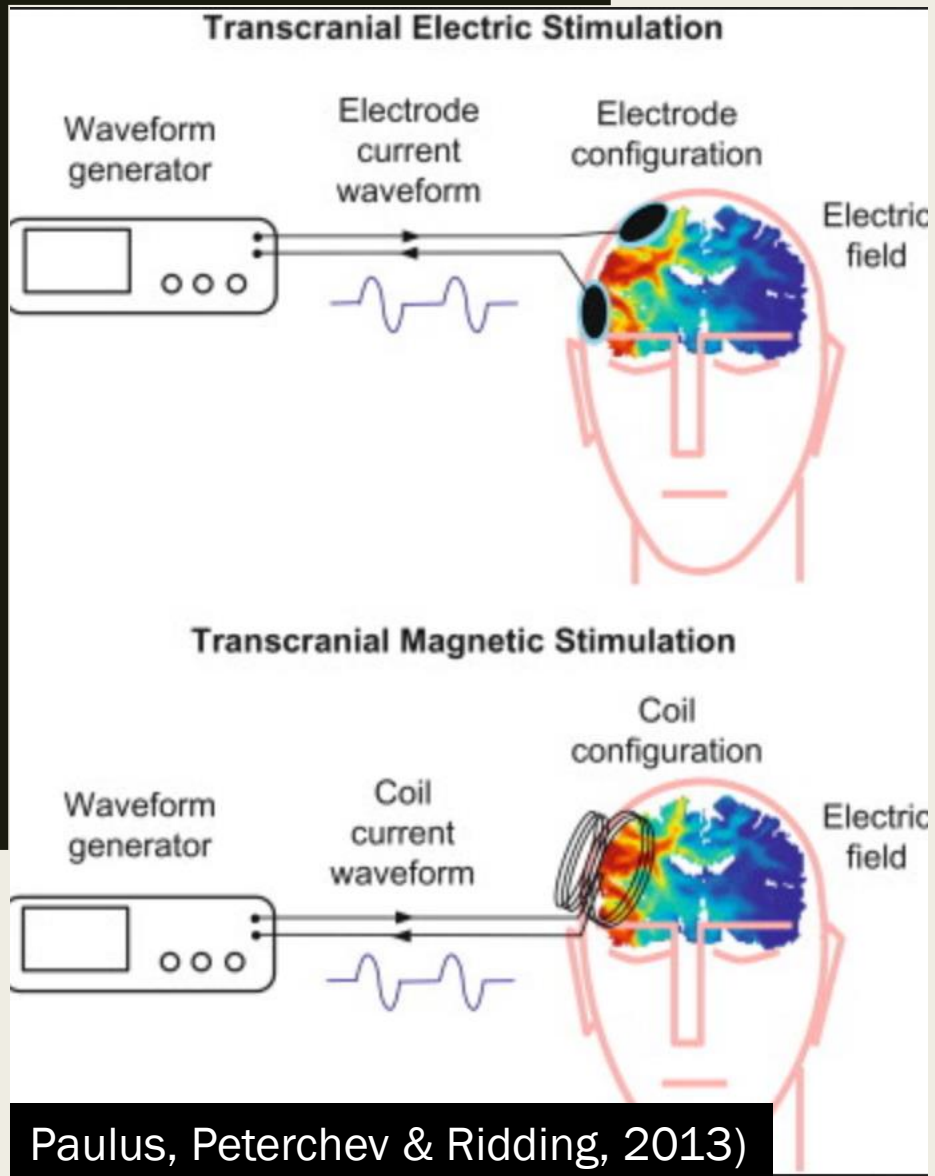
This increasing relevance is witnessed by an increasing number of relevant publications

■ Source: Scopus nov. 16 2018



Maybe this increase is non-specific, but a general trend in science...NO...
See for comparison the case of vestibular caloric stimulation





THANK
YOU AND
BUON
LAVORO!