



67° CONGRESSO NAZIONALE SIGG

LA LONGEVITÀ DECLINATA AL FEMMINILE

Grazia Daniela Femminella

L'IMAGING CEREBRALE NEI DISTURBI DEL SONNO

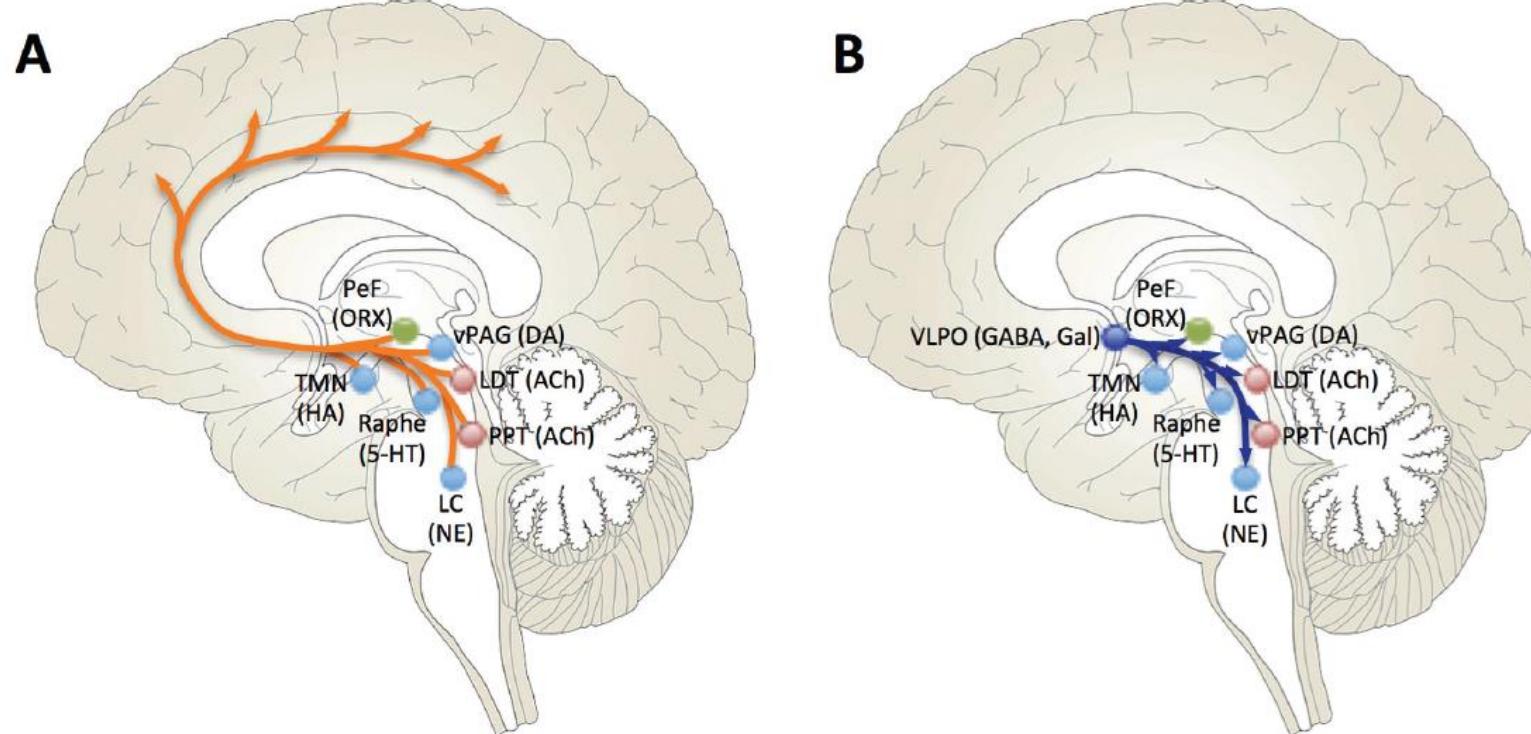


SOCIETÀ ITALIANA
DI GERONTOLOGIA
E GERIATRIA

Roma, 30 novembre - 3 dicembre 2022
UNIVERSITÀ CATTOLICA DEL SACRO CUORE

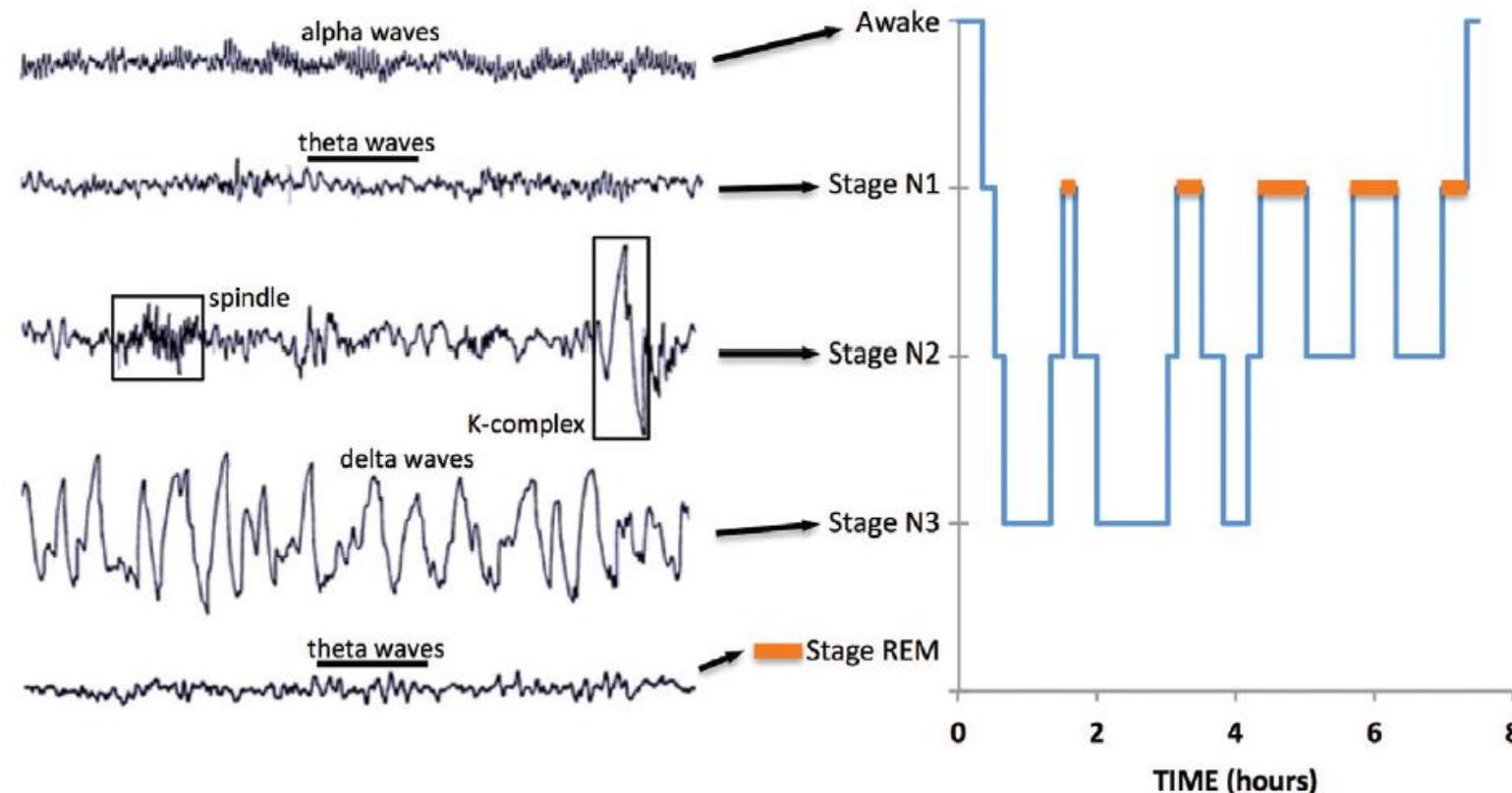


Fisiologia del sonno



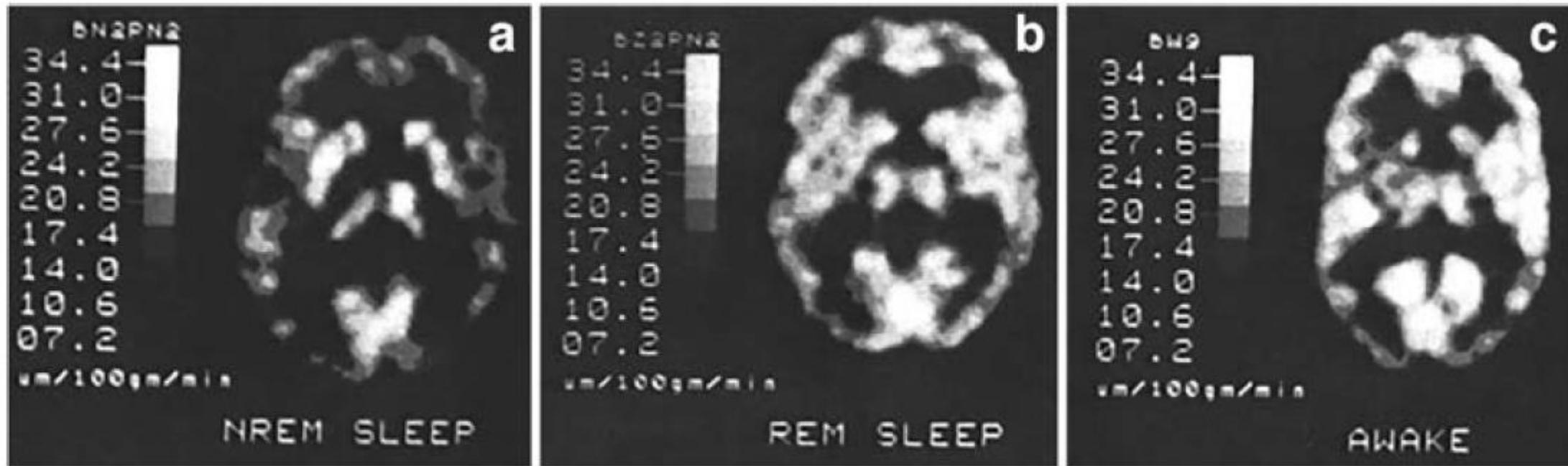


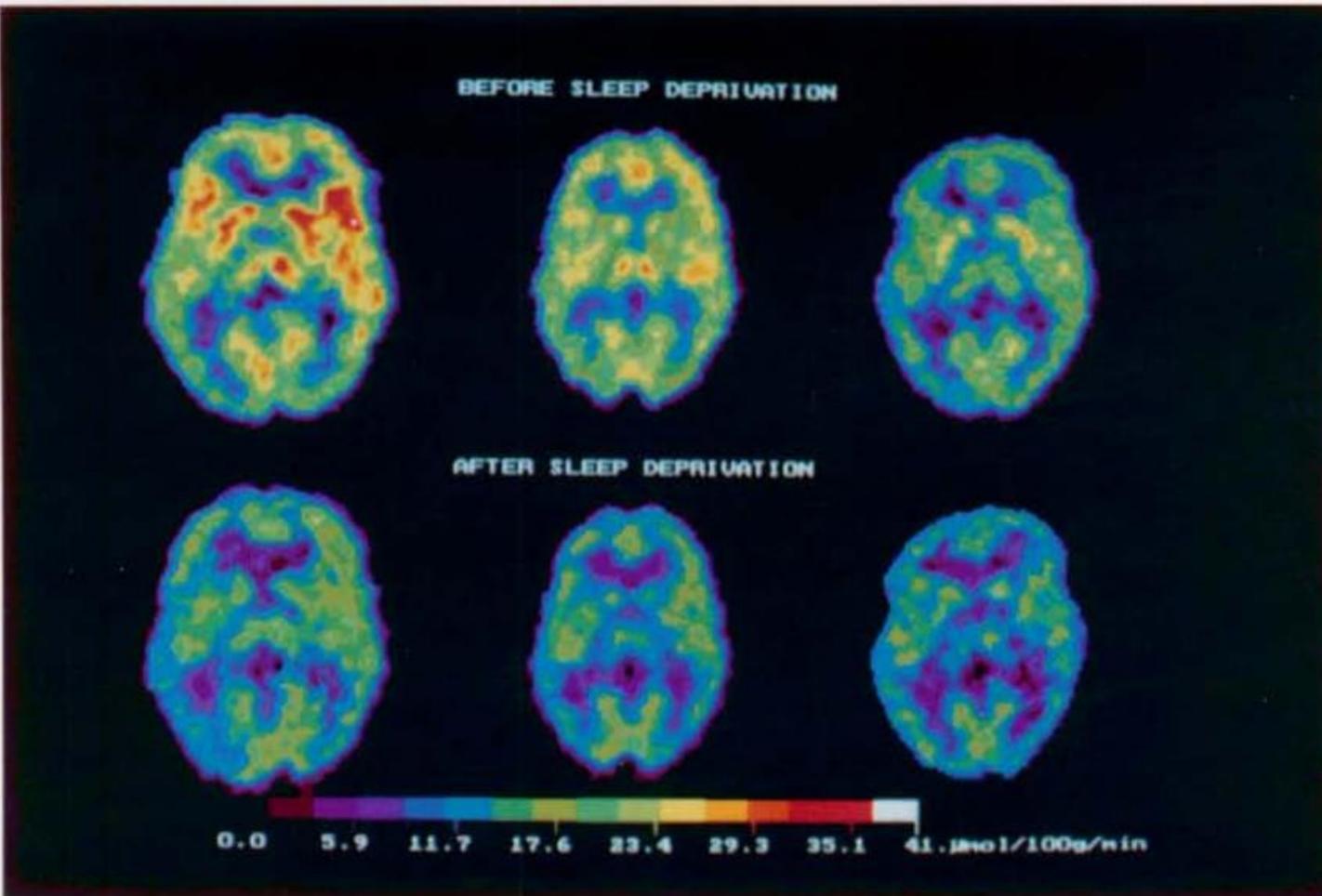
Fisiologia del sonno





Metabolismo cerebrale durante il sonno





Sleep, 14(2):155–162
© 1991 Association of Professional Sleep Societies

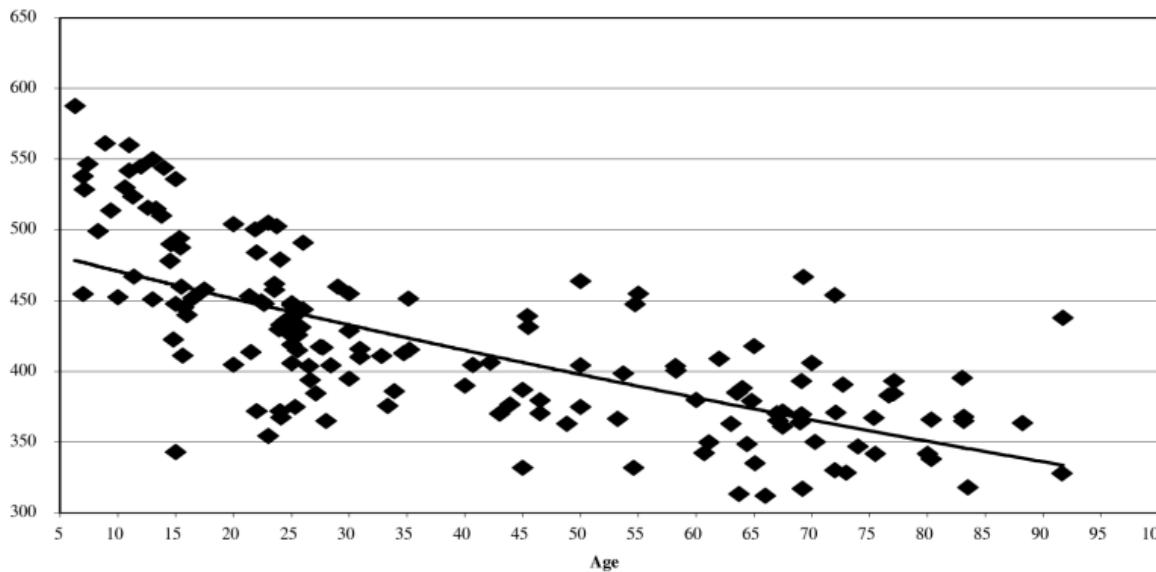
The Effect of Sleep Deprivation on Cerebral Glucose Metabolic Rate in Normal Humans Assessed with Positron Emission Tomography

*Joseph C. Wu, †J. C. Gillin, *Monte S. Buchsbaum,
*Tamara Hershey, *Erin Hazlett, *Nancy Sicotte,
and *William E. Bunney, Jr.

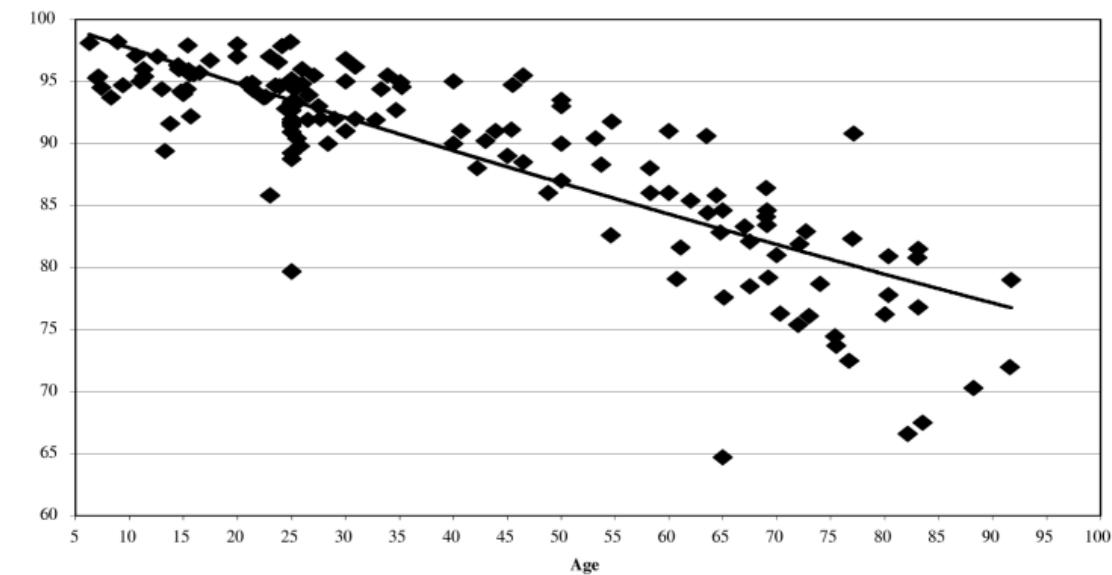


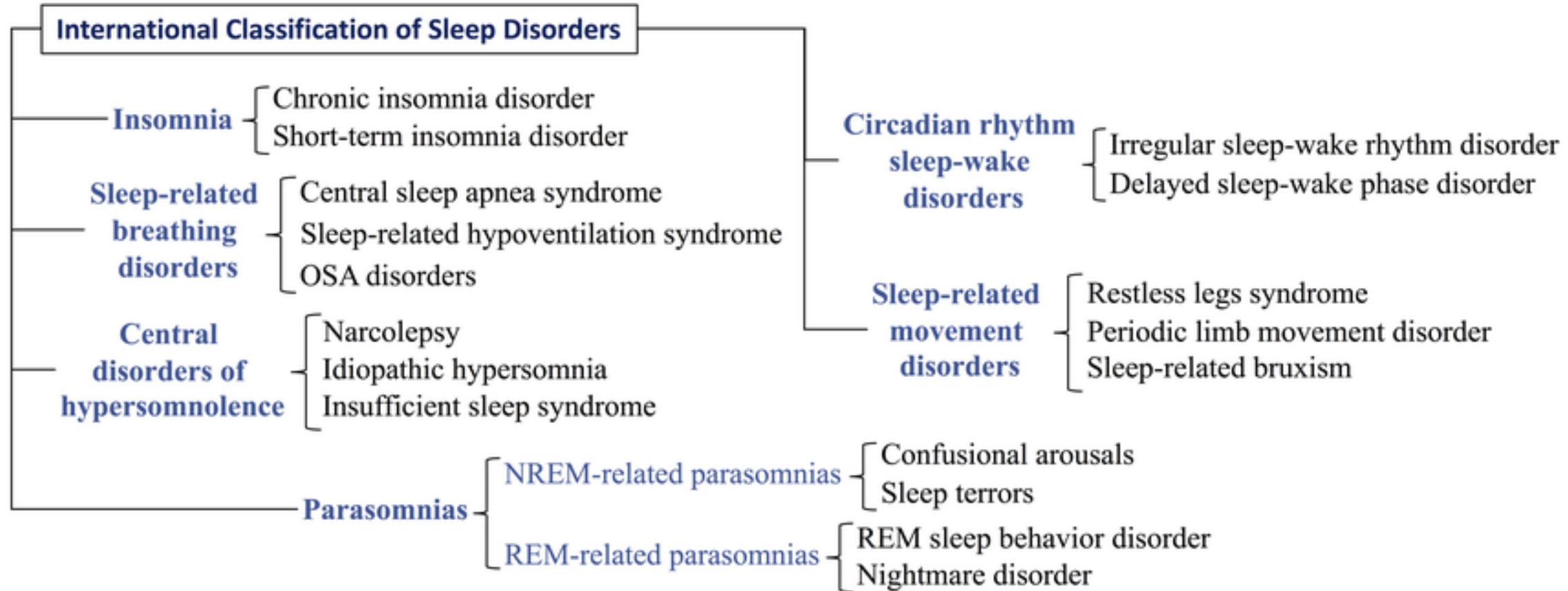
Variazioni del sonno con l'eta'

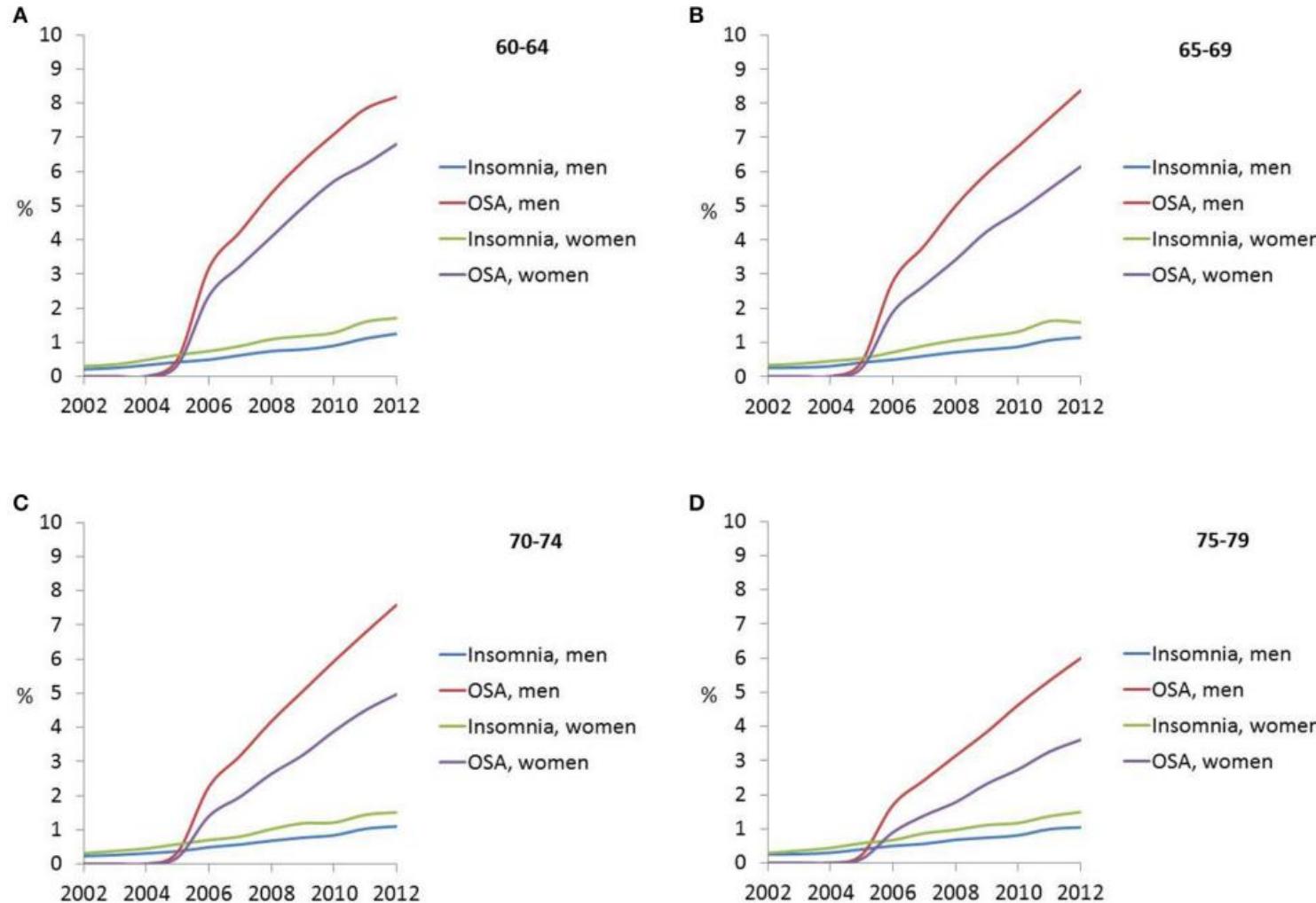
Total sleep time



Sleep efficiency







Sleep Disturbances
among Older Adults
in the United States,
2002-2012



RISCHIO DI AD

Study

insomnia

- Osorio et al., 2011 [16]
- Benedict et al., 2015 [35]
- Yaffe et al., 2015 [15]
- Subtotal (I-squared = 57.4%, p = 0.096)**

SDB

- Chang et al., 2013 [14]
- Virta et al., 2013 [33]
- Yaffe et al., 2015 [15]
- Subtotal (I-squared = 0.0%, p = 0.729)**

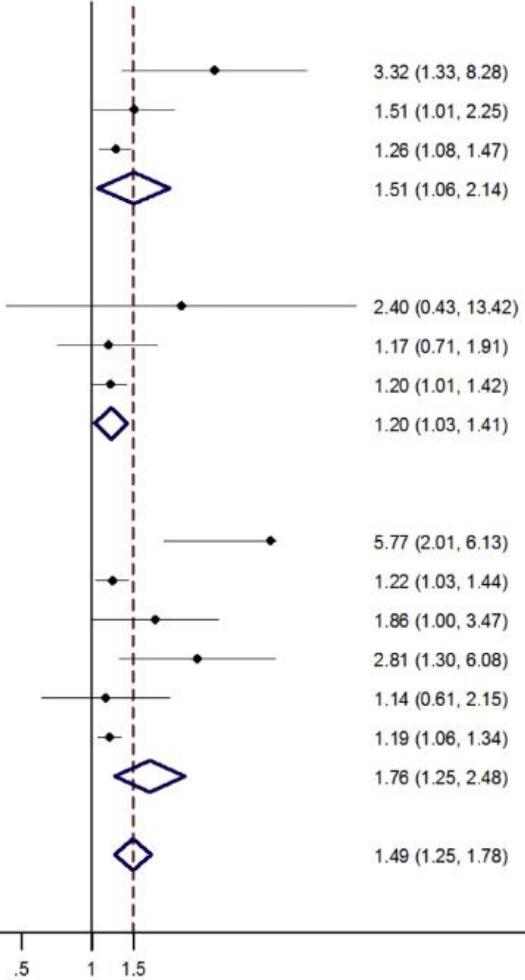
other

- Lin et al., 2015 [36] (SRMD)
- Lim et al., 2013 [32] (sleep fragmentation)
- Hahn et al., 2014 [34] (sleep pattern change)
- Lobo et al., 2008 [29] (non-specific)
- Virta et al., 2013 [33] (non-specific)
- Yaffe et al., 2015 [15] (non-specific)
- Subtotal (I-squared = 85.8%, p = 0.000)**

Overall (I-squared = 73.4%, p = 0.000)

NOTE: Weights are from random effects analysis

RR (95% CI)



RISCHIO DI VaD

Study

insomnia

- Elwood et al., 2011 [18]
- Benedict et al., 2015 [35]
- Yaffe et al., 2015 [15]
- Subtotal (I-squared = 0.0%, p = 0.906)**

SDB

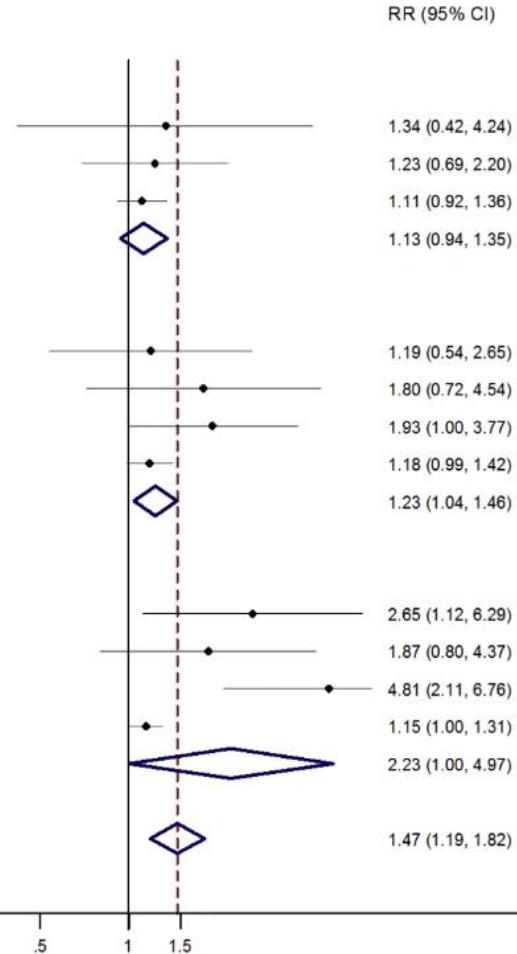
- Elwood et al., 2011 [18] (snoring)
- Elwood et al., 2011 [18] (sleep apnea)
- Chang et al., 2013 [14]
- Yaffe et al., 2015 [15]
- Subtotal (I-squared = 0.0%, p = 0.451)**

other

- Elwood et al., 2011 [18] (EDS)
- Elwood et al., 2011 [18] (SRMD)
- Lin et al., 2015 [36] (SRMD)
- Yaffe et al., 2015 [15] (non-specific)
- Subtotal (I-squared = 88.4%, p = 0.000)**

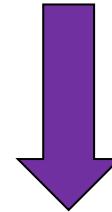
Overall (I-squared = 66.3%, p = 0.001)

NOTE: Weights are from random effects analysis





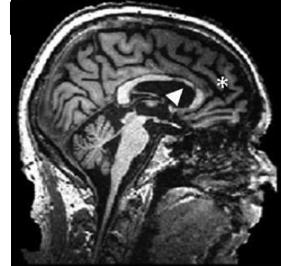
Quali possono essere i correlati neurobiologici dell'associazione tra disturbi del sonno e deficit cognitivo?



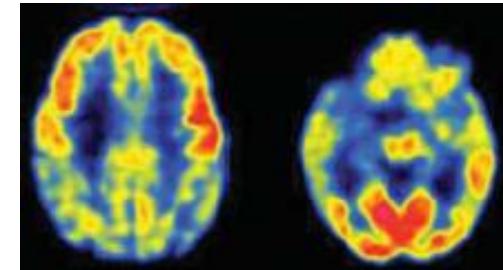
NEUROIMAGING



STRUTTURALE



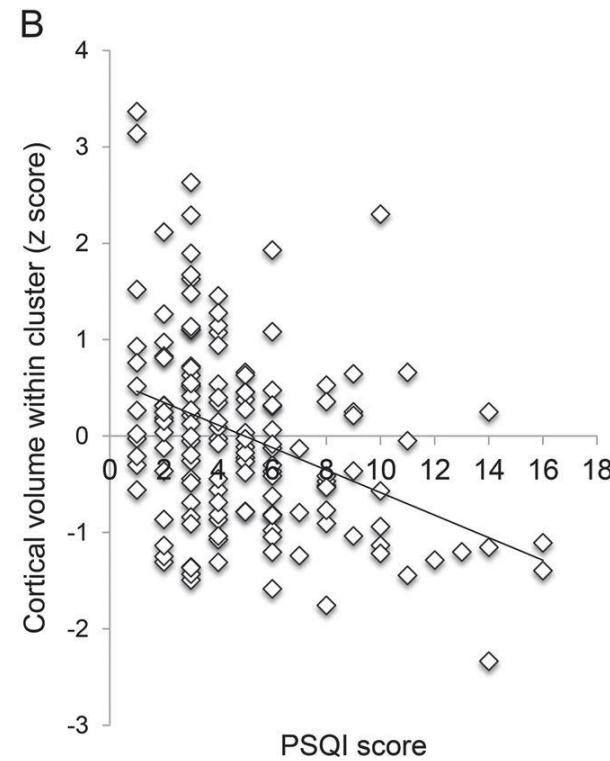
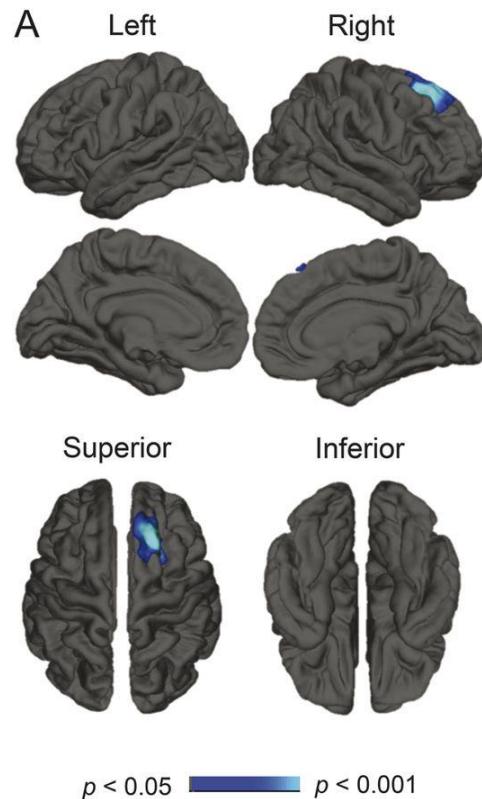
FUNZIONALE



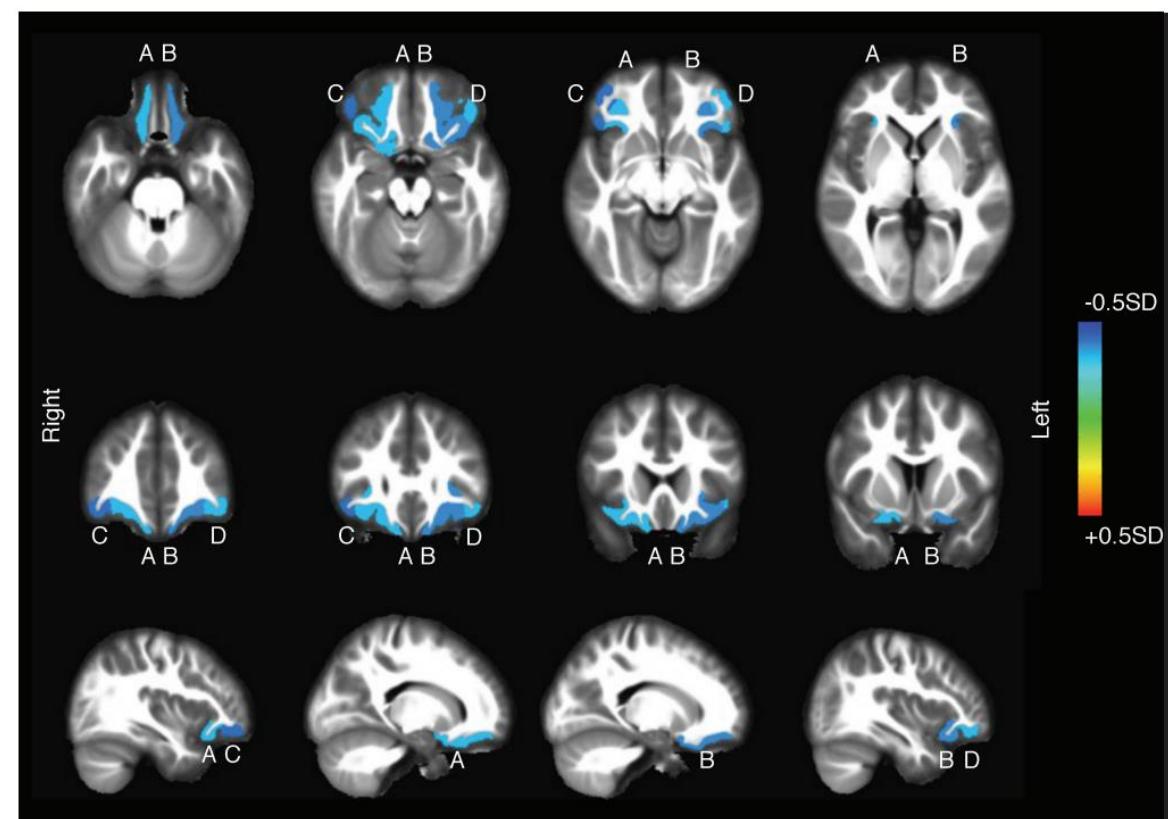


Qualita' del sonno ed atrofia cerebrale

Self-reported global sleep quality

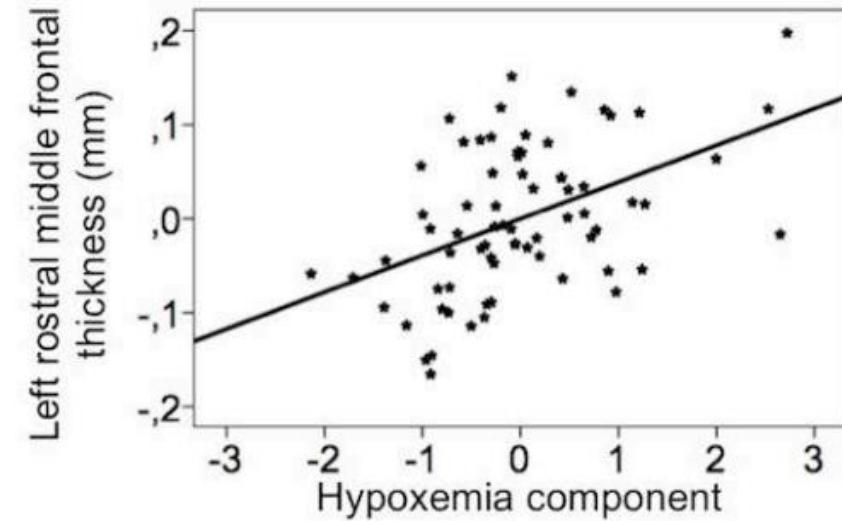
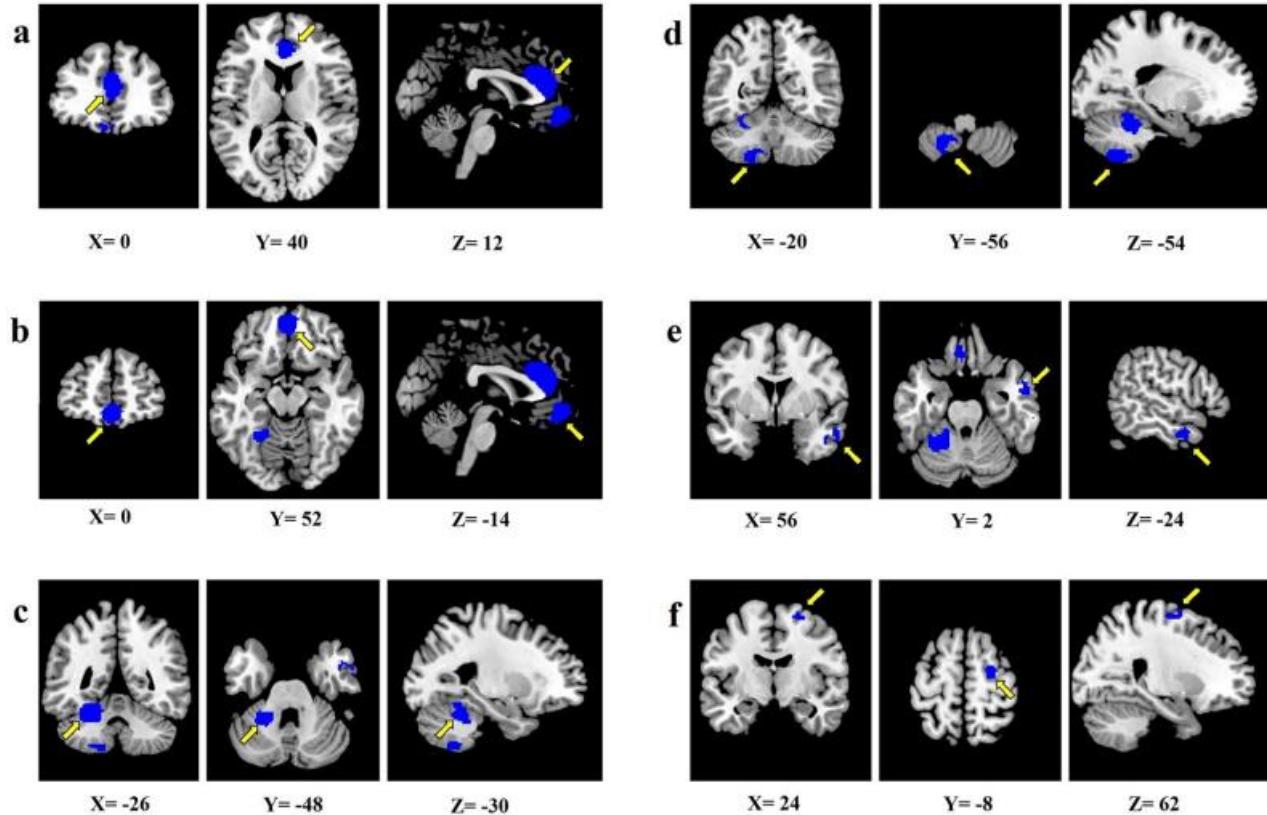


Objectively reported sleep fragmentation





SDB ed integrita' strutturale cerebrale





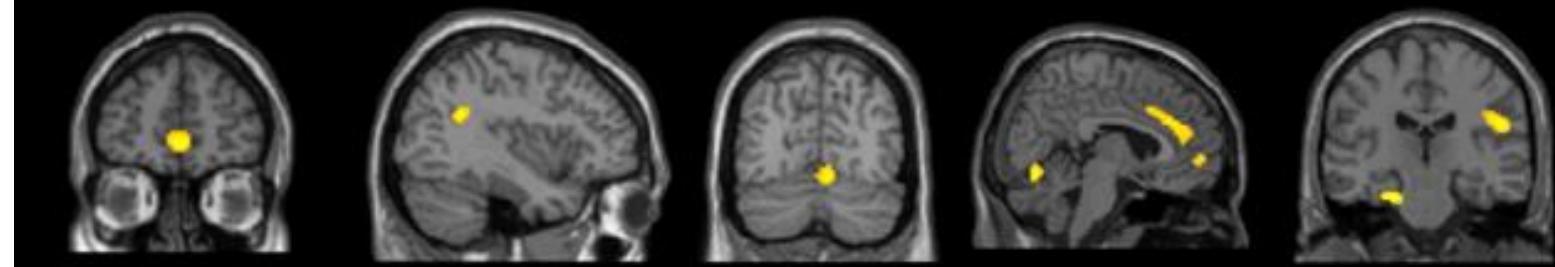
Metabolismo cerebrale nei disturbi del sonno



Sleep fragmentation

Obstructive sleep apnea

A. Pre-CPAP OSA < Controls





FEATURE

HEALTH & MEDICINE

The brain may clean out Alzheimer's plaques during sleep

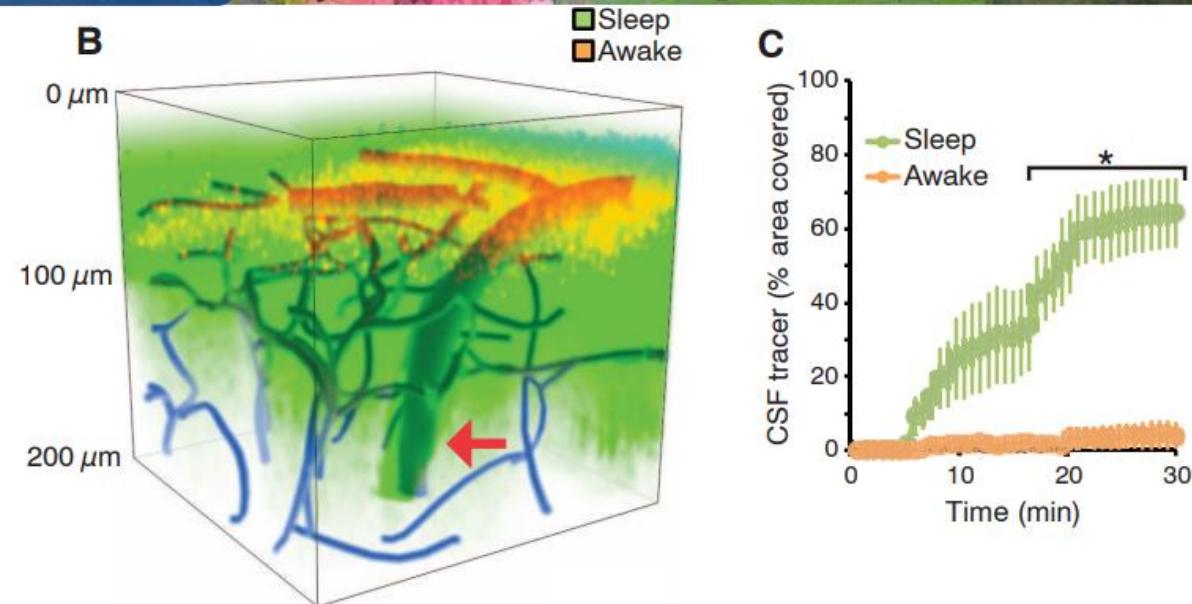
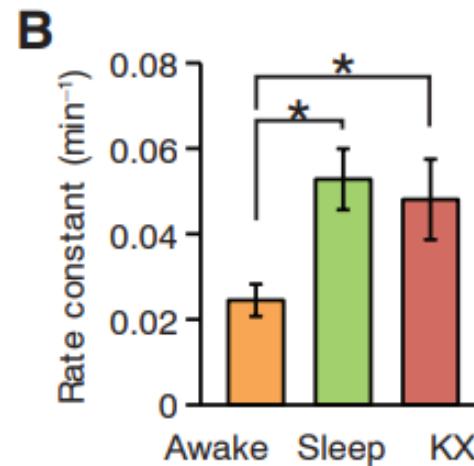
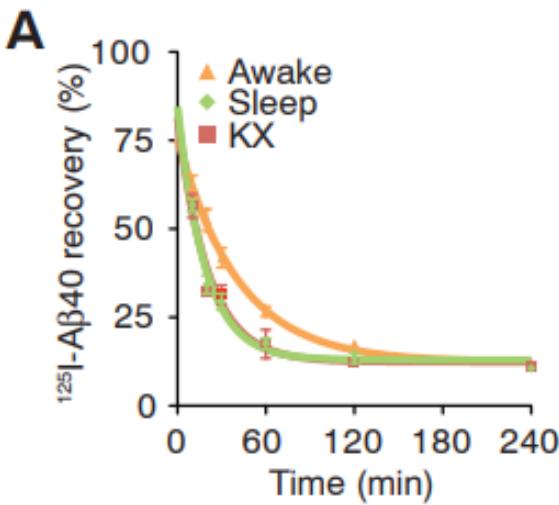
If sleep deprivation puts garbage removal on the fritz, the memory-robbing disease may develop





Sleep Drives Metabolite Clearance from the Adult Brain

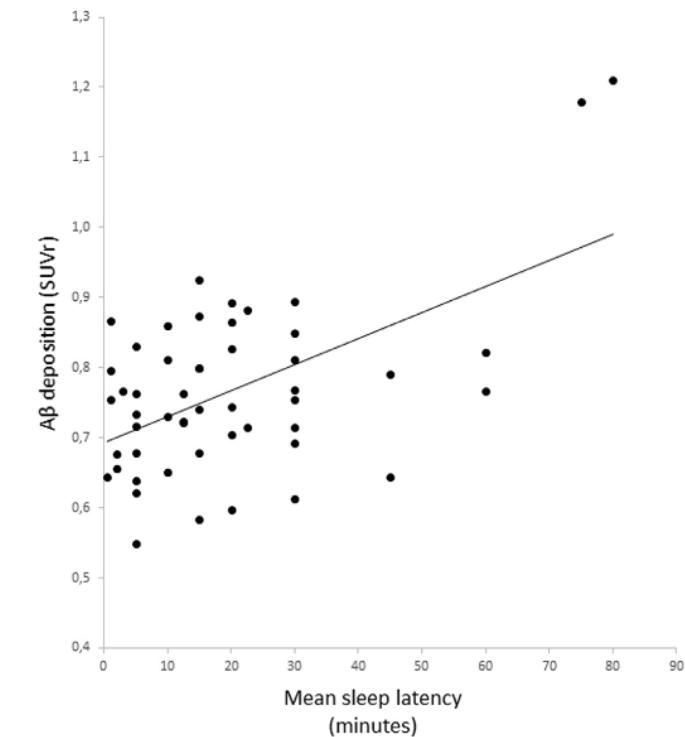
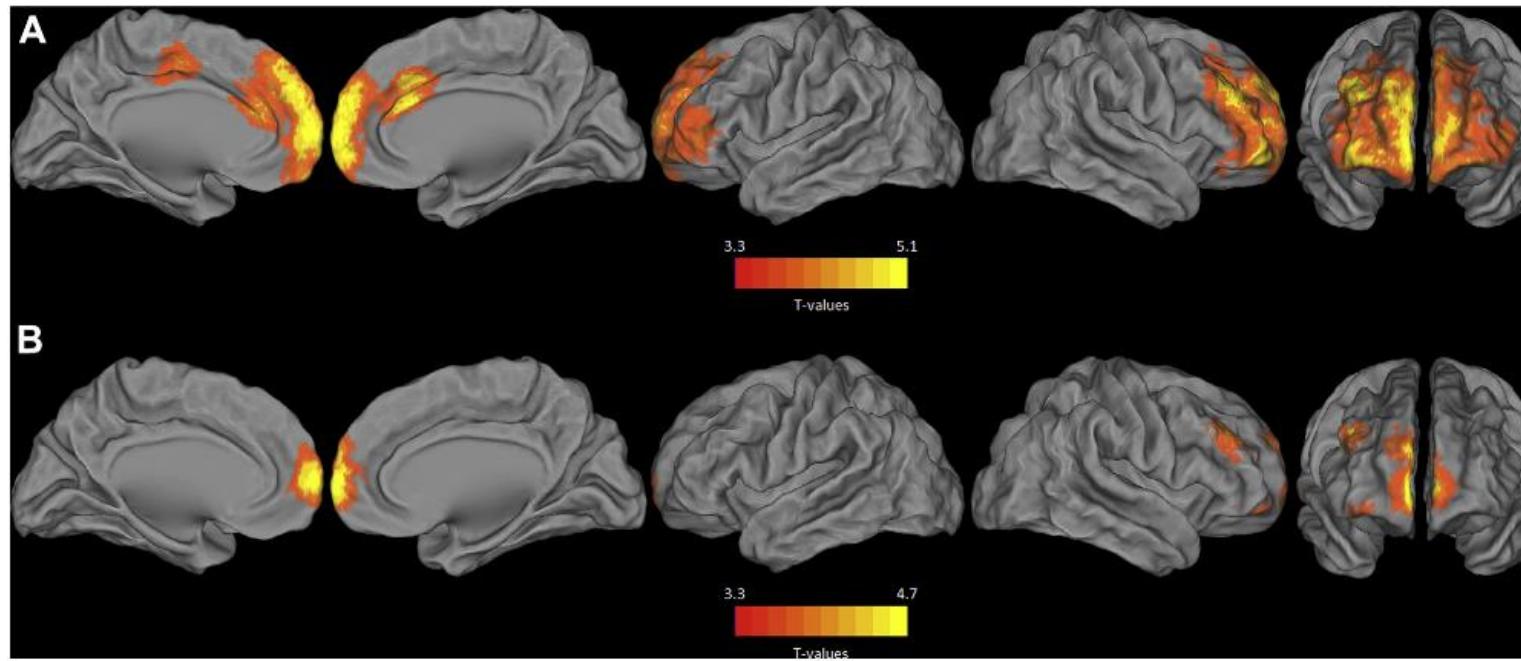
Lulu Xie,^{1,*} Hongyi Kang,^{1,*} Qiwu Xu,¹ Michael J. Chen,¹ Yonghong Liao,¹ Meenakshisundaram Thiagarajan,¹ John O'Donnell,¹ Daniel J. Christensen,¹ Charles Nicholson,² Jeffrey J. Iliff,¹ Takahiro Takano,¹ Rashid Deane,¹ Maiken Nedergaard^{1†}



Natural sleep or anesthesia are associated with a 60% increase in the interstitial space, resulting in a striking increase in convective exchange of cerebrospinal fluid with interstitial fluid. In turn, convective fluxes of interstitial fluid increased the rate of β -amyloid clearance during sleep

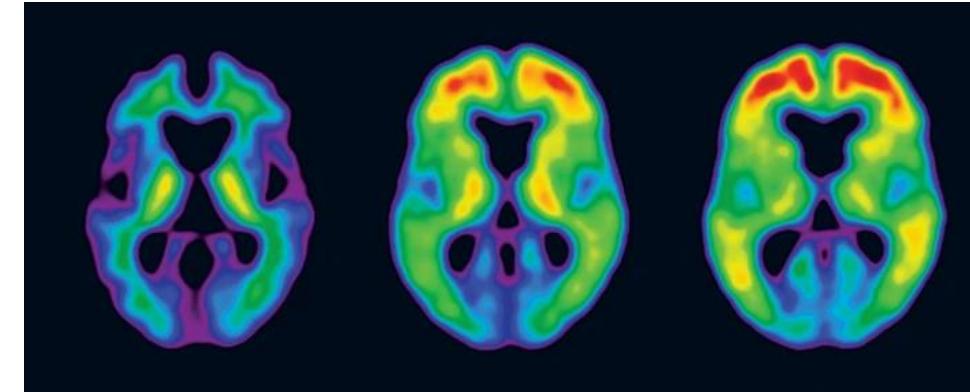
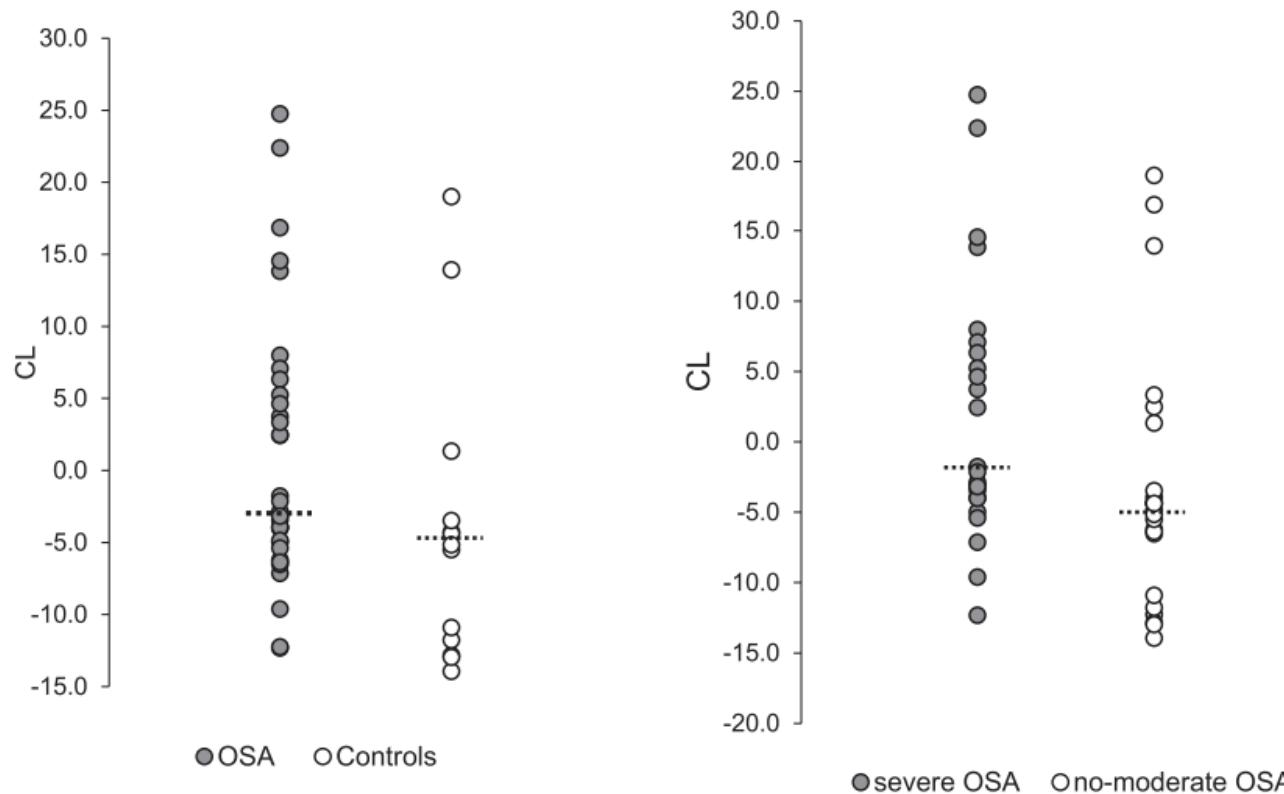


Deposizione di amiloide nei disturbi del sonno



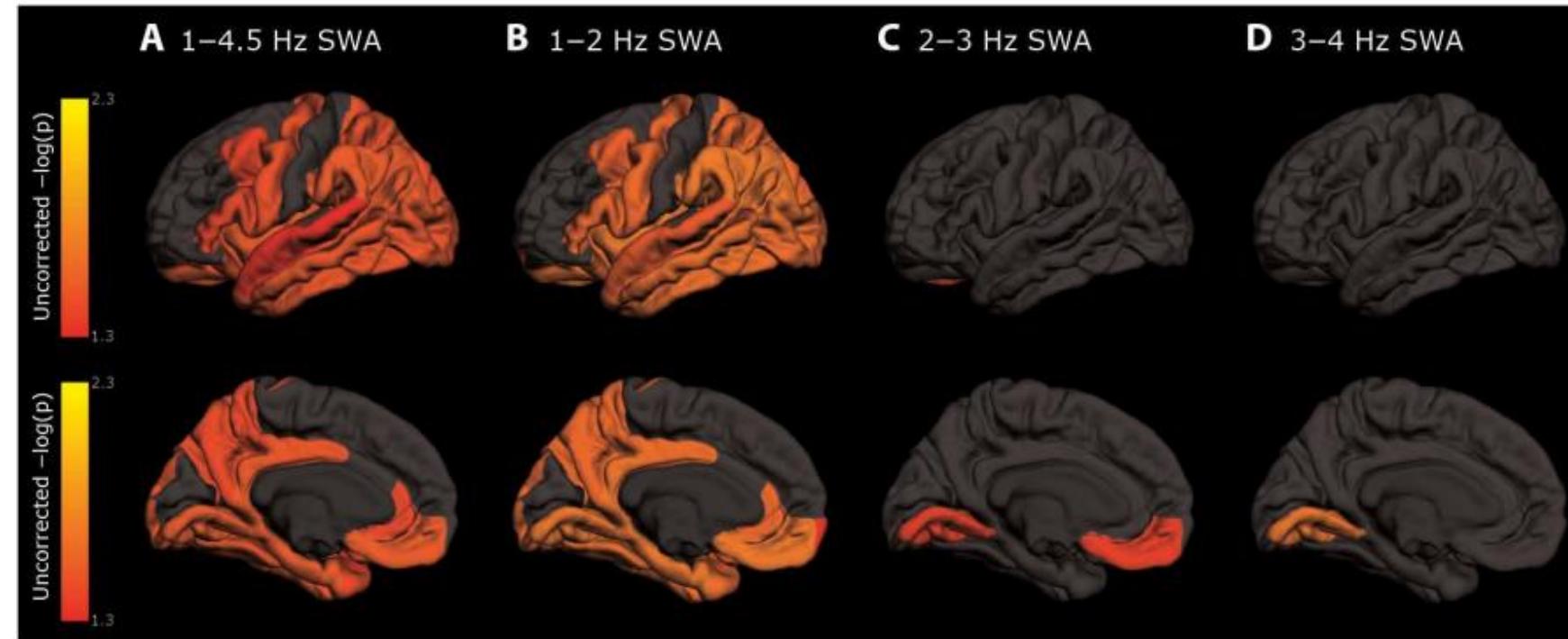


Deposizione di amiloide in OSA





Accumulo di tau e disturbi del sonno



We found that NREM slow wave activity (SWA) showed an inverse relationship with AD pathology, particularly tauopathy, and that this association was most evident at the lowest frequencies of NREM SWA

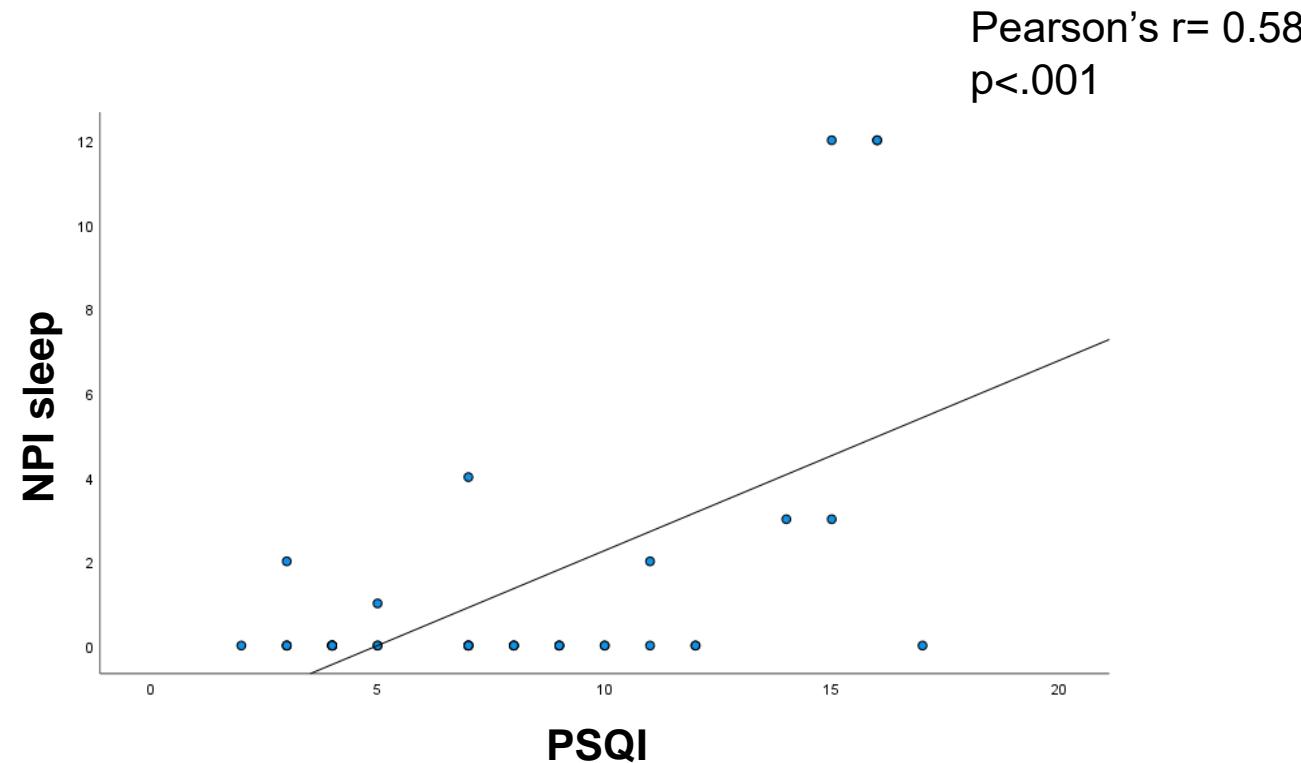


Prevalenza di disturbi del sonno in una popolazione di MCI

43 soggetti, 18 M 25 F
Eta' media 73 (± 8)

Disturbi del sonno riportati mediante NPI e PSQI

13/43 (30%) ha un NPI (sleep) >0

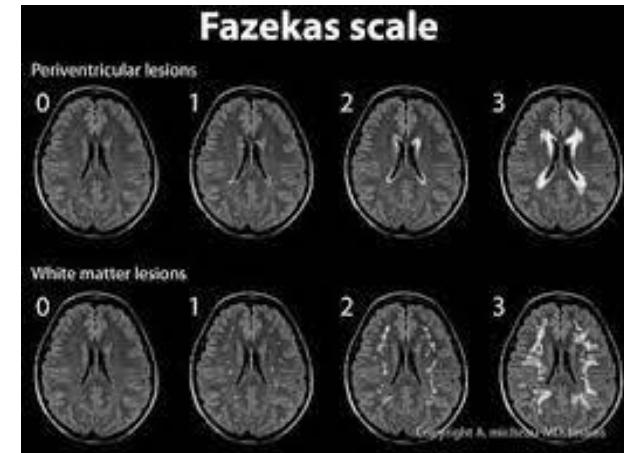
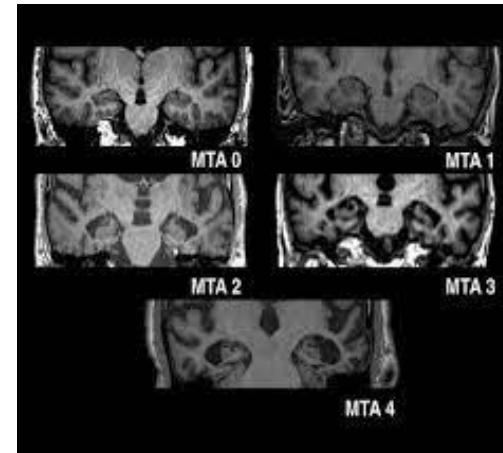




	NPI sleep -ve	NPI sleep +ve
Age	75.9 (7.1)	65.8 (8.1) *
Sex (M)	15	3
MMSE	27.7 (2.4)	27 (3.1)
Imm recall (Rey)	25.3 (11.0)	29.6 (8.5)
Del recall (Rey)	4.0 (3.4)	5.8 (2.5)
Trail A	85.1 (48.0)	75.9 (42.5)
Trail B	128.2 (60.8)	138.1 (66.4)
CDT	7.2 (2.2)	6.6 (3.2)
HAM-A	2.7 (4.2)	9.5 (7.8) *
HAM-D	4.1 (3.7)	11.3 (6.2) *
Hypertension	54%	18%
Diabetes	15%	6%
Dyslipidemia	30%	15%

Ongoing:

- MTA scale
- Fazekas scale



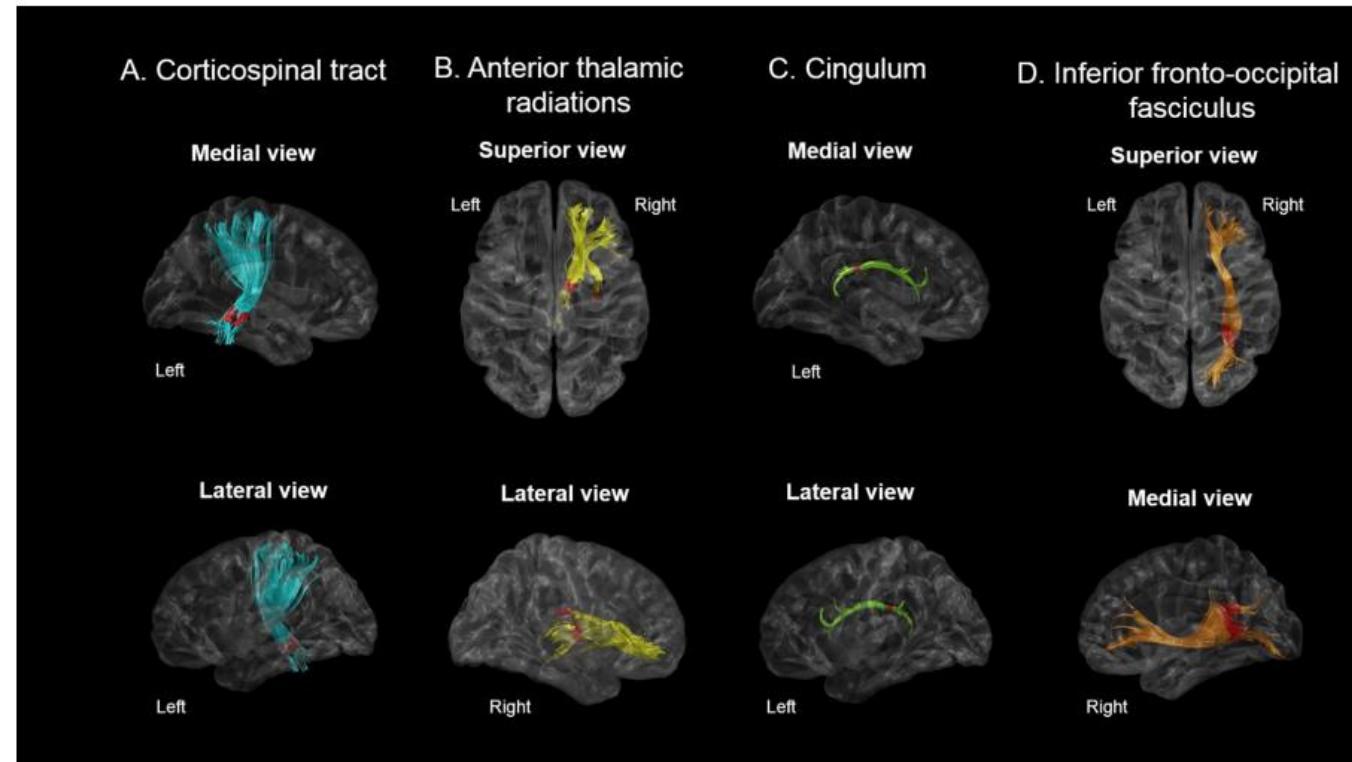
* p<.05

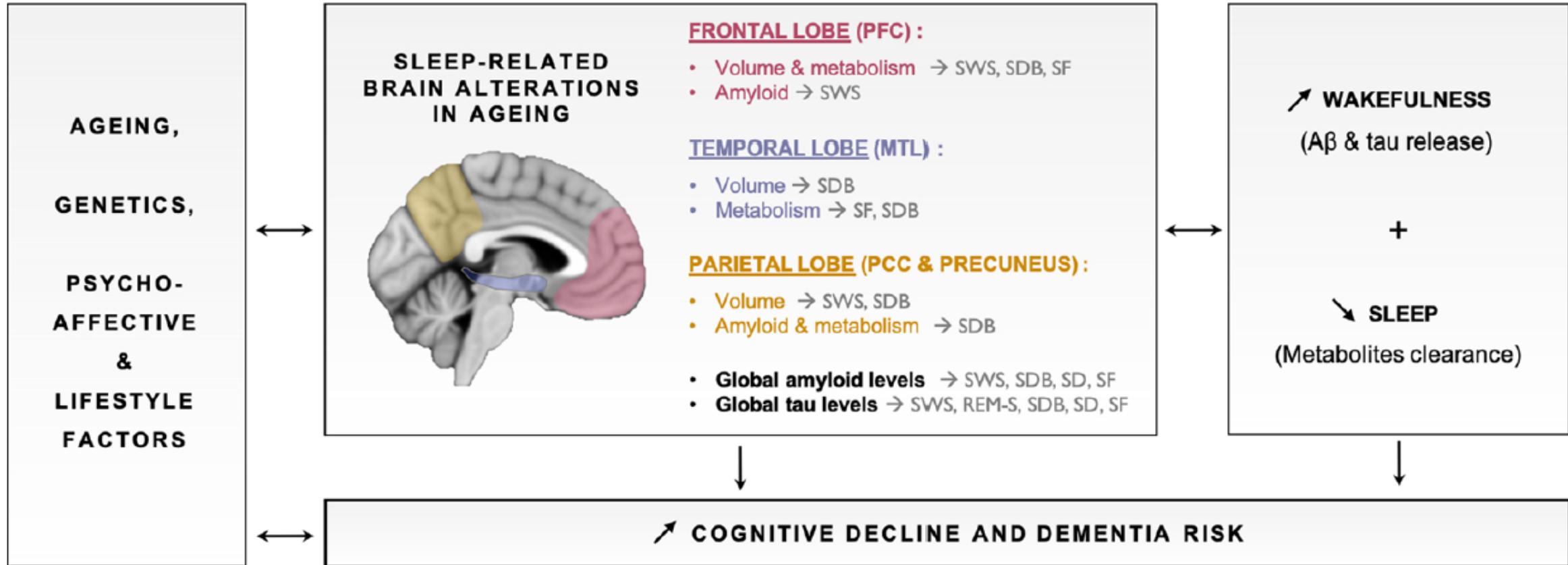


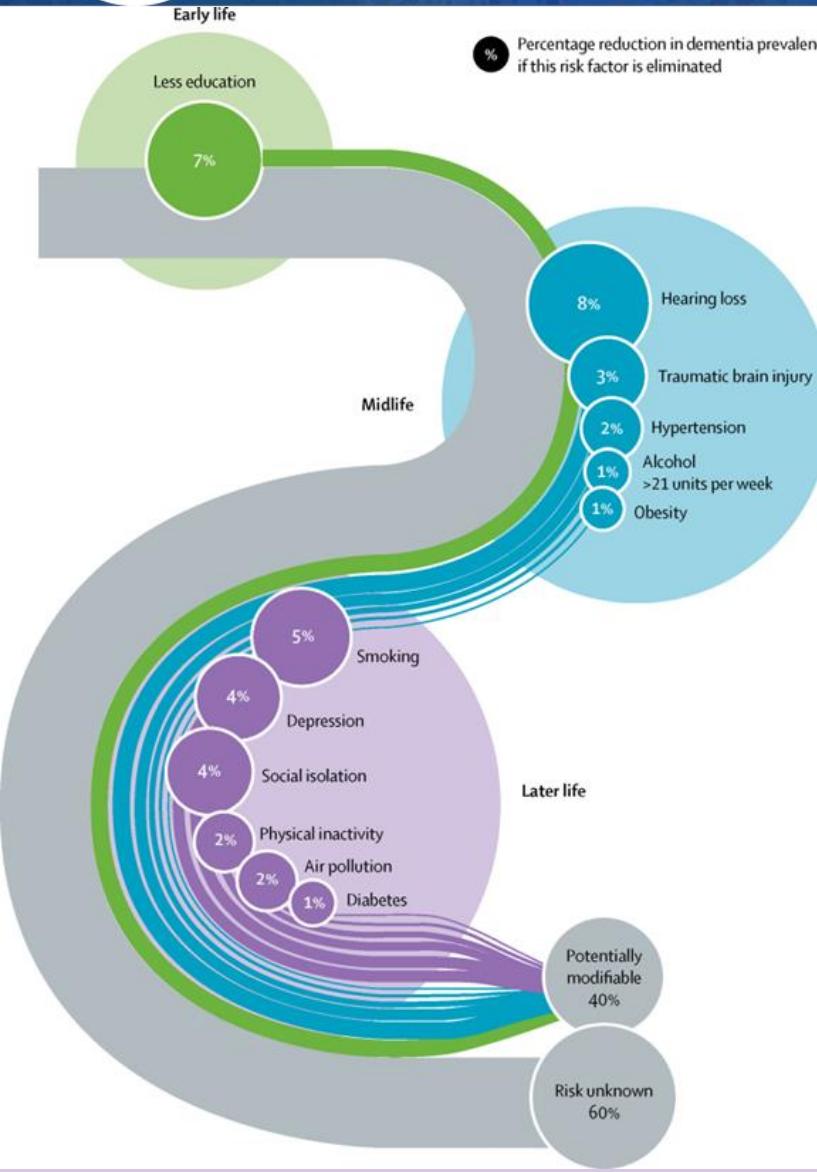
OPEN

White matter tract-specific alterations in patients with primary restless legs syndrome

Hea Ree Park^{1,7}, Hye Ryun Kim^{2,7}, Seunghwan Oh³, Joon-Kyung Seong^{3,4,6}✉ & Eun Yeon Joo⁵✉







Sleep
?

The Lancet Commissions

Dementia prevention, intervention, and care: 2020 report of the Lancet Commission

Gill Livingston, Jonathan Huntley, Andrew Sommerlad, David Ames, Clive Ballard, Sube Banerjee, Carol Brayne, Alistair Burns, Jiska Cohen-Mansfield, Claudia Cooper, Sergi G Costa Freda, Amit Dias, Nick Fox, Laura N Gitlin, Robert Howard, Helen C Kales, Mika Kivimäki, Eric B Larson, Adesola Ogunniyi, Vasiliki Orgeta, Karen Ritchie, Kenneth Rockwood, Elizabeth L Sampson, Quincy Samus, Lon S Schneider, Geir Selbæk, Linda Teri, Naaheed Mukadam





Conclusioni

- Il sonno è uno stato fisiologico durante il quale avviene la rimozione di prodotti del metabolismo cerebrale
- La prevalenza dei disturbi del sonno aumenta con l'età
- Numerosi studi che hanno impiegato tecniche di neuroimaging hanno dimostrato che i disturbi del sonno negli adulti e negli anziani si associano a ridotto volume corticale, aumentata deposizione di amiloide e tau
- Tali alterazioni potrebbero spiegare il rischio aumentato di demenza nei disturbi del sonno
- Studi longitudinali saranno in grado di chiarire l'eventuale ruolo causa-effetto nell'associazione tra disturbi del sonno e deficit cognitivo



67°

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SIGG



Grazie



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