

# SCIENCE WITH BRIDGE

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# CONFERENCE

- April 20-21 in Toruń (Poland) at the Nicolaus Copernicus University for the very first time in history bridge was integral part of International Scientific Conference

RECREATIONAL ACTIVITY AND JOY IN SENIORS LIFE





# WELLBEING, SOCIAL ASPECTS OF PLAYING BRIDGE BY ELDERLY



# The secrets of bridge

(fact group 1)

Scientific research related to bridge proves:

- ♠ Bridge provides a social network
- ♠ Bridge effectively counters loneliness
- ♠ Bridge raises happiness

Source:

NIVEL, Leemrijse C.J.; Ooms, L; Veenhof C. (2011) Evaluatie van kansrijke beweegprogramma's ...

NIVEL, Leemrijse C.J.; Veenhof C. (2012) Denken en Doen: bridgend de eenzaamheid te lijf

Mulier Institute, Smits F., van Rens F.; Elling, A. (2012) Om mijn hersenen te trainen en voor de gezelligheid

# The secrets of bridge

(fact group 2)

General scientific  
research also proves  
that happiness and  
a social network  
reduces mortality  
risks comparable to:

- ♠ Stop smoking
- ♠ Stop drinking
- ♠ Lose weight
- ♠ Exercise more

Source: *PLoS Med* 7 (7): e1000316, doi: 10.1371/journal.pmed.1000316

# The secrets of bridge

We discover the importance of social relationships for health and see an increased need for them



*Science*, New Series vol. 241. No. 4865 <http://www.jstor.org/stable/1701736>



## Conclusion: Bridge is more than fun

fact group 1 + fact group 2:

**Bridge and its social network  
improves health and reduces  
mortality risks**

(especially among elderly)

a scientific proven statement

## More scientific research

The results of a research by *Louise Clarkson Smith* and *Alan A. Hartley* (Journal of Gerontology – Vol 45, Issue 6, pp 233-238) on Bridge players and nonplayers aged 55-91 indicated that players outperformed nonplayers in measures of **working memory** and **reasoning**.

## More scientific research

A study published in 2003 by Verghese in the New England Journal of Medicine proved that senior citizens who play a board game have 74% **lower risk of dementia.**

## More scientific research

In 2000, Marian Cleeves Diamond found out that playing Bridge stimulates the thymus gland, which produces white blood cells (T lymphocytes), thus enhancing the **immune system**.

## More scientific research

A 2014 research performed by Tor Vergata (Rome) scientists (Becchetti, Fiaschetti, Marini) proved that Bridge players, due to their superior team play habits, are more likely to adopt **cooperative behavior**.

Listening, etiquette, concentration, dealing with winning and losing and many other social skills can be enhanced by playing Bridge.

# Why all this research?

To convince EU, national ministry of health and/or local government organizations it is wise to invest in bridge projects:

- ♠ scientifically proven advantages
- ♠ infrastructure of WBF, EBL and NBO's
- ♠ successful projects and best practices

# Marketing senior bridge

- ♠ Average age of bridge players is about 70 (...)
- ♠ Emphasize that bridge is fun
- ♠ Claim bridge improves health, scientific data
- ♠ Use dedicated learning method (tempo)
- ♠ Use internet for practicing

# Marketing but also sales

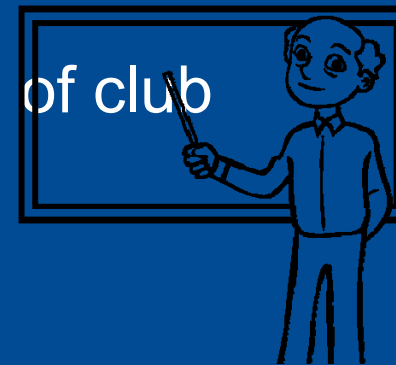
Clear message to municipalities / ministry:

- ♠ social networks are important for elderly
- ♠ improve health by offering a perspective
- ♠ it is human to fight against loneliness
- ♠ prevention much cheaper than care
- ♠ municipality administration sends letter
- ♠ hereafter NBB takes care of total project
- ♠ NBB make use of local community centers



## Traditional teaching method

- ♠ Club teachers with classes of 8-20 students
- ♠ Two phases/years, once a week, evening
- ♠ Focus on bridge technical aspects
- ♠ After finishing course membership of club
- ♠ Relatively large early drop out



## Modern senior approach

- ♠ Startersbridge: playing important, simple bidding
- ♠ Internet: practice from day 1
- ♠ Fun: more important than level
- ♠ Social: bridge but also meet, walk, gym
- ♠ Frequency: two-three times per week, day times





WHAT ABOUT INFLUENCE OF PLAYING BRIDGE ON BRAIN OF ELDERLY?

WHAT ABOUT INFLUENCE OF PLAYING BRIDGE ON BRAIN OF ELDERLY?

# BRAIN CARE AND AGING



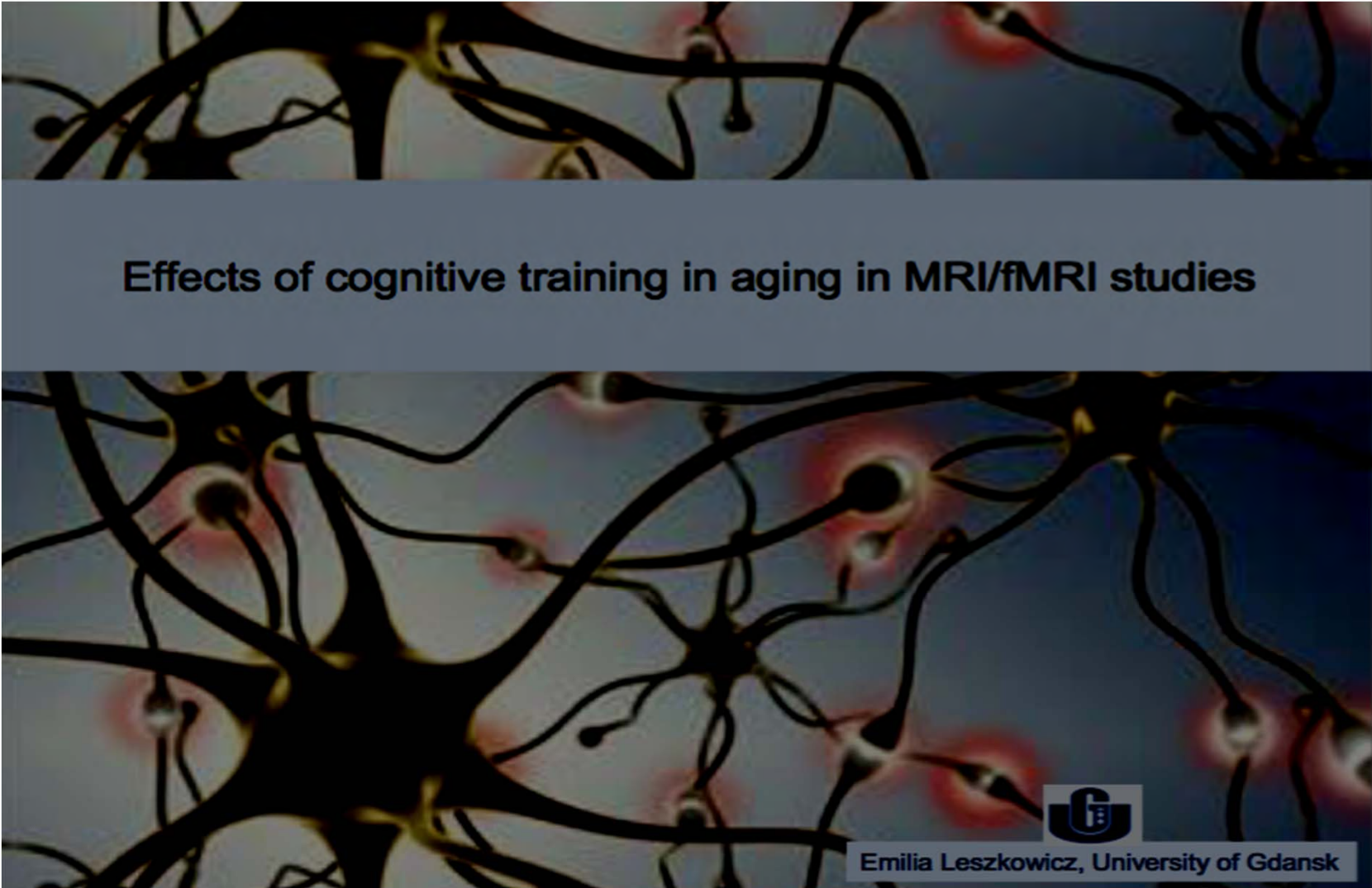
Professor Paolo Walter Gabriele – Università di Cassino e del Lazio

# AROUND COGNITIVE AND BRAIN RESERVE HYPOTHESIS

Dr Tomasz Komendziński





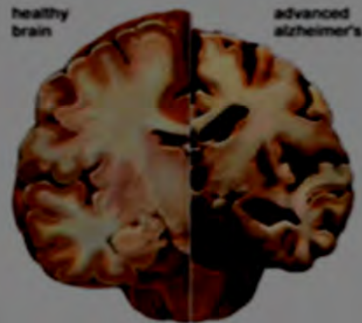
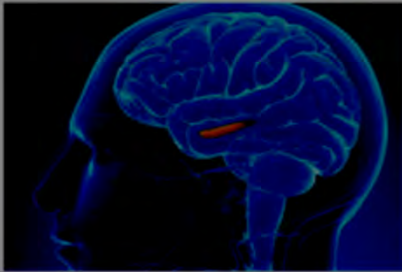


## Effects of cognitive training in aging in MRI/fMRI studies

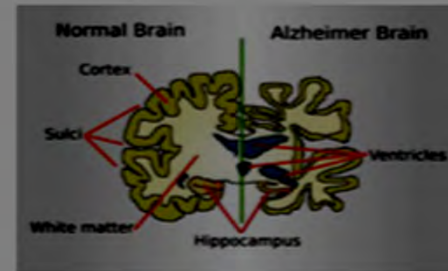


Emilia Leszkowicz, University of Gdansk

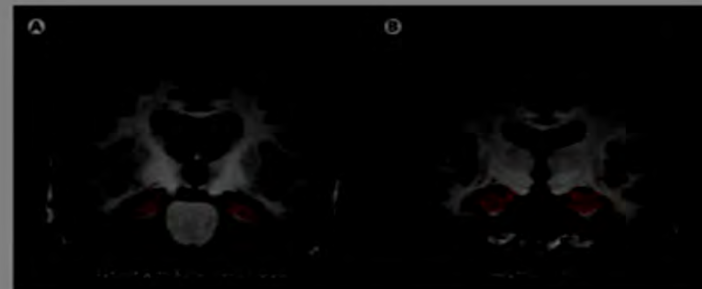
**Hippocampus**  
brain area critical for learning and memory  
especially vulnerable to damage  
in early stages of dementia and Alzheimer's disease




Credit: Alzheimer's Association



Credit: Wikimedia Commons



Teipel et al. Multimodal imaging in Alzheimer's disease:  
validity and usefulness for early detection. *Lancet*, 2015, 14, 1037–1053.



Engvig A, et al. Effects of cognitive training on gray matter volumes in memory clinic patients with subjective memory impairment. J Alzheimers Dis, 2014, 41, 779–791.

### **Subjects**


Mean age 61 years, subjective memory impairment (SMI, n=19), healthy controls (HC, n=42), groups: SMI-training, HC-training, HC-no training.

### **Training**

8 weeks, 1/week, 90-min supervised class sessions (verbal recall memory), 5 weekly homework assignments (25-30 min).

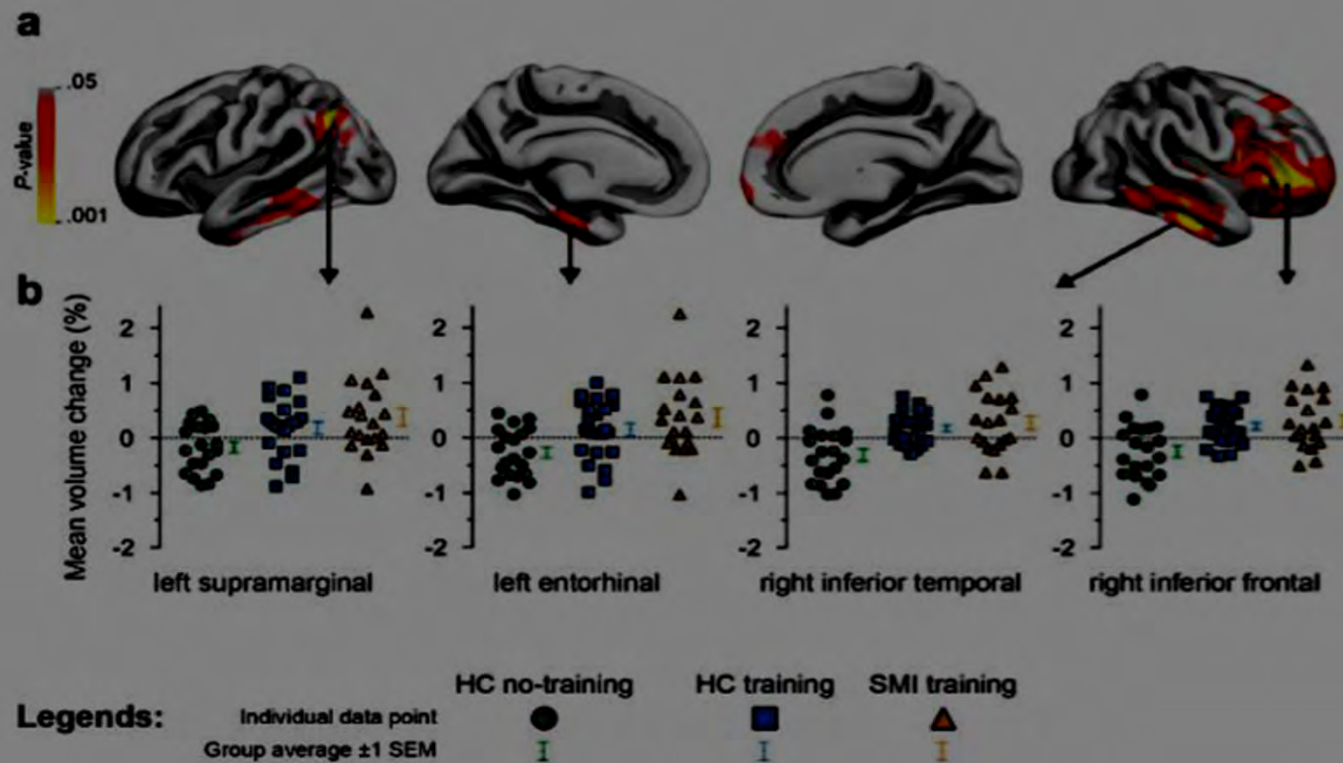
### **Measures**

One week before and after training (approx. 65 days apart).



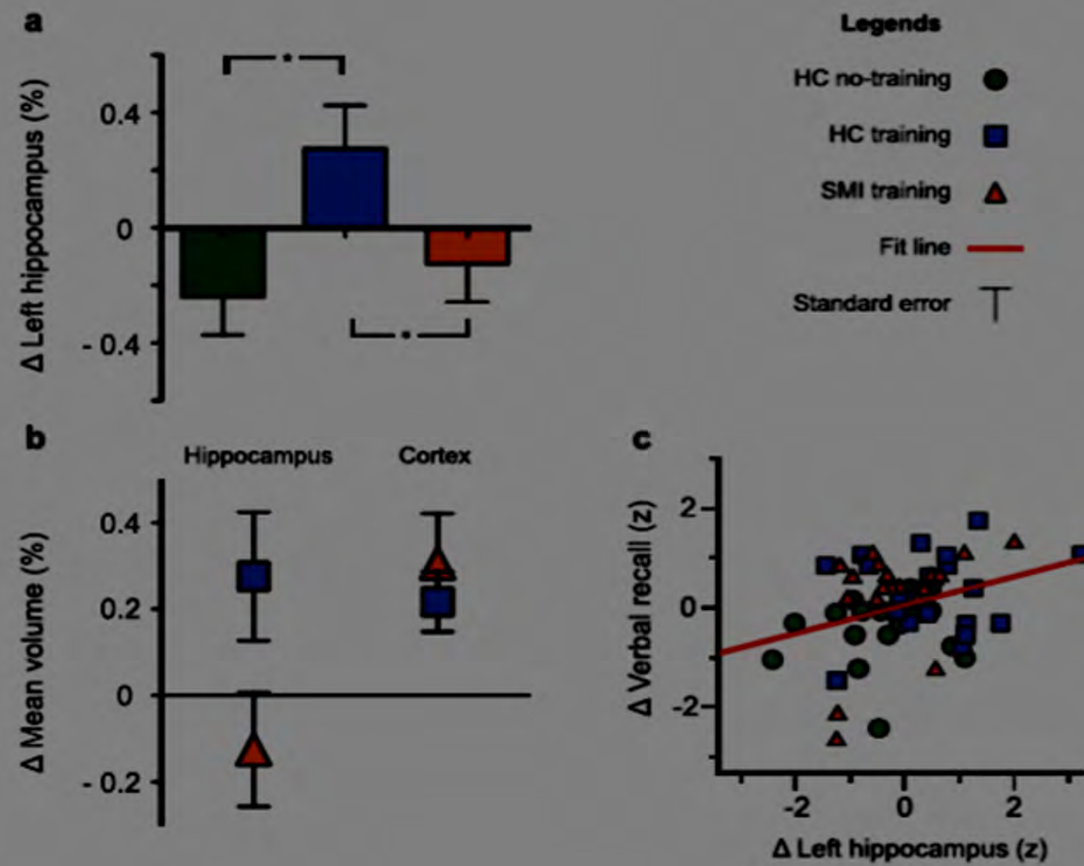



## Longitudinal increases in cortical volume in SMI- and HC-training groups following training



Engvig et al., 2014

Memory training was associated with increased hippocampal volume in HC-training group (but not in SMI-training)





Maffei L. et al. Randomized trial on the effects of a combined physical/cognitive training in aged MCI subjects: the Train the Brain study. Sci Rep, 2017, 7, 39471.

### **Subjects**


Aged 65-89 years, mild cognitive impairment (MCI),  
groups: training (n=55, n=38 fMRI), no training (n=58, n=25 fMRI).

### **Training**

Multi-domain cognitive training + physical exercises + music therapy,  
classes of 7-10 subjects, 7 months, 3/week,  
cognitive training 2 x 60-min sessions, physical training 60 min in a gym,  
music therapy 1/week, film 1/month;  
cognitive sessions - stimulating acoustic and visual attention,  
various forms of memory, imagination, orientation, etc.

### **Measures**

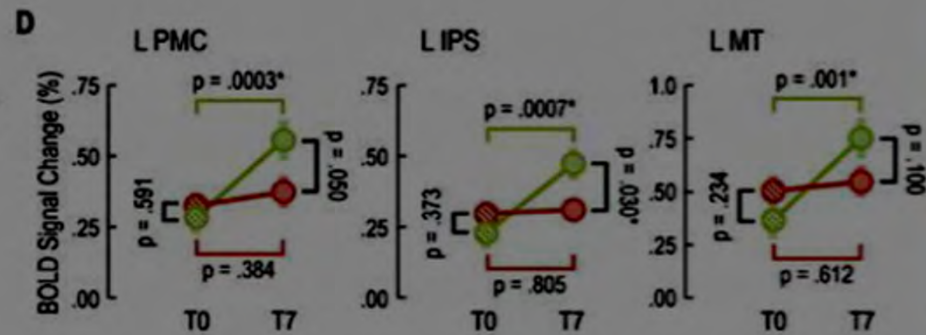
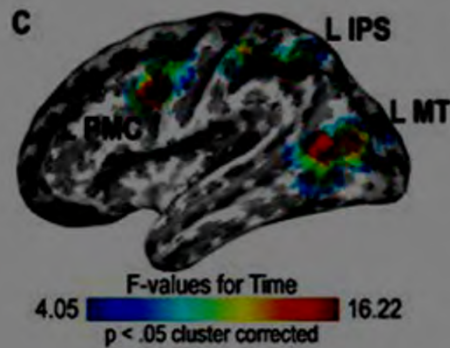
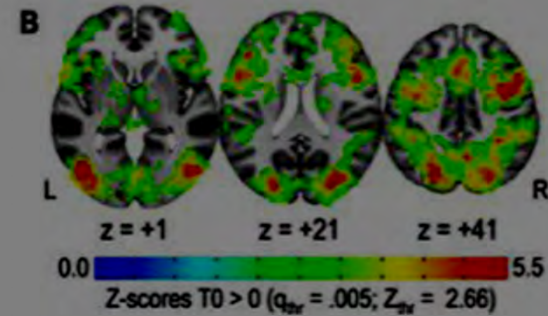
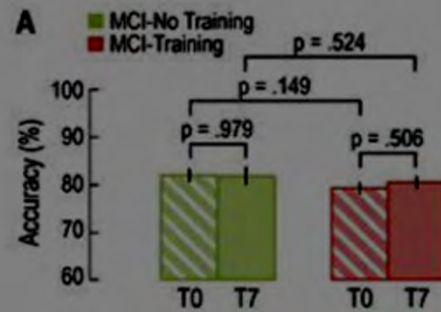
Before training (T0) and at the end of 7 months after training or usual life (T7).





# Training maintained neural efficiency as measured by task-related fMRI

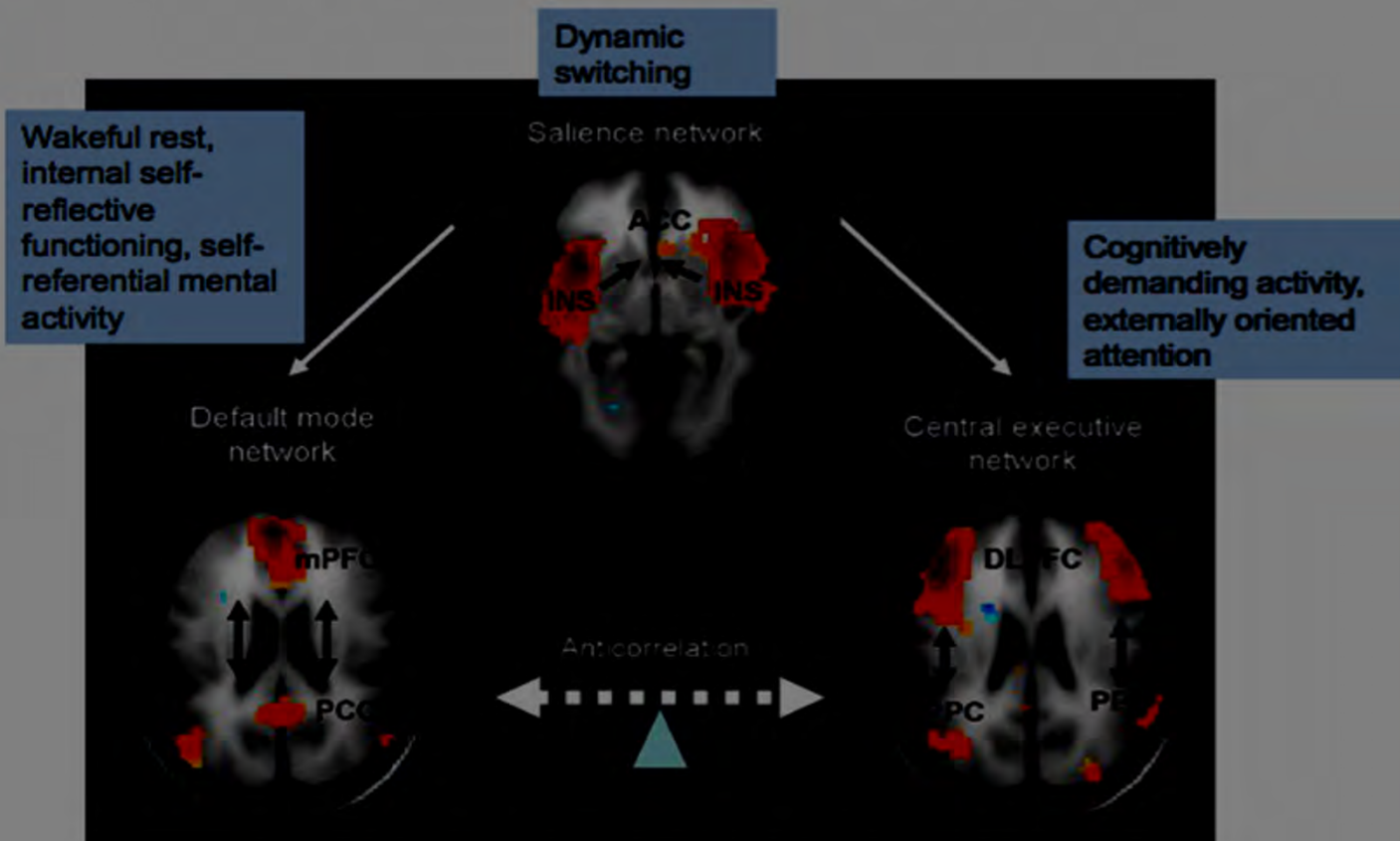
L MT, left middle temporal motion-related region; L IPS, left intraparietal sulcus; L PMC, left premotor cortex



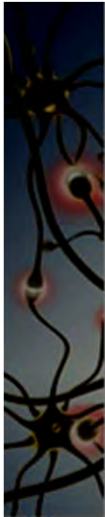
Maffei, L. et al



## Major functional networks in the human brain



Nekovarova T, et al. Bridging disparate symptoms of schizophrenia: a triple network dysfunction theory. *Front Behav Neurosci*, 2014, 8, art.171.



Cao W, et al. Effects of cognitive training on resting-state functional connectivity of default mode, salience, and central executive networks. *Front Aging Neurosci*, 2016, 8, 70.

### **Subjects**


Healthy adults, age 65-75 years, training group (n=23), no training group (n=17).

### **Training**

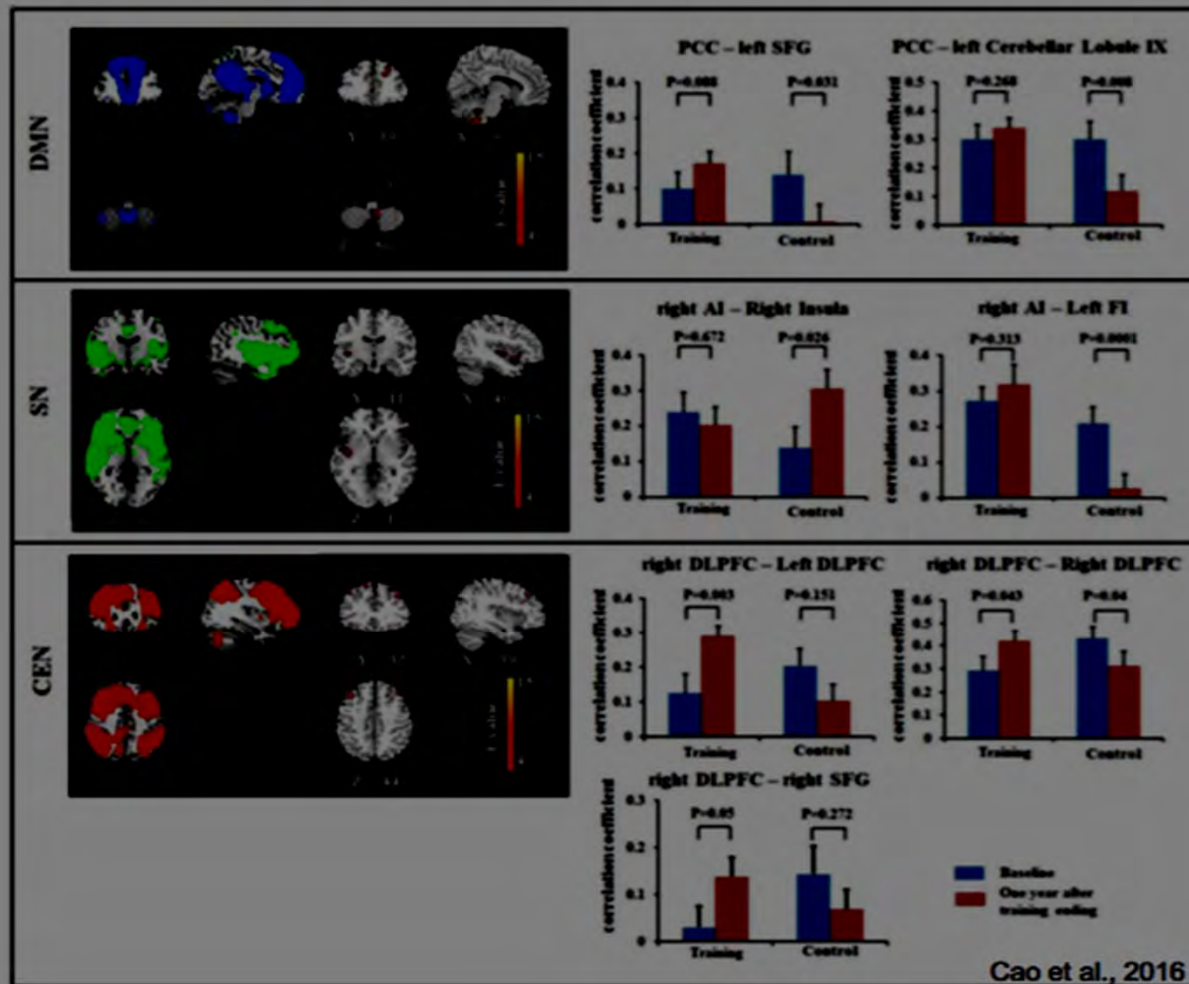
Supervised multi-domain cognitive training, 3 months, 2/week, 60-min session; training targeted: memory, reasoning, problem-solving, handcraft-making, healthy living, etc.

### **Measures**

Baseline before training and at 1 year after training ended (fMRI).



Resting-state functional connections within the three networks were increased or maintained after training (and decreased in the control group)





Credit: [NeuroPlusBrainSupplement.org](http://NeuroPlusBrainSupplement.org)

### **Conclusion**

Multi-cognitive training in older adults can mitigate age-related structural and functional alternations in the brain, thereby helping to reduce or delay age-related cognitive decline, which in turn supports accomplishments of everyday tasks and independent living.

# AGREEMENT

Caroline Small from Imperial College of London and Samantha Punch from Stirling University are planning to run research together with the Nicolaus Copernicus University using fMRI unit.

It will show us which parts of brain are active during playing bridge.

# HOW ARE WE GOING TO USE IT?

Having scientific proofs that playing bridge is:

- dementia (Alzheimer) prevention
- improving social life of elderly
- preventing from social isolation

we will be able to promote our beloved game and hopefully get support from organizations like European Union, World Health Organization and governments.

1. Social Relationships and Mortality Risk – A Metaanalytic Rev. ( 2010)
2. The relation between non-occupational physical activity and years lived without disability- Epid.Com.Health ( 2008)
3. Playing bridge boosts immune system – study . M.C.Diamond University of California – Berkley
4. Mind Games May Trump Alzheimer's – report from Harvard medical School I Albert Einstein College of Medicine in Bronx in: The Washington Post ( 2003)
5. At Card Table , Clues to a Lucid Old Age – NYT ( 2009)
6. Social Disengagement..... - Annals of Internal Medicine ( 1999)
7. Can Playing Cards Stimulate Physical Activity – prof.Hopman w Activity Aging Today( 2010)
8. Social Relationships and Health – Science New Series vol.241 ( 1988)
9. The Game of Bridge as an Exercise Working Memory and Reasoning- L.C Smith,A.A Hartley ,Scripps College Clermont California ( 1989)
10. Do Bridge Players Know the Secret to Longevity? – J.Anderson SENIOR LIVING ( 2013)
11. The Benefits of Playing Bridge - STAJE ( 2013)
12. Using Brain Games to Prevent Dementia- STAJE ( 2014)
13. Brain Gym – B.Booker , Richmond Times ( 2004)
14. Intellectual Activity contra Alzheimer Disease – dr.R.de la Fuente-Fernandez
15. European Commission and European Parliament initiative on Alzheimer disease –
16. Can you boost your brain power- M.Parente The San Diego Union-Tribune (17.05 2015)
- 17.

18. NIVEL, Leemrijse C.J.; Ooms, L; Veenhof C. (2011) Evaluatie van kansrijke beweegprogramma's

19. NIVEL, Leemrijse C.J.; Veenhof C. (2012) Denken en Doen: bruggend de eenzaamheid te lijf