



Brain Health



Brain Health



# Learning & Living for Brain Health

Sabina Brennan



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[www.sabinabrennan.ie](http://www.sabinabrennan.ie)

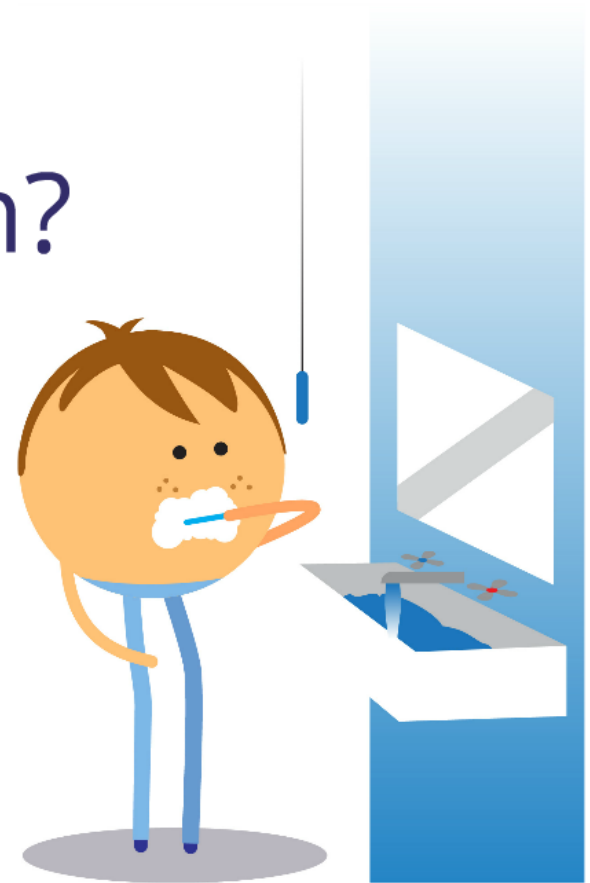


Trinity Brain Health

# Did you brush your teeth?

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# Risk

Age

Genetics [small compared to lifestyle]

## Modifiable Risk Factors

### Cardiovascular

- hypertension
- diabetes
- obesity

### Psycho-social

- depression
- **social isolation & loneliness**

### Health Behaviours

- smoking
- excess drinking
- low level physical activity
- **low education - low-level mental activity**

# Protective

## Education

Mental/cognitive activity

Occupation

Social connection

Exercise

Mediterranean diet





## Modifiable Risk Factors

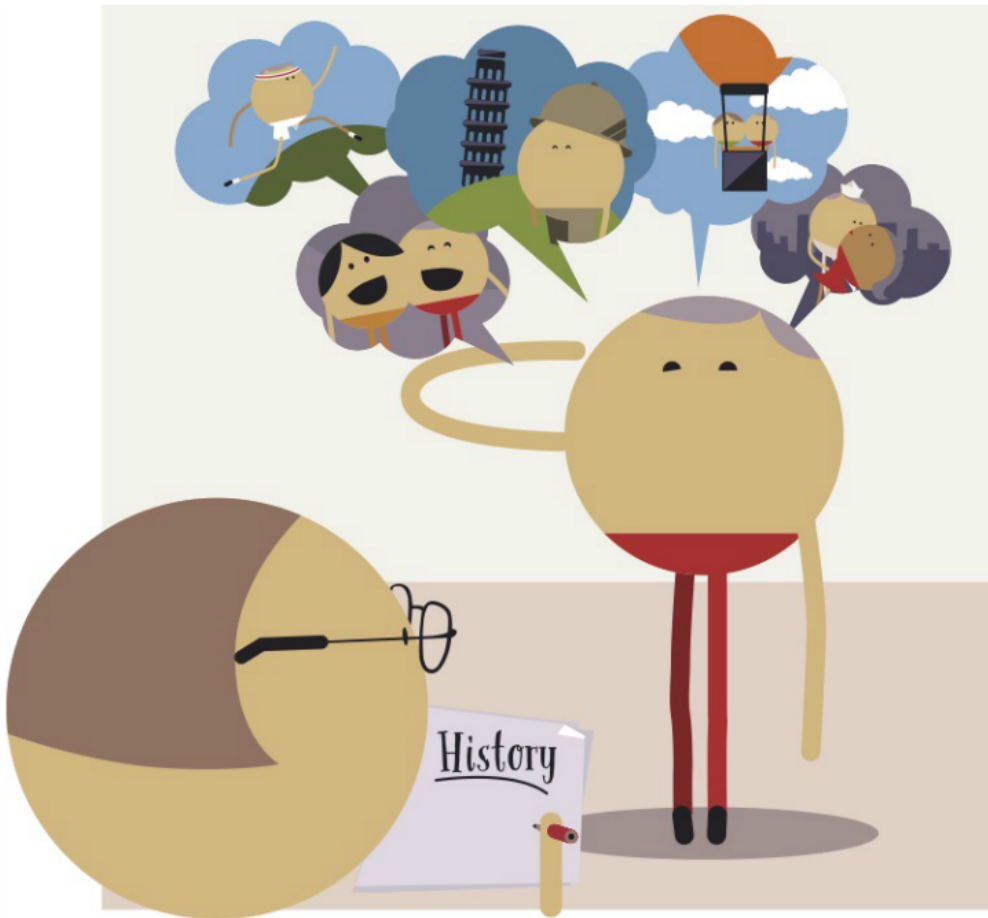
Those with better **cardiovascular health** who have been more **physically, socially, and mentally** active, who have adopted **healthy eating habits**, who **don't smoke** and drink **alcohol in moderation** are less likely, on average, to develop dementia



**Ingredients but not the recipe.**



# Our brain is constantly changing



our behaviours  
our experiences  
our lifestyle choices  
shape it at any age

# What we do or what we don't do...



**WHAT CAN YOU DO  
TO KEEP YOUR  
BRAIN HEALTHY  
???**

**WHAT CAN YOU DO  
TO KEEP YOUR  
BRAIN HEALTHY  
???**



Adopting a brain healthy lifestyle

Investing in Brain Capital

Keep brain healthy now

Build cognitive reserves

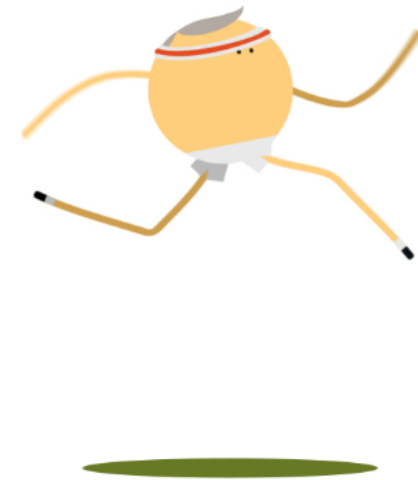
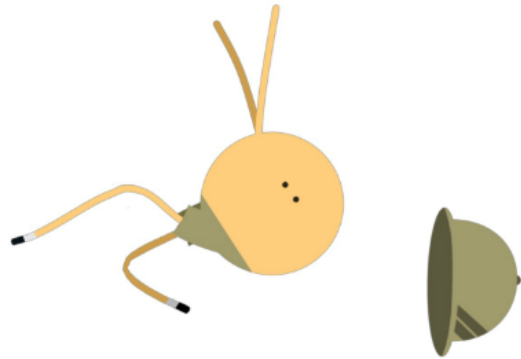
Cash in

Cope with / Compensate

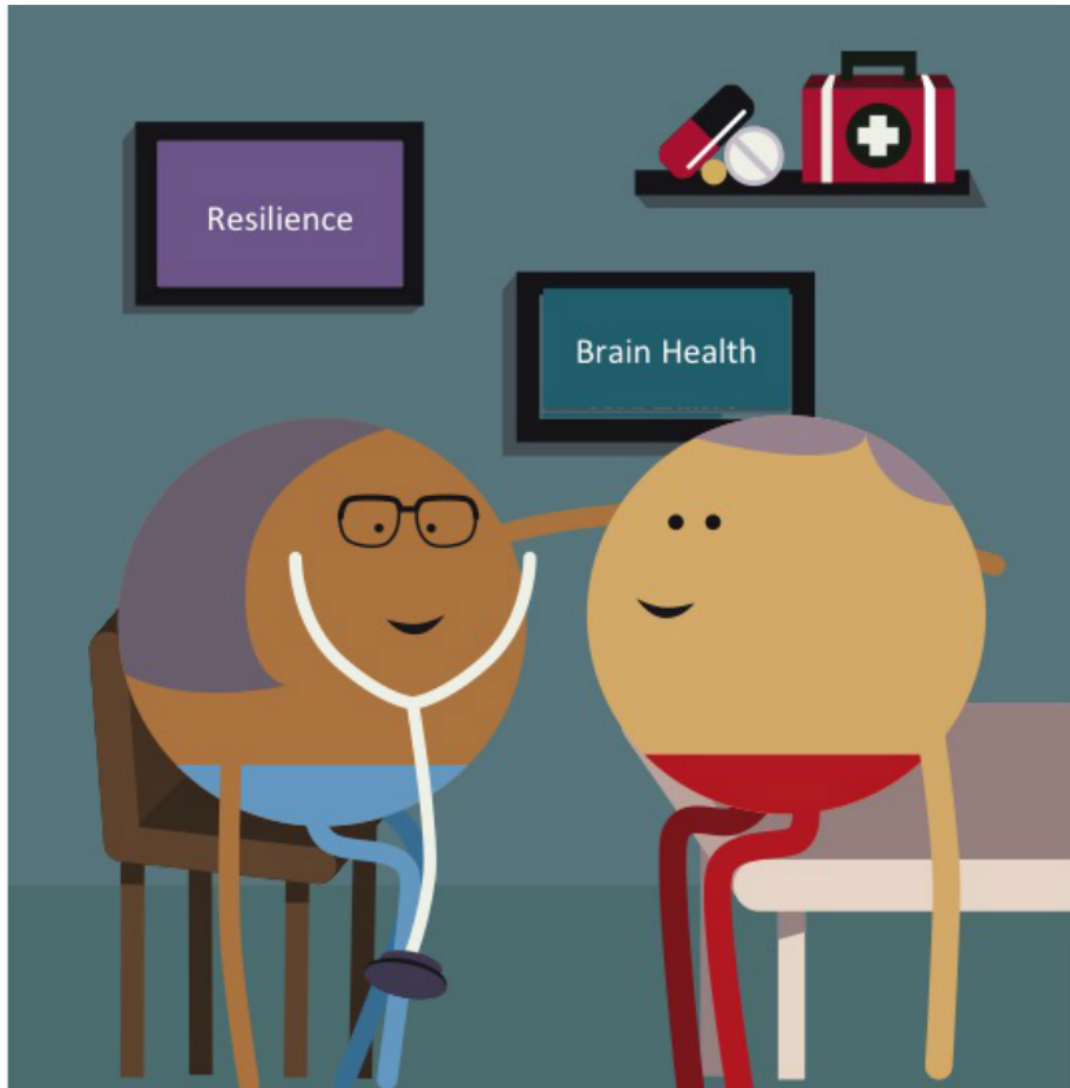
Disease - Damage - Decline



# Resilience



Our brain has the capacity for resilience provided we give it a helping hand by living a brain healthy lifestyle



# Cognitive Reserve

Repeated observation  
no direct relationship  
between the degree of  
brain pathology / brain damage  
the clinical manifestation of that  
injury or disease

Stroke



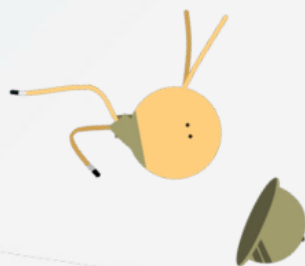


## Cognitive Reserve

- **Brain is resilient**
- **25% during autopsy fulfill criteria for AD - clinically intact**
- **better brain function**
- **even in the face of disease (physical damage)**
- **resilience linked to lifestyle factors**
  - **Education and Stimulating Activities**

- Education is the most broadly and consistently successful cognitive enhancer
- Better even than drugs or sophisticated technology
- Education can build up our cognitive reserve at any point during life.

Resilience



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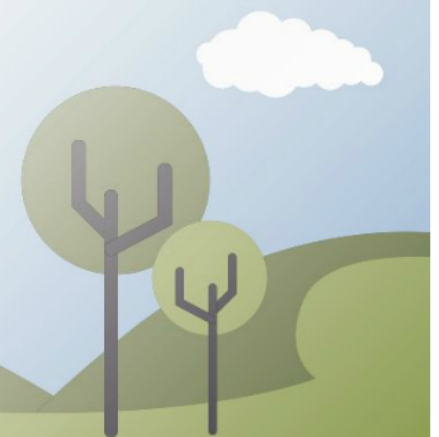
# Cognitive Reserve



**Education & stimulating activities interact to contribute to Cognitive Reserve**

- 488 (healthy) - Bronx Healthy Aging Study - 5 years
- Reading, writing, crossword puzzles, games, discussions, music
- 101 (dementia)
- Every activity day - (1 activity for 1 day per week)
- Delayed the onset of rapid memory loss for 2 months
- Positive effect independent of education level
- Never too late - lifelong

Resilience



# Resilience & Lifelong Learning

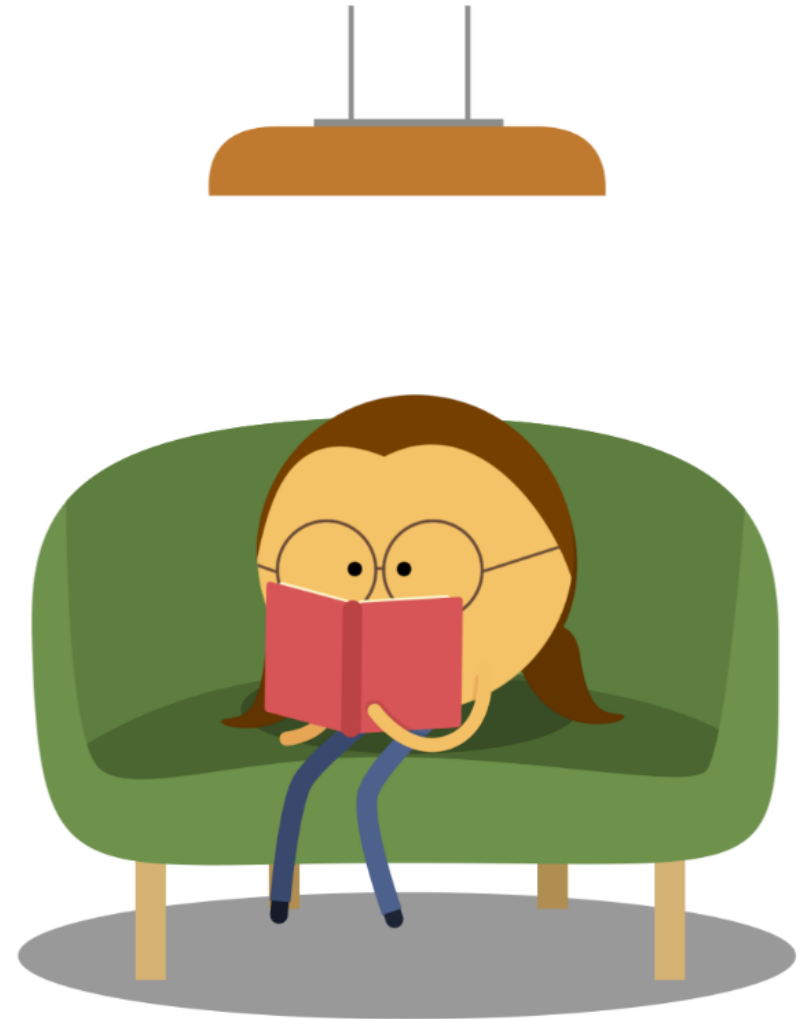
Resilience linked to:

factors associated with Lifelong learning

- level of education reached
- cognitively demanding tasks
- being socially active

Lifelong learning is linked to:

- improved quality of life & well-being
- reduced risk of social isolation
- reduces dementia risk
- increases chances of independent living





# Neuroplasticity

The brain has the ability to CHANGE throughout life

It can reorganise itself by forming new connections between neurons

- Beginning of life - when the immature brain organises itself
- Brain injury - to compensate for lost functions / maximize remaining
- Adulthood - whenever something new is learned or memorised

Plasticity IS the capacity of the brain to change with Learning.

Become expert in a specific domain -  
the area in the brain that deals with that type of skill will grow

May boost resilience & allow us to cope with  
or compensate for Alzheimer brain changes for longer



**WILL I LOSE**  
**MY** *Memory*  
**WHEN I GET OLD**



WILL I LOSE  
MY *Memory*  
WHEN I GET OLD







# Neuroplasticity - Learning

Plasticity IS the capacity of the brain to change with Learning.

Learning to **Juggle** over several months increases grey and white matter

- areas of the brain motion sensors,
- integrate perceptual and motor information
- control hand and eye movements

- Learning a **language**

- bilingualism associated with increased grey matter in area of the brain associated with language function [parietal lobe]
- effect bigger in early rather than late learners BUT
- short-term learning alters brain structure - 3 month language courses
- 6 weeks, 1yr later effects still there for those who kept up language practice
- learning a 2nd language even in later life
  - neuro-protective effects & may reduce risk of AD

Skill Specific - global changes - more efficient configuration of brain networks

# Learning and Living for Brain Health

## Learning

- generates new brain cells,
- enriching brain networks
- opening new routes that the brain can use to bypass damage

Our brains were built for learning and change - adapt to our ever changing world  
Our brain confers on us the ability to do tomorrow what we couldn't do today

Learning is not just for school, college or university.  
Learning is for living and Learning is for life  
Learning is not just for the young Learning is for everyone





## ACTIVITY

GET  
PHYSICAL



STAY  
SOCIAL



GO  
MENTAL



## ATTITUDE

KEEP  
SMILING



MANAGE  
STRESS



BE  
PRESENT



## LIFESTYLE

LOVE YOUR  
HEART



CHERISH  
SLEEP



CHOOSE  
BALANCE



# Top Tips for Brain Health



Get physically active



Stay socially engaged



Challenge your brain



Manage stress, think young, think positive



Adapt your lifestyle to protect your brain



# Get Physically Active

## Why?

- Brain - good supply of nutrients & oxygen
- Activity - direct benefit on structure & function
- Inactivity - increased risk of CV Disease
- aerobic fitness in MS
  - faster information processing
  - preserved brain tissue volume

## Benefits

### Exercise

- helps to grow brain connections
- associated with
  - better cognitive function
  - increased activity in brain cells - attention
  - may improve day-to-day memory
  - reduced levels of depression, stress and anxiety
- good for brain health because it improves mental health





# Stay Socially Engaged

## Social Networks - Neural Networks

### Why?

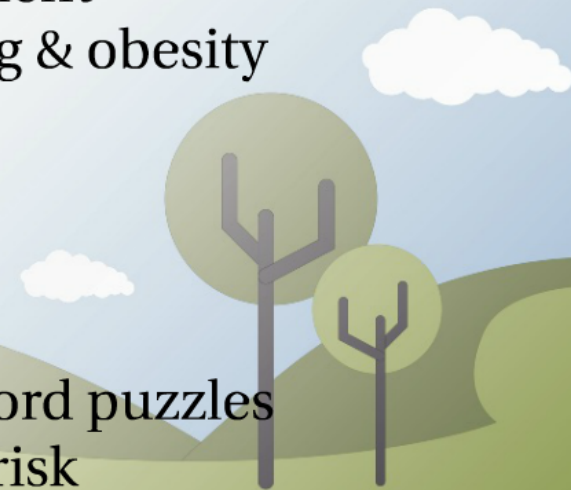
People with more social ties

- live longer
- better health
- less depressed
- less like to develop cognitive impairment
- loneliness & social isolation - smoking & obesity

### Benefits

#### Social Interaction

- 10 minutes can increase brain performance
- may deliver greater benefits than solving crossword puzzles
- rewarding, maintain brain health & may reduce risk





# Challenge Your Brain

## Why?

### **Life-long learning & education**

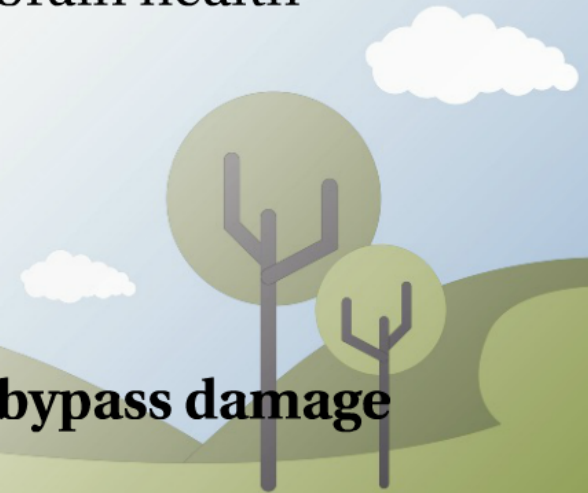
- good for brain health
- lower risk of dementia

### **Challenging yourself,**

- doing new things & learning are vital for brain health

## Benefits

- **Learning generates new brain cells,**
- **enriching brain networks**
- **opening new routes that the brain can use to bypass damage**







# Attitude

Manage Stress - Positive Attitude - Present-mindedness

## Why?

- Chronic stress structural/functional effects on the hippocampus
- Positive Thinking
- Present-mindedness - Attention - Video

## Benefits

Being present in the moment

- keep us away from negative thoughts or memories
- that cause depression, anxiety & stress

Mindfulness alters regions associated with memory

Chronic Stress interfere with learning

Well managed supports us through challenge, change & learning





# Adapt Your Lifestyle

smoking, sleep, hypertension, diabetes, diet

## Why?

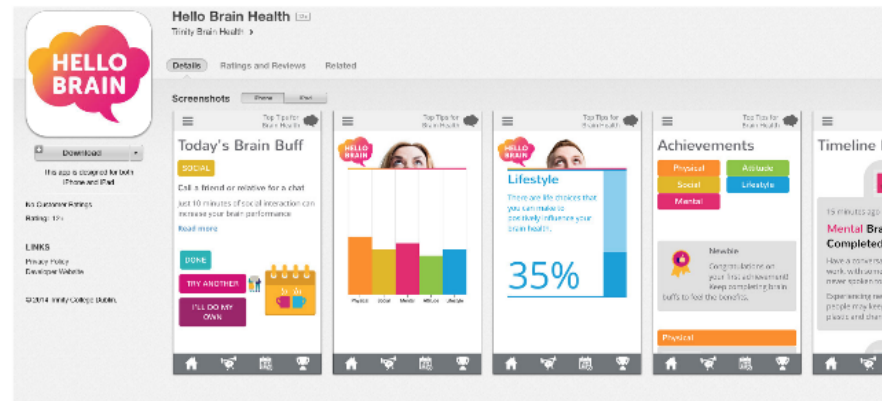
- Lifestyle choices influence brain health
- Smoking - cv - dementia risk - toxins
- Whats good for your heart is good for your brain

## Benefits

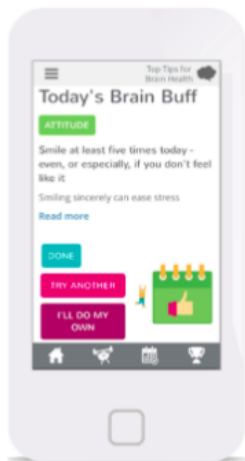
- Also benefit cardiovascular, physical and mental health
- Brain builds memories while you sleep - good sleep habits
- Poor sugar control increases risk
- Manage hypertension - high blood pressure
- Maintain a healthy weight

# www.hellobrain.eu

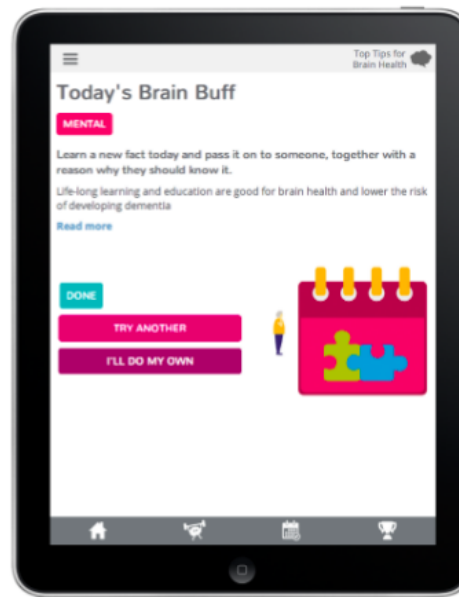
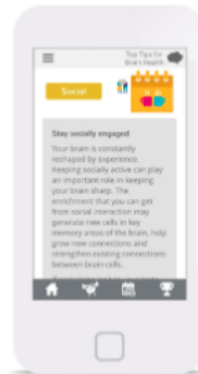
## Carers



# www.sabinabrennan.ie



phone



computer



paper



## Brain Health 4 Kids

[www.freedomliving.com](http://www.freedomliving.com)

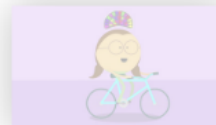


[www.brainhealth4ms.com](http://www.brainhealth4ms.com)



The BRAIN section serves up the basics on how your brain works, and how MS affects it.

The HEALTH section arms you with information on building brain healthy habits.



[www.sabinabrennan.ie](http://www.sabinabrennan.ie)



# SMILE



- Its free
- Boosts the growth of brain cells in hippocampus
  - learning and memory
- makes your brain more resilient
- Releases hormones that make you feel good
- Lowers blood pressure
- Boosts immune function
- Protects against stress, anxiety and depression
- Simple act of smiling makes you feel happy even if you are not

# Learning & Living for Brain Health



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