THE SUCCESSFUL AGING & YOUR BRAIN PUZZLE PACKET

Exercise your mind with these puzzles & you may help your brain STAY SHARP!

Questions/comments? Email us at danainfo@dana.org
We all know people who stay active into old age, or who seem to blossom creatively late in life. It turns out that these “successful agers” seem to share some common characteristics. Below are some key words related to ways to stay active as we age. To learn more, see the “Successful Aging & Your Brain” booklet from the Dana Foundation at www.dana.org/successful aging.

Words may appear in all directions, including diagonally and backwards.

Aerobic  Cards  Chess  Children  Community  Dancing  Diet  Education  Engage  Exercise  Family  Friends  Function  Games  Laughter  Learning  Lifestyle  Network  Novelty  Plasticity  Practice  Puzzles  Reading  Sharp  Skills  Sleep  Stress  Think  Volunteer
Successful Aging & Your Brain

Stay Socially Engaged

From the day we are born our brain is primed for learning, ready to capture the experiences of our lives and encode them into its web of nerve connections. Below are some key words related to how learning and memory happen within the brain and the role social engagement plays in both. To learn more, see the “Successful Aging & Your Brain” booklet from the Dana Foundation at www.dana.org/successfulaging.

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Ability  Action  Amygdala  Attention  Axons  Challenge  Cognition  Conceptual
Connection  Education  Engage  Executive  Experience  Focus  Hippocampus  Information
Judgment  Language  Learning  Lobe  Memory  Multitasking  Myelination  Neurogenesis
Neurotransmitters  Plasticity  Social  Synapse  Thought  Wisdom
Successful Aging & Your Brain

Vascular Health

Eating well and controlling vascular risk factors such as blood pressure, cholesterol, and stress may contribute to the maintenance of cognitive function throughout life. Below are some key words related to diet, exercise, and vascular health. To learn more, see the “Successful Aging & Your Brain” booklet from the Dana Foundation at www.dana.org/successfulaging.

Words may appear in all directions, including diagonally and backwards.

Nearly one in five Americans is afflicted with a brain disorder—conditions that range from learning disabilities to depression to traumatic brain injury. Seeing your doctor can help keep your brain healthy and help prevent and treat various brain diseases and disorders. See how many key words related to brain diseases and disorders you can find. To learn more, see the “Successful Aging & Your Brain” booklet from the Dana Foundation at www.dana.org/successfulaging.

Words may appear in all directions, including diagonally and backwards.

*note: no spaces, no hyphens, no apostrophes

Addiction  Coma  Mental illness  Shingles
Alzheimer’s  Deafness  Migraine  Sleep disorders
Anxiety  Depression  Muscular dystrophy  Spina bifida
Ataxia  Dyslexia  Pain  Spinal cord injury
Autism  Dystonia  Panic disorder  Stroke
Birth defects  Eating disorders  Paralysis  Tourette syndrome
Blindness  Epilepsy  Parkinson’s  Cerebral palsy
Cerebral palsy  Lou Gehrig’s  Schizophrenia  Spinal bifida


dana.org
Unscramble the words below to learn about the four factors of successful aging (hint: for help, see the “Successful Aging & Your Brain” bookmark at www.dana.org/successfulaging). Once you figure out the answers, unscramble the highlighted letters to fill in the healthy brain mystery phrase (three letters have been filled in for you).

IALOSC MGGEATEENN

RAPIEMID NUFNOITC

LOCTLHEEROS

NALCITTULLEE VATTYICI

COORDT

GODO DETI

CETMDINOIA DSEI-CESTEFF

VAURSACL HETAHL

RIEEXSEC

DUETEAQA SELPE

LODBO PESRUERS

Successful Aging & Your Brain

Four Factors Jumble
### Successful Aging & Your Brain

#### Get Moving! Jumble

Unscramble the words below to see what regular exercise can do for your body (hint: for help, see the “Successful Aging & Your Brain” bookmark at [www.dana.org/successfulaging](http://www.dana.org/successfulaging). Once you figure out the answers, unscramble the highlighted letters to answer the riddle (two letters have been filled in for you).

**Regular exercise can...**

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<td>Slow...</td>
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<td>Decrease risk of some...</td>
<td>SIAEDSES</td>
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<td>Increase...</td>
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<tr>
<td>Combat high blood...</td>
<td>PERURESS</td>
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<td>Improve overall...</td>
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What happened to the mollusk that went to the gym?

"""

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What may seem like a faltering memory may in fact be a decline in the rate at which we learn and store new information. Visit [www.dana.org](http://www.dana.org) for more information on memory, and practice these memory skills to enhance learning and make remembering easier:

The following jumbled words are skills you can practice to help keep your memory sharp (hint: we’ve underlined the first letter of each word for you). Once you figure out the answers, unscramble the highlighted letters to answer the riddle (eight letters have been filled in for you, and letters can be used multiple times).

**ICESTAAO**

**XEARL**

**RENNECATCTO**

**COSEU**

**LSWO NOWD**

**NAOZIGRE**

**WITRE**

**PETREA**

**IUZAVISLE**

“Why do reptiles have such good memories?”

“**B S H Y H V**

**T L**”
The following cryptograms are all quotes about the brain, with the names of their authors. Some of the letters have been filled in to give you a head start. See how many you can solve! Visit www.dana.org for more information on neuroscience and the brain.

### We’re Not in Kansas Anymore

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### The Sci-Fi Brain

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Visit www.dana.org for more information on neuroscience and the brain.
The following cryptograms are all quotes about the brain, with the names of their authors. Some of the letters have been filled in to give you a head start. See how many you can solve! Visit www.dana.org for more information on neuroscience and the brain.

The Poetry of the Brain

```
| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z |
| 4 | 14| 13| 16| 3 | 17| 6 | 5 | 2 |
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T | 6 | 26 | 24
A | 14 | 19 | 4 | 10
K | 9 | 16 | 2
O | 7 | 17 | 19
Y | 20 | 5
---|

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B | 13 | 24 | 19
T | 6 | 26 | 4 | 10
D | 9 | 13 | 24
B | 14 | 2
Y | 9 | 1 |
D | 13 | 24
---|
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T | 6 | 26 | 24
O | 17 | 10 | 24
Y | 18 | 1 |
T | 26 | 24
O | 19
---|
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```
A | 18 | 1 |
T | 6 | 26 | 4
A | 9 | 24
D | 13 | 10
Y | 24
O | 13 | 10
---|
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T | 12 | 9 | 17
N | 18 | 19 | 11
W | 23 | 13 | 17
L | 2 | 3 |
T | 12 | 11
R | 10 | 17 |
N | 19 |
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X | 17 | 22 | 20 | 6 |
T | 12 | 5 | 17 | 12
Y | 8 | 20 | 19 | 2
S | 11 | 17 | 6 |
N | 19 |
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N | 20 |
T | 12 | 9 | 17
L | 3 | 8 |
X | 22 | 5 |
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R | 25 | 10 |
S | 6 | 4 |
K | 15 | 18 |
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The following cryptograms are all quotes about the brain, with the names of their authors. Some of the letters have been filled in to give you a head start. See how many you can solve! Visit www.dana.org for more information on neuroscience and the brain.

**Oh, the Places You’ll Go!**

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A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
9 13 6 122
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Y 12 22 20 23 15 6 11
B 9 5 15 7 17
S 7 17
Y 12 22 20 5 23 11 15 13
D
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Y 12 22 20 23 15 6 11
V 25 11 11 26 7 17
Y 12 22 20 5 23 22 11
S 2
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S 2 26 11 11 5 26 17
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Y 12 22 20 5 23 22 22 20
Y 11 17 7 12
Y 25 11 11 26 Y 5 15
B S 7 2 17 12 22 5 20 23 11 13 15
```

Renaissance Brain

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A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
15 8 16 21
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I 26 9 26 24
I 21 24 23 11
I 18 21 23 16
H 16 21 11
H 16 21 11
H 16 21 11
H 16 24 10 11
H 16 24 10
H 16 21 11
H 21 24 11
I 21 19
H 16 3
C 15 26 24 24 23
H 16 26 5 3
H 16 26 5 3
H 16 21 11
H 21 24 11
G 8 7 21 3 19
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I 9 21
C 15 16 3 22 26 24
I 9 21
C 15 2 9 3 23 2
G 8 3 22 2
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The following cryptograms are all quotes about the brain, with the names of their authors. Some of the letters have been filled in to give you a head start. See how many you can solve! Visit www.dana.org for more information on neuroscience and the brain.

An Ancient View?

```
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

M 7 18 23  
 20 12 15 2 9  
 9 20 24 23 20 14  
 9 2 8 9  
 F 17 13 20 7  

G 9 2 18  
 4 13 8 5 23  
 8 23 19  
 F 17 13 20 7  
 9 2 18  
 R 4 13 8 5 23  

L 20 23 3 22  
 8 13 5 21 18  
 20 12 13  
 P 6 3 18 8 21 12  
 R 13 18 21  

L 10 20 22  
 3 8 12 15 2 9  
 18 13 8 23 19  
 10 18 21 9 21  
 8 21  

G R L L 14 18 3 3 8 21  
 20 12 13  
 21 20 13 20 14 21  
 6 8 5 23 21  

F 9 18 8  
 R 13 21  

P 2 5  
 6 6 20 16 8 9 18 21  
```
Use the Dana Alliance’s Brain Briefs on “The Senses” of vision and hearing available at www.dana.org/downloads/adults/ to find all the words and to reveal the hidden message formed by letters that are not part of the found words.

Words may appear in all directions, including diagonally and backwards.

X M U S I M O P T I C W C P A M
E A M N DEARFTLEECRME
T R H A R C I E A N R A E P M
R E T G A H L G T I C N T S L B
O T Y M P A N I C O N I A B I R
C I H G M N P Y R A N C R Y T A
D N R E E I N N C J O K A O U N
Y A N A C C E B L N E E C P D E
T T K C R A T X K L E S T I E M
S L O C O L L I C U L U S A X U
Y R O T I D U A M M V S Q O V L
I N F E R I O R C O C H L E A O
N O I T P E C R E P F F P C Z R V
S E L C I S S O S H A P E Q U F
J Z S T B L X T E M P O R A L N
C T H A L A M U S L V J U W E Q

*note: no apostrophes

Amplitude Filaments Ossicles Thalamus
Auditory Frequency Perception Tympanic
Cataract Inferior Presbyopia Volume
Cochlea Mechanical Retina Wernicke’s
Colliculus Membrane Rhythm
Cornea Occipital Shape
Cortex Optic Temporal
Neuroscience is the study of the brain and nervous system, including their structure, function, and disorders. How many common four- and five-letter English words (no proper names or abbreviations) can you find in the word NEUROSCIENCE? See how many you can find, and then check your words against ours in the answer key. Good luck! Visit www.dana.org for more information about neuroscience and the brain.

How many did you find? _________

Hint: There are 83 possible words.

How many did you find? _________

Hint: There are 106 possible words.

If you’re ready for a bigger challenge, see how many six-letter words you can find!

Puzzle by the Dana Alliance for Brain Initiatives, [www.dana.org](http://www.dana.org) and answers courtesy of [https://wordmaker.info/how-many/neuroscience.html](https://wordmaker.info/how-many/neuroscience.html)
Successful Aging & Your Brain
Stay Sharp Crossword

Reference the Dana Foundation’s “Successful Aging & Your Brain” booklet, available at www.dana.org, to solve this BRAIN-Y crossword puzzle!

ACROSS
4. During ________, certain types of memories become consolidated.
5. The type of memories that can be recalled consciously and described verbally, including facts, people, and places.
6. A type of memory that is used when learning motor skills and other actions.
7. Tiny blood vessels that provide oxygen to the brain, sense when active brain cells need more oxygen, and remove carbon dioxide.
8. Denotes the ability to use knowledge, experience, and understanding to make good decisions.
10. The brain’s capacity to structurally change by learning.
11. The type of network involving relationships that may help to preserve mental sharpness and decrease the risk of developing depression and dementia.
12. The type of healthy fat found in olive, sunflower, and soybean oils.

DOWN
1. The process of creating an image of what you want to remember that improves recall by giving your brain another way to access information.
2. Action that can improve mood, enlarges blood vessels so more blood and oxygen can flow to the brain, and boosts brain-derived neurotrophic factor (BDNF), that is associated with alleviating depression and anxiety.
3. Many studies have linked aging with a decrease in ________ matter, the bundles of axons that transmit nerve signals between brain regions.
4. Believing in our ability to succeed in a specific situation, giving us confidence.
7. A type of risk factor, such as high blood pressure, high cholesterol, smoking, obesity, and diabetes, that increases the risk of cognitive decline.
9. A series of interrelated processes involving, encoding, storing, and retrieving information.
ACROSS
4. One of the most prevalent neurodegenerative disorders that greatly reduces a person’s memory.
5. The general name for the chemicals that are released by one neuron and taken up by another.
6. The branches of a neuron that receive electrical signals from other neurons.
7. You have more than 100 ____ neurons. (spell out the number).
8. An area of the brain located deep inside the brain and involved in memory.
13. What does the “I” in MRI stand for?
14. The part of the brain that connects directly with the spinal cord and is responsible for some of the automatic functions of the body.

DOWN
1. The tennis-ball-sized area at the back of the brain that regulates motor movements; it is responsible for balance and involved in motor learning.
2. The nerve cells in the brain.
3. The long, tail-like branch that extends from the neuron cell body and transmits electrical information to other target cells.
5. The exploration of ethical issues surrounding advances in neuroscience.
9. The brain’s ability to change and rewire its synaptic connections.
10. The area of the brain involved with emotions, especially fear, anger, and happiness.
11. The pathway for nerve signals to travel to and from the brain (two words, no space).
12. The junctions where neurons form connections with one another.
Successful Aging & Your Brain

Brain Injury and Neurodegenerative Diseases

Reference the Dana Alliance’s Fact Sheets based on content from our “Q&A: Answering Your Questions about Brain Research” at www.dana.org to solve this BRAIN-Y crossword puzzle!

**ACROSS**

2. The type of protein that clumps together in Alzheimer’s.

8. One of the first areas of the brain affected by Alzheimer’s.

9. A type of cell that supports and regulates neurons studied by researchers.

11. Brain cells that support and regulate neurons and also help both limit and exacerbate brain damage.

12. When brain circuits reshape themselves to take over functions for damaged areas; also, new cell growth.

14. The disease where a loss of dopamine-producing neurons in the basal ganglia causes movement problems.

16. Protein that accumulates in Parkinson’s disease.

**DOWN**

1. _______ lost is brain lost.

3. Protein responsible for common neurodegenerative diseases and traumatic brain injury (TBI).

4. The most common type of stroke caused by a blood clot.

5. One of the types of cells that both limits and exacerbates brain damage.

6. A condition caused by repeated blows to the brain that occurs in professional athletes.

7. Compounds in the blood or spinal cord fluid, for example, that can reveal disease activity earlier than symptoms develop.

10. A condition that can be caused by TBI.

13. Interruption of the brain’s blood supply.

15. This may happen in response to TBI.
Successful Aging & Your Brain

How Does the Brain Work and Develop?

Reference the Dana Alliance’s Fact Sheets based on “Q&A: Answering Your Questions About the Brain,” available at www.dana.org, to solve this crossword puzzle!

**ACROSS**

4. The percent of the body’s daily energy intake that is used by the developing brain until puberty.
5. The week during gestation when primitive forms of the cortex, cerebellum, and brainstem are apparent.
6. Nerve fiber that conducts electrical impulses.
10. The part of the brain that controls movement. (two words, no space).
11. The part of the brain that is a keystone of memory.
12. Bundles of axons that carry signals from region to region, like long-distance cables. (two words, no space).
13. The part of the brain that regulates balance, coordination, and life-sustaining processes such as breathing and heartbeat.
14. Throughout the brain, neurons communicate with one another through _______ circuits.

**DOWN**

1. One of the primitive regions of the brain important in emotion that is not fully functional until age three.
2. The outermost layer of the brain that is divided up into specialized lobes to regulate sensory experience, language and memory, and our sense of space.
3. Chemicals that cross a synapse to stimulate neurons nearby.
7. The sheath that covers axons and speeds electrical messages along.
8. The week during gestation when genes switch on to turn some of the embryo’s stem cells into neurons and glia.
9. Percent a baby’s brain volume grows per day after birth before slowing down by the third month.
We all know people who stay active into old age, or who seem to blossom creatively late in life. It turns out that these “successful agers” seem to share some common characteristics. Below are some key words related to ways to stay active as we age. To learn more, see the “Successful Aging & Your Brain” booklet from the Dana Foundation at www.dana.org/successful aging.

Words may appear in all directions, including diagonally and backwards.
Successful Aging & Your Brain

Stay Socially Engaged

From the day we are born our brain is primed for learning, ready to capture the experiences of our lives and encode them into its web of nerve connections. Below are some key words related to how learning and memory happen within the brain and the role social engagement plays in both. To learn more, see the “Successful Aging & Your Brain” booklet from the Dana Foundation at www.dana.org/successfulaging.

Words may appear in all directions, including diagonally and backwards.
Eating well and controlling vascular risk factors such as blood pressure, cholesterol, and stress may contribute to the maintenance of cognitive function throughout life. Below are some key words related to diet, exercise, and vascular health. To learn more, see the “Successful Aging & Your Brain” booklet from the Dana Foundation at www.dana.org/successfulaging.
Nearly one in five Americans is afflicted with a brain disorder – conditions that range from learning disabilities to depression to traumatic brain injury. Seeing your doctor can help keep your brain healthy and help prevent and treat various brain diseases and disorders. See how many key words related to brain diseases and disorders you can find. To learn more, see the “Successful Aging & Your Brain” booklet from the Dana Foundation at www.dana.org/successfulaging.

Words may appear in all directions, including diagonally and backwards.

*note: no spaces, no hyphens, no apostrophes

<table>
<thead>
<tr>
<th>Addiction</th>
<th>Coma</th>
<th>Mental illness</th>
<th>Shingles</th>
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<td>Sleep disorders</td>
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<td>Depression</td>
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<td>Spina bifida</td>
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<td>Dyslexia</td>
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<td>Spinal cord injury</td>
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<td>Eating disorders</td>
<td>Paralysis</td>
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<td>Epilepsy</td>
<td>Parkinson’s</td>
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<tr>
<td>Cerebral palsy</td>
<td>Lou Gehrig’s</td>
<td>Schizophrenia</td>
<td></td>
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</table>
Unscramble the words below to learn about the four factors of successful aging (hint: for help, see the “Successful Aging & Your Brain” bookmark at www.dana.org/successfulaging). Once you figure out the answers, unscramble the highlighted letters to fill in the healthy brain mystery phrase (three letters have been filled in for you).

**IALOSC MGGEATEENN**  
SOCIAL ENGAGEMENT

**RAPIEMID NUFNOITC**  
IMPAIRED FUNCTION

**LOCTLHEEROS**  
CHOLESTEROL

**NALCITULLEE VATTYICI**  
INTELLECTUAL ACTIVITY

**COORDT**  
DOCTOR

**GODO DETI**  
GOOD DIET

**CETMDINOIA DSEI-CESTEFF**  
MEDICATION SIDE EFFECTS

**VAURSACL HETAHL**  
VASCULAR HEALTH

**RIEEXSEC**  
EXERCISE

**DUETEAQA SELPE**  
ADEQUATE SLEEP

**LODBO PESRUERS**  
BLOOD PRESSURE

**STAY PHYSICALLY ACTIVE, REDUCE**

**VASCULAR RISK FACTORS, TALK TO**

**YOUR DOCTOR, AND KEEP YOUR BRAIN**

**LIVELY**!
Successful Aging & Your Brain
Get Moving! Jumble

Unscramble the words below to see what regular exercise can do for your body (hint: for help, see the “Successful Aging & Your Brain” bookmark at www.dana.org/successfulaging. Once you figure out the answers, unscramble the highlighted letters to answer the riddle (two letters have been filled in for you).

Regular exercise can...

Prevent... BIOTYSE O B E S I T Y
Promote... SOENIEGESNUR N E U R O G E N E S I S
Boost... DOMO M O O D
Slow... NEBO SOLS B O N E L O S S
Decrease risk of some... SIAEDSES D I S E A S E S
Increase... REGNYE E N E R G Y
Combat high blood... PERURESS P R E S S U R E
Improve overall... HHTELA H E A L T H

What happened to the mollusk that went to the gym?

"I T P U L L E D A M U S S E L!"
What may seem like a faltering memory may in fact be a decline in the rate at which we learn and store new information. Visit [www.dana.org](http://www.dana.org) for more information on memory, and practice these memory skills to enhance learning and make remembering easier:

The following jumbled words are skills you can practice to help keep your memory sharp (hint: we’ve underlined the first letter of each word for you). Once you figure out the answers, unscramble the highlighted letters to answer the riddle (eight letters have been filled in for you, and letters can be used multiple times).

<table>
<thead>
<tr>
<th>Jumbled Words</th>
<th>Correct Word</th>
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<tr>
<td>ICESTAAO</td>
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<tr>
<td>XEARL</td>
<td>RELAX</td>
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<tr>
<td>RENNECATCTO</td>
<td>CONCENTRATE</td>
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<tr>
<td>COSEU</td>
<td>FOCUS</td>
</tr>
<tr>
<td>LSWO NOWD</td>
<td>SLOW DOWN</td>
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<tr>
<td>NAOZIGRE</td>
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<td>WRITE</td>
</tr>
<tr>
<td>PETREA</td>
<td>REPEAT</td>
</tr>
<tr>
<td>IUZAVISLE</td>
<td>VISUALIZE</td>
</tr>
</tbody>
</table>

“Why do reptiles have such good memories?”

“BECAUSE THEY HAVE TURTLE RECALL”
Successful Aging & Your Brain

Brain Quote Cryptograms

The following cryptograms are all quotes about the brain, with the names of their authors. Some of the letters have been filled in to give you a head start. See how many you can solve! Visit www.dana.org for more information on neuroscience and the brain.

We’re Not in Kansas Anymore

The Sci-Fi Brain
The following cryptograms are all quotes about the brain, with the names of their authors. Some of the letters have been filled in to give you a head start. See how many you can solve! Visit www.dana.org for more information on neuroscience and the brain.

The Poetry of the Brain

Beam Me Up!

Visit www.dana.org for more information on neuroscience and the brain.
Successful Aging & Your Brain

Brain Quote Cryptograms

The following cryptograms are all quotes about the brain, with the names of their authors. Some of the letters have been filled in to give you a head start. See how many you can solve! Visit www.dana.org for more information on neuroscience and the brain.

Oh, the Places You’ll Go!

12 22 20 15 6 11 9 5 15 7 17 12 22 20 5 23 11 15 13

12 22 20 23 15 6 11 25 11 11 26 7 17 12 22 20 5 23 22 11 2

Y O U   C A N   S T E E R   Y O U R   S E L F   A N Y   D R I F T I O N
13 7 5 11 1 26 7 22 17 12 22 20 5 2 11

D R   S U E S
13 5 2 11 20 2 2 2

Renaissance Brain

A M N P A N T S W I T H H I S B R A I N S
26 9 26 4 26 21 24 23 11 18 21 23 16 16 21 11 26 21 24 11

A N D N O T W I T H H I S H A N D S , A N D
26 24 10 24 2 23 18 21 23 16 16 26 24 10 11

I F H E C A N N O T H A V E H I S B R A I N S
21 19 16 3 15 26 24 24 2 23 16 26 5 3 16 21 11 26 21 24 11

C L E A R H E W I L L C O M E T O G R I E F
15 22 3 26 7 16 3 18 21 22 22 15 2 9 3 23 2 8 7 21 3 19

M I C H E L A N G E L O
9 21 15 16 3 22 26 8 2 22 2
The following cryptograms are all quotes about the brain, with the names of their authors. Some of the letters have been filled in to give you a head start. See how many you can solve! Visit www.dana.org for more information on the brain and neuroscience.

An Ancient View?

M E N
7 18 23
O U G H T
20 12 15 2 9
T O K N O W
9 20 24 23 20 14
T H A T
9 2 8 9
F R O M
17 13 20 7

T H E
9 2 18
B R A I N
4 13 8 5 23
A N D
8 23 19
F R O M
17 13 20 7
T H E
9 2 18
B R A I N
4 13 8 5 23

O N L Y
20 23 3 22
A R I S E
8 13 5 21 18
O U R
20 12 13
P L E A S U R E S
6 3 18 8 21 12 13 18 21

J O Y
10 20 22
L A U G H T E R
3 8 12 15 2 9 18 13
A N D
8 23 19
J E S T S
10 18 21 9 21
A S
8 21

W E L L
14 18 3 3
A S
8 21
O U R
20 12 13
S O R R O W S
21 20 13 13 20 14 21
P A I N S
6 8 5 23 21

G R I E F S
15 13 5 18 17 21
A N D
8 23 19
T E A R S
9 18 8 13 21

H I P P O C R A T E S
2 5 6 6 20 16 13 8 9 18 21
Use the Dana Alliance’s Brain Briefs on “The Senses” of vision and hearing available at www.dana.org/downloads/adults/ to find all the words and to reveal the hidden message formed by letters that are not part of the found words.

Words may appear in all directions, including diagonally and backwards.

successful aging & your brain
the senses: vision and hearing

notes: no apostrophes

amplitude auditory cataract cochlea colliculus cornea cortex
filaments frequency inferior mechanical membrane occipital optic
ossicles perception presbyopia retina rhythm shape temporal

music and art are engaging and enjoyable!
Neuroscience is the study of the brain and nervous system, including their structure, function, and disorders. How many common four- and five-letter English words (no proper names or abbreviations) can you find in the word NEUROSCIENCE? See how many you can find, and then check your words against ours in the answer key. Good luck! Visit www.dana.org for more information about neuroscience and the brain.

Successful Aging & Your Brain
Words in a Word Puzzle

Four-letter words:

<table>
<thead>
<tr>
<th>cee</th>
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<th>rocs</th>
<th>sire</th>
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</thead>
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<tr>
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<td>cion</td>
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<td>ones</td>
<td>roue</td>
<td>sour</td>
<td>suer</td>
</tr>
<tr>
<td>coin</td>
<td>coir</td>
<td>orcs</td>
<td>ruine</td>
<td>suen</td>
<td>suun</td>
</tr>
<tr>
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<td>ruse</td>
<td>sure</td>
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</tr>
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<td>runs</td>
<td>sewer</td>
<td>unci</td>
<td>unco</td>
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<tr>
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<td>cornu</td>
<td>nine</td>
<td>ours</td>
<td>sere</td>
<td>uric</td>
</tr>
<tr>
<td>croc</td>
<td>coin</td>
<td>nose</td>
<td>rice</td>
<td>sice</td>
<td>user</td>
</tr>
</tbody>
</table>

Five-letter words:

<table>
<thead>
<tr>
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<th>cusec</th>
<th>irone</th>
<th>osier</th>
<th>rouse</th>
<th>sire</th>
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</thead>
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<tr>
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<td>cures</td>
<td>irons</td>
<td>ounce</td>
<td>ruins</td>
<td>siren</td>
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<td>runes</td>
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<tr>
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<td>recce</td>
<td>runic</td>
<td>sonic</td>
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<td>niece</td>
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<td>enure</td>
<td>nines</td>
<td>reins</td>
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<td>eosin</td>
<td>noirs</td>
<td>renin</td>
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<td>union</td>
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<tr>
<td>cires</td>
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<td>resee</td>
<td>score</td>
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<td>nonce</td>
<td>reese</td>
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<td>urin</td>
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<td>euros</td>
<td>nones</td>
<td>reuse</td>
<td>secco</td>
<td>urine</td>
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<td>noris</td>
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<td>inner</td>
<td>occur</td>
<td>rosin</td>
<td>senor</td>
<td>urines</td>
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<td>orcin</td>
<td>rouen</td>
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<td>roues</td>
<td>serin</td>
<td>urines</td>
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<tr>
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<td>inurn</td>
<td>ornis</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

ACROSS
4. During ________, certain types of memories become consolidated.
5. The type of memories that can be recalled consciously and described verbally, including facts, people, and places.
6. A type of memory that is used when learning motor skills and other actions.
7. Tiny blood vessels that provide oxygen to the brain, sense when active brain cells need more oxygen, and remove carbon dioxide.
8. Denotes the ability to use knowledge, experience, and understanding to make good decisions.
10. The brain's capacity to structurally change by learning.
11. The type of network involving relationships that may help to preserve mental sharpness and decrease the risk of developing depression and dementia.
12. The type of healthy fat found in olive, sunflower, and soybean oils.

DOWN
1. The process of creating an image of what you want to remember that improves recall by giving your brain another way to access information.
2. Action that can improve mood, enlarges blood vessels so more blood and oxygen can flow to the brain, and boosts brain-derived neurotrophic factor (BDNF), that is associated with alleviating depression and anxiety.
3. Many studies have linked aging with a decrease in ________ matter, the bundles of axons that transmit nerve signals between brain regions.
4. Believing in our ability to succeed in a specific situation, giving us confidence.
7. A type of risk factor, such as high blood pressure, high cholesterol, smoking, obesity, and diabetes, that increases the risk of cognitive decline.
9. A series of interrelated processes involving, encoding, storing, and retrieving information.
ACROSS
4. One of the most prevalent neurodegenerative disorders that greatly reduces a person’s memory.
5. The general name for the chemicals that are released by one neuron and taken up by another.
6. The branches of a neuron that receive electrical signals from other neurons.
7. You have more than 100 ____ neurons. (spell out the number).
8. An area of the brain located deep inside the brain and involved in memory.
13. What does the “I” in MRI stand for?
14. The part of the brain that connects directly with the spinal cord and is responsible for some of the automatic functions of the body.

DOWN
1. The tennis-ball-sized area at the back of the brain that regulates motor movements; it is responsible for balance and involved in motor learning.
2. The nerve cells in the brain.
3. The long, tail-like branch that extends from the neuron cell body and transmits electrical information to other target cells.
5. The exploration of ethical issues surrounding advances in neuroscience.
9. The brain’s ability to change and rewire its synaptic connections.
10. The area of the brain involved with emotions, especially fear, anger, and happiness.
11. The pathway for nerve signals to travel to and from the brain (two words, no space).
12. The junctions where neurons form connections with one another.
**ACROSS**

2. The type of protein that clumps together in Alzheimer's.
8. One of the first areas of the brain affected by Alzheimer's.
9. A type of cell that supports and regulates neurons studied by researchers.
11. Brain cells that support and regulate neurons and also help both limit and exacerbate brain damage.
12. When brain circuits reshape themselves to take over functions for damaged areas; also, new cell growth.
14. The disease where a loss of dopamine-producing neurons in the basal ganglia causes movement problems.
16. Protein that accumulates in Parkinson's disease.

**DOWN**

1. _______ lost is brain lost.
3. Protein responsible for common neurodegenerative diseases and traumatic brain injury (TBI).
4. The most common type of stroke caused by a blood clot.
5. One of the types of cells that both limits and exacerbates brain damage.
6. A condition caused by repeated blows to the brain that occurs in professional athletes.
7. Compounds in the blood or spinal cord fluid, for example, that can reveal disease activity earlier than symptoms develop.
10. A condition that can be caused by TBI.
13. Interruption of the brain's blood supply.
15. This may happen in response to TBI.
successful aging & your brain

how does the brain work and develop?

reference the dana alliance’s fact sheets based on “q&a: answering your questions about the brain,” available at www.dana.org, to solve this crossword puzzle!

**across**

4. the percent of the body’s daily energy intake that is used by the developing brain until puberty.
5. the week during gestation when primitive forms of the cortex, cerebellum, and brainstem are apparent.
6. nerve fiber that conducts electrical impulses.
10. the part of the brain that controls movement. (two words, no space).
11. the part of the brain that is a keystone of memory.
12. bundles of axons that carry signals from region to region, like long-distance cables. (two words, no space).
13. the part of the brain that regulates balance, coordination, and life-sustaining processes such as breathing and heartbeat.
14. throughout the brain, neurons communicate with one another through ______ circuits.

**down**

1. one of the primitive regions of the brain important in emotion that is not fully functional until age three.
2. the outermost layer of the brain that is divided up into specialized lobes to regulate sensory experience, language and memory, and our sense of space.
3. chemicals that cross a synapse to stimulate neurons nearby.
7. the sheath that covers axons and speeds electrical messages along.
8. the week during gestation when genes switch on to turn some of the embryo’s stem cells into neurons and glia.
9. percent a baby’s brain volume grows per day after birth before slowing down by the third month.