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Exercise and Brain Health

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Why Brain Health Matters

Alzheimer's disease is the most common form of dementia and affects memory, thinking, and the ability to carry out everyday tasks. While age, sex, and genetics influence risk, research shows that lifestyle behaviors play an important role in brain health.[1] Regular physical activity supports brain function and overall quality of life and may help reduce risk, slow functional decline, and support independence as people age.[1,2]

Physical Activity and Cognitive Health

Physical activity supports brain health and cognition by improving blood flow to the brain, supporting energy use in brain cells, reducing inflammation, and helping reduce harmful body changes related to markers of Alzheimer's disease.[3] Cognition refers to the mental skills used in daily life, including attention, memory, decision making, and problem solving. Movement also helps manage conditions such as high blood pressure, diabetes, and high cholesterol, which are linked to a higher risk of cognitive decline.[1,2]

Beyond aerobic activity (e.g., walking, jogging, cycling, etc.), how people move matters. Activities that challenge balance, coordination, and attention appear especially important for maintaining cognitive function as we age.[1,4]

How Exercise Supports Different Parts of Thinking and Memory

Research shows that physical activity can support several cognitive functions by improving blood flow to the brain, strengthening communication between brain cells, and supporting the brain's ability to adapt to change.[1,4]

Attention and Focus

Attention helps people stay focused, follow directions, and avoid distractions. Exercises that require concentration, such as balance activities, coordination drills, or dual-task exercises, can strengthen attention by keeping the brain actively engaged during movement. Tasks such as walking while counting, responding to cues, or changing directions challenge the brain to process information while the body is moving.[1,4]

Memory

Memory allows people to learn new information and recall past

experiences. Aerobic exercise, such as walking, cycling, or dancing, is associated with improvements in memory by increasing blood flow and oxygen delivery to brain areas involved in learning. Activities that include repeated movement patterns or simple sequences may further support memory by reinforcing learning through repetition.[1,4]

Executive Function (Planning, Decision Making, and Multitasking)

Executive function includes skills such as planning, problem solving, and switching between tasks. Exercises that involve rules, choices, or change, such as agility drills, obstacle courses, or dual-task activities, challenge these skills. These activities require the brain to make decisions and adapt to new information, helping support independence in daily activities.[1,4]

Processing Speed

Processing speed refers to how quickly the brain can take in and respond to information. Physical activity that raises heart rate and includes coordinated movement may help support faster reaction time and mental speed. Improved processing speed supports safe movement, balance recovery, and everyday tasks such as driving or navigating busy environments.[1,4]

Spatial Awareness Skills

Spatial awareness skills help people judge distance, understand spatial relationships, and move safely through their environment. Balance exercises, stepping patterns, and movements that require awareness of body position support these skills by engaging brain areas responsible for spatial processing. Supporting spatial awareness skills is especially important for fall prevention and safe mobility as people age.[1,4]

Types of Exercise that Support Cognition

Research suggests that exercises requiring the brain and body to work together may provide added cognitive benefits. These activities engage attention, planning, and coordination while also improving physical function.[1,4]

Balance exercises challenge postural control and sensory awareness. Examples include standing on one leg, heel-to-toe walking, and controlled weight shifting. These movements require continuous brain input to maintain stability and are linked to improved functional independence.[1,4]

Coordination exercises involve timing and sequencing of movement, such as marching with arm movements, stepping patterns, agility drills, or simple dance routines. These activities stimulate communication between brain areas involved in movement and cognition.[1,4]

Dual-task exercises combine movement with a mental challenge, such as walking while counting backward, naming words in a category, or following changing directions. These tasks help strengthen attention and executive function.[1,4]

Strength training supports brain health indirectly by improving mobility, balance, and independence. Exercises such as sit-to-stands, resistance band movements, and light free-weight exercises can be adapted for many ability levels and help support continued participation in physical activity.[1,2]

Putting it all Together

Brain health is supported through consistent movement that challenges both the body and the mind. Activities that improve balance, coordination, strength, and aerobic fitness provide a strong foundation for cognitive health across the lifespan.[1,2] Small, regular actions matter. Even modest increases in physical activity can contribute to long-term brain health and functional independence.[1]

Key Take Home Messages

- Physical activity supports brain function, mobility, and independence.[1,2]
- Exercises that challenge balance, coordination, and attention may offer added cognitive benefits.[1,4]
- Combining movement with mental challenges helps support memory and decision making.[1,4]
- Regular activity at any age can contribute to long term brain health.[1]

Brain-Health & Balance Exercises

Supporting Alzheimer's Disease, Dementia, and Cognitive Decline
(Adapted from Extension Get Fit – Fundamental Exercises Guide)

EXERCISES	DESCRIPTION	WHY IT SUPPORTS BRAIN HEALTH	MODIFICATIONS / SAFETY	VISUAL
Single-Leg Stand	Stand tall and shift weight onto one leg. Hold balance while looking forward. Switch legs.	Challenges balance, posture, and body awareness, requiring constant brain input.	Hold a chair; tap toes as needed; shorten hold time.	
Tandem Walk (Heel-to-Toe)	Walk forward placing the heel of one foot directly in front of the toes of the other.	Strongly engages balance, coordination, and attention.	Use wall or rail; widen stance slightly; reduce steps.	
Forward Toe Touch / Arm Reach	Step forward and lightly tap toes while reaching the opposite arm forward.	Combines balance, coordination, and attention.	Slow movement; shorten reach; chair support.	
Calf Raise	Stand with feet shoulder width apart. Hold a chair if needed. Rise onto the balls of the feet, hold 1–5 seconds, then lower heels.	Improves sensory awareness for safe walking.	Hold chair; smaller shifts; seated option.	

Brain-Health & Balance Exercises (continued)

Supporting Alzheimer's Disease, Dementia, and Cognitive Decline
(Adapted from Extension Get Fit – Fundamental Exercises Guide)

EXERCISES	DESCRIPTION	WHY IT SUPPORTS BRAIN HEALTH	MODIFICATIONS / SAFETY	VISUAL
Standing Bird Dog	Hold chair, lift opposite arm and leg.	Dual-task balance and coordination exercise.	Lift arm or leg only; toes down.	
Side Hip Raise	Lift leg out to the side with control.	Improves side-to-side stability.	Chair support; lower lift.	

Adding Cognition Components to Exercise

STRATEGY	HOW TO USE IT	COGNITIVE SKILL CHALLENGED
Counting Patterns	Count reps backward or count by 2s, 3s, or 5s while moving	Attention, working memory
Dual Task Naming	Name items (fruits, animals, states) during the exercise	Divided attention
Memory Recall	Remember a short list of words and recall them after the set	Short term memory
Direction Cues	Respond to cues like "right," "left," "hold," or "slow"	Reaction time, executive function
Pattern Changes	Alternate fast/slow reps or vary hold times each round	Mental flexibility
Decision Making	Choose the next move based on a rule (odd/even, color, sound)	Problem solving

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