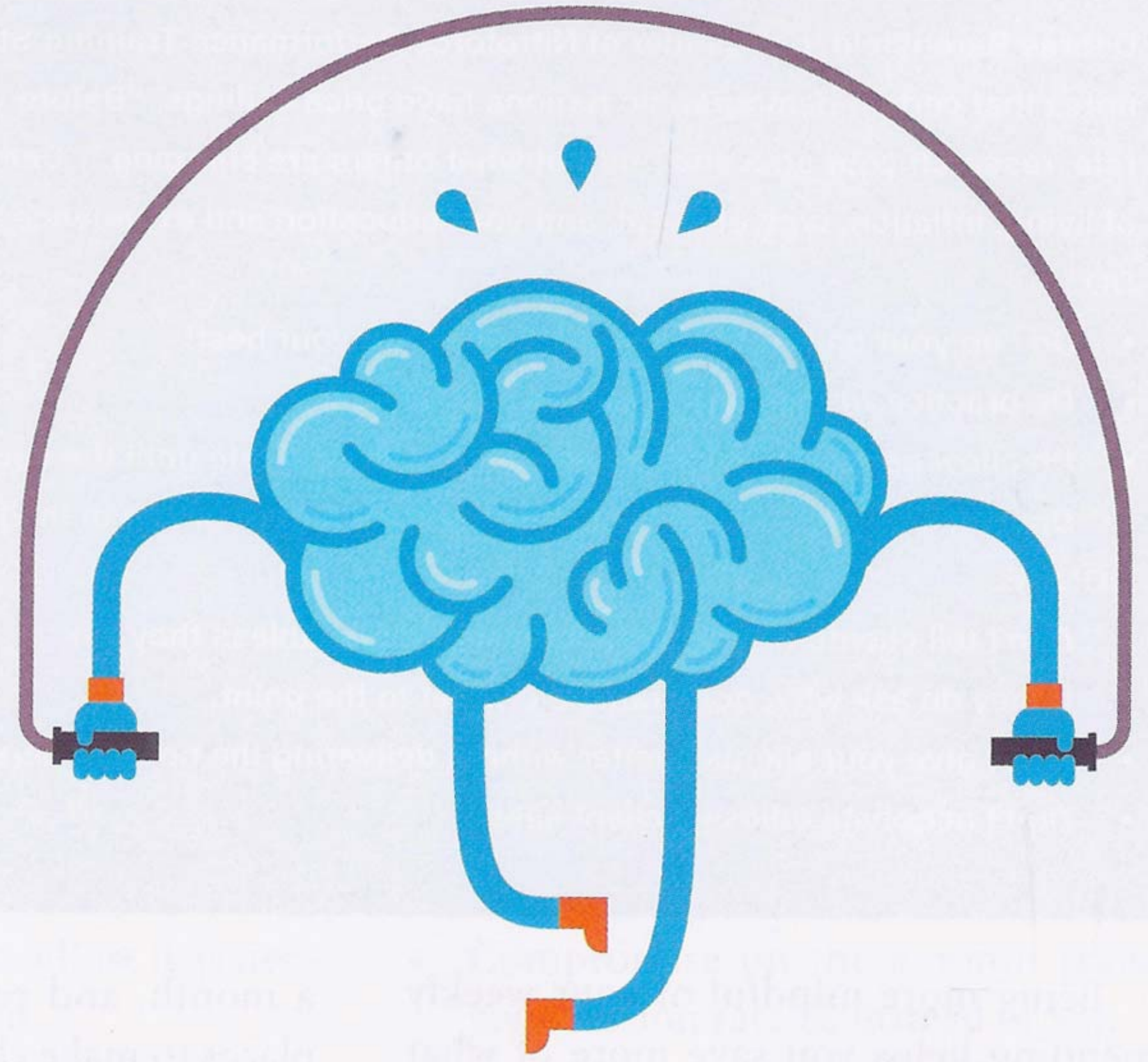


Fight Aging With Brain Training

Neuroplasticity combines physical and mental exercises to strengthen brain power.



Adding mental exercises to training can go a long way toward helping people age gracefully. Research backs this up. Because the brain controls the body (and not the other way around), brain training adds an often-overlooked opportunity to improve quality of life for almost everyone (Diener & Biswas-Diener 2013).

Neuroplasticity is a scientific term describing the brain's ability to change and adapt. Fitness pros can use neuroplasticity to exercise the brain while the body is in motion, training it just as you would muscle—by applying adaptations, sets, repetitions, timed performance and specificity (Ferris, Williams & Shen 2007).

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—Reynolds 2009

2009). Ready to give it a try? Check out my series of tasks that help develop neuroplasticity in older clients. These exercises train clients for four of the five specific varieties of age (see the sidebar, “Aging and the Brain”).

Getting Started: Move It

Sitting down and working on mental games like Sudoku can exercise the brain's mathematical functions, but research finds an optimal relationship occurs when simple movements marry verbal-dependent exercises (Fleshner et al. 2011). Any movement is good during mental tasks—it does not have to be intense. Therefore, basic seated marching or alternating heel raises can help with neuroplasticity.

Engaging in even a moderately challenging brain skill—such as recalling your first memory or doing a complex math problem with no paper handy—while walking and talking makes it clear how much easier the skill becomes when you stop and think. Stopping the body's movement decreases sensory input to the brain, allowing it to concentrate on its other processes, like memory or math.

Stopping to let yourself think may prove more comfortable, but it will interfere with neuroplasticity training. After all, the whole point is to encourage the brain to function *simultaneously*

with the body's needs, just as life requires (Baddeley 2003). If you're answering a caller's questions on a cellphone while dodging traffic, for example, you are in effect doing a neuroplasticity exercise.

Practical Neuroplasticity Exercises

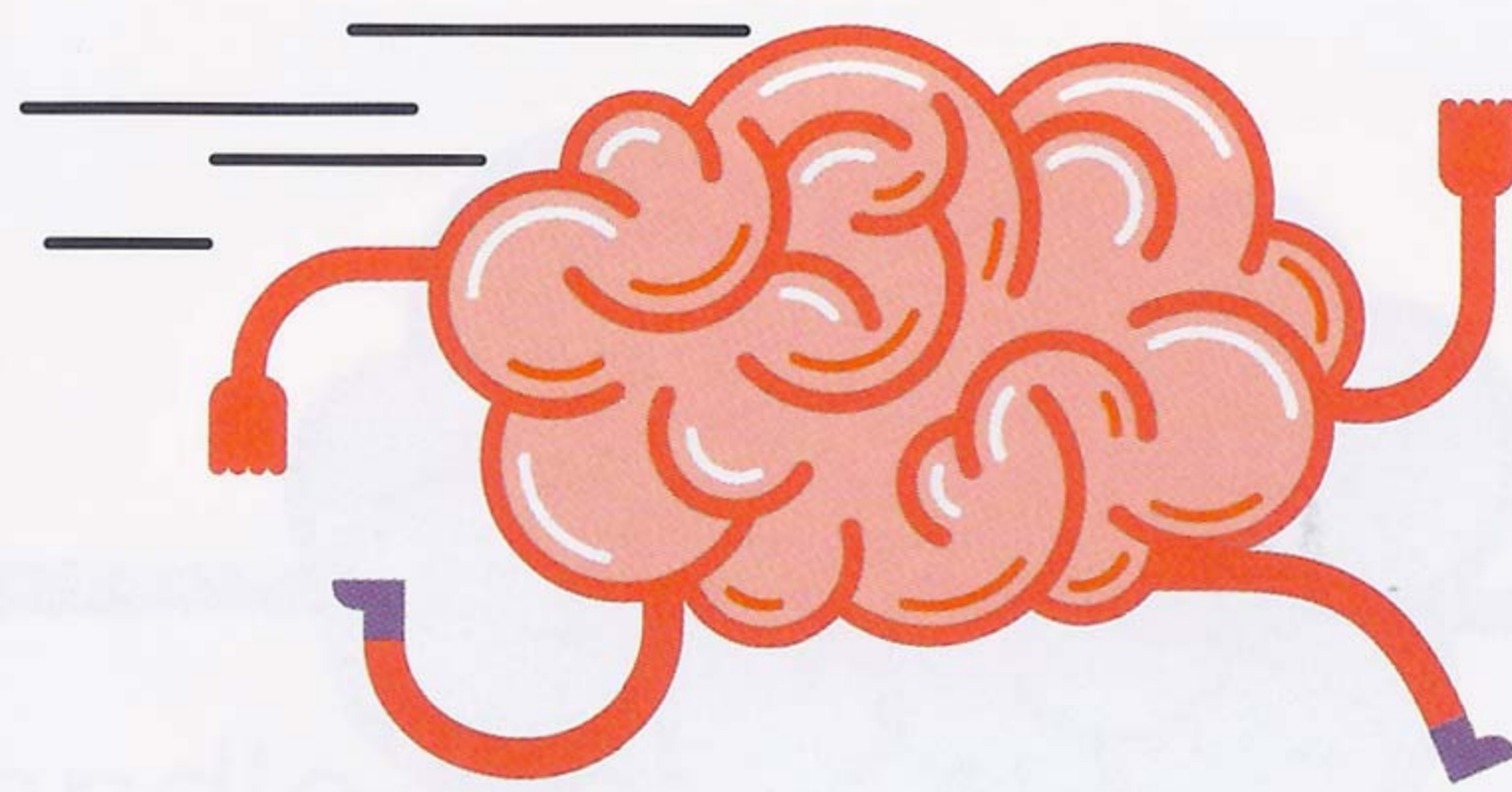
For each of the following tasks, choose continuous movements that tax the body moderately (9–13 on the Borg Scale of Perceived Exertion). The range could extend anywhere from seated heel lifts to plyometric burpees, depending on what's appropriate for your client or class.

Appropriate progressions could include multiplanar tasks, since some active-aging experts suggest that crossing the midline of the body while verbalizing can further train neuroplasticity because of the way the brain has to fire to cross the **corpus callosum**, the bundle of fibers in the center of the brain uniting its two halves (Eckmann 2013).

(To view these tasks demonstrated in order by a personal trainer and an active-aging client, please see the Web Extra at <http://bit.ly/IDEAWebExtrafindLawrenceNeuroplasticity>).

Task 1: Space It

This exercise applies spatial, language and math tasks to provide psychological age training:



While your body is in motion, say your favorite color aloud. Spell it forward, then backward. How many letters does the word have? Does your telephone number contain that number? If it does, then say the section of your phone number that contains that number. Repeat that numerical answer backward. If not, then repeat a section of your phone number forward and then backward.

Task 2: Speak It

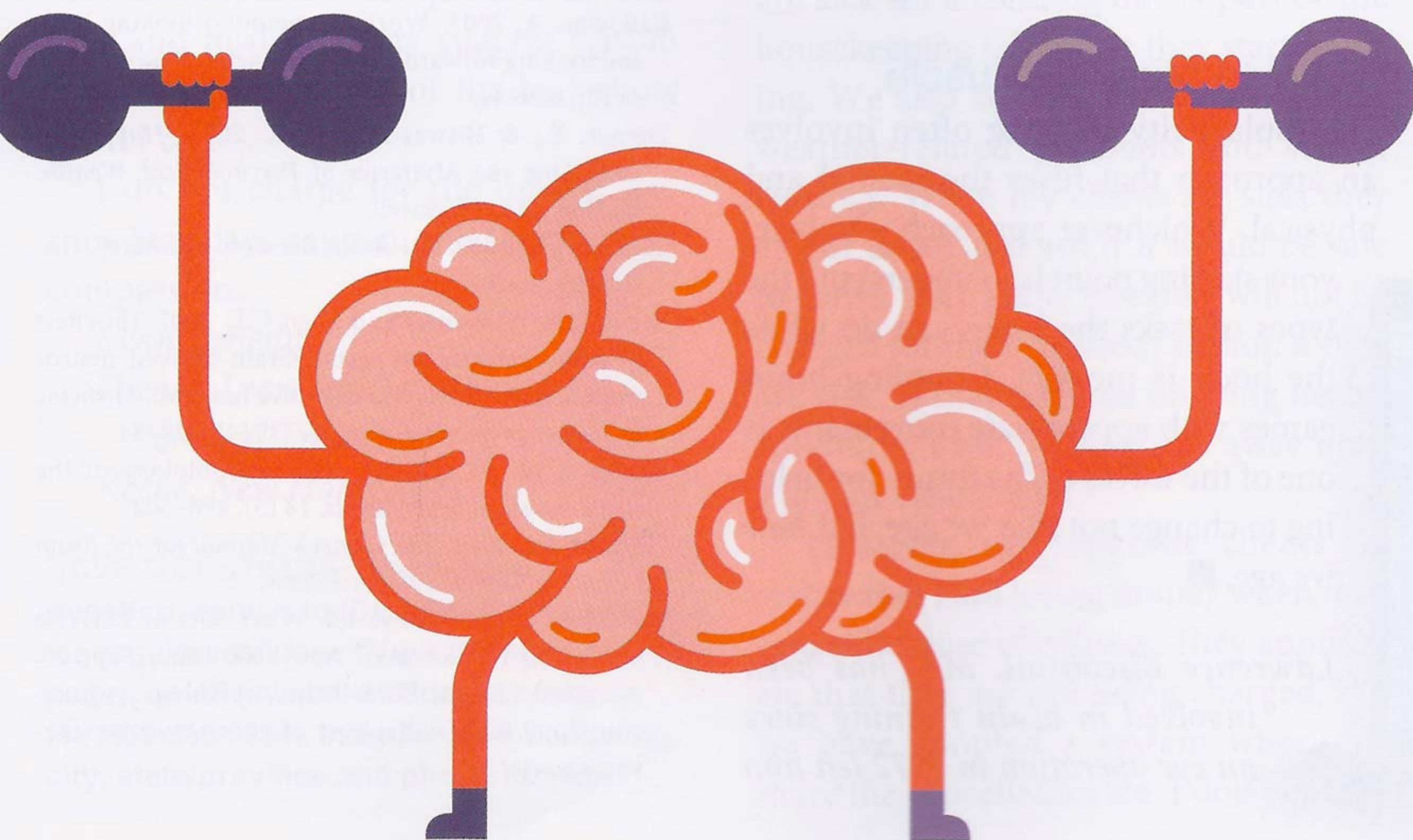
This exercise matches problem solving with spatial and language tasks for biological age training:

For a movement task with the right (or left) side of the body, recite the name of any fruit or vegetable. For a movement task with the left (or right) side of the body, recite any word in any other language. Remember to consider such commonplace words as *pizza*, *fajita*, *croissant*, *plaza*, *chaos* and *sushi* as pos-

sible answers for people who speak just one language.

For example, stand in place and lunge with the right leg (and return) while saying a fruit or vegetable, and then lunge with the left leg while saying a foreign-language word. Repeat this for up to 1 minute, alternating sides. As a regression, sit and extend the right-knee for the right-side tasks, and the left-knee for the left-knee tasks. >>

While your body is in motion, say your favorite color aloud. Spell it forward, then backward. How many letters does the word have? Does your telephone number contain that number? If yes, then say the section of your phone number that contains that number.



AGING AND THE BRAIN

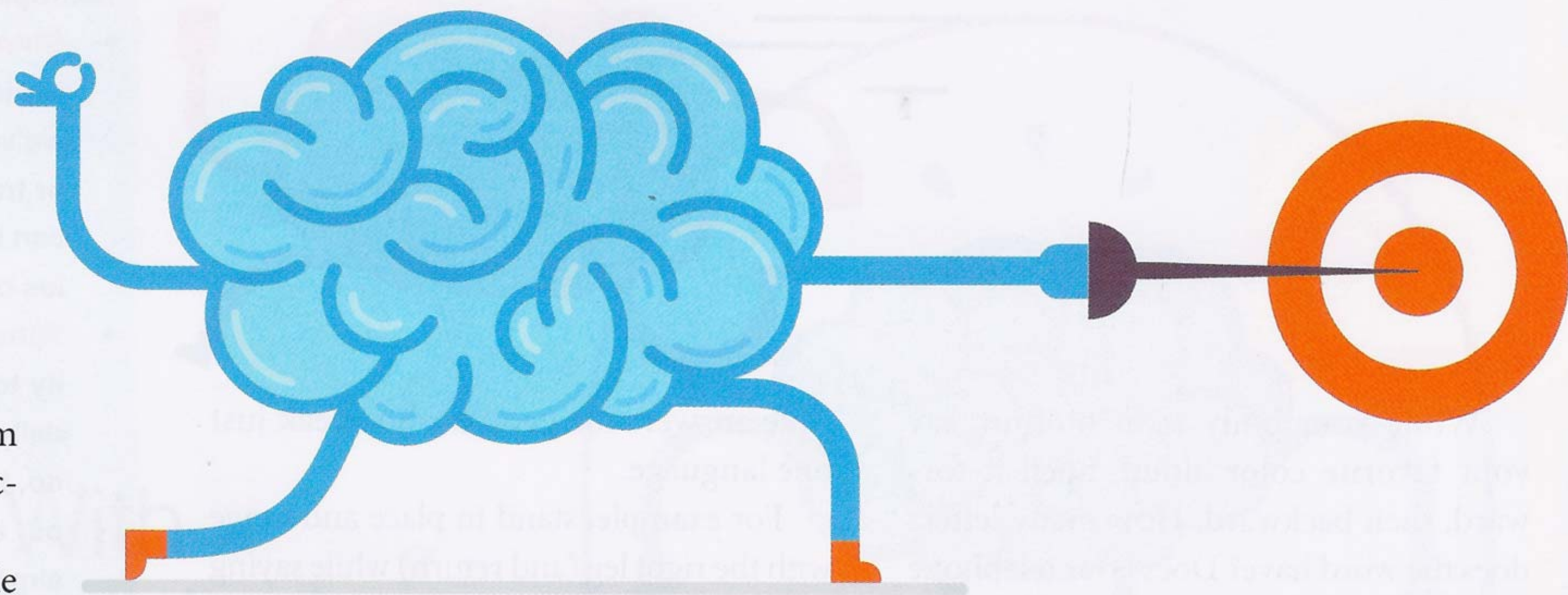
Experts point to five types of aging that can help us understand the concept of neuroplasticity:

- **Chronological age** is the most basic: It's the number of years we've been alive. We cannot change or train chronological age—but we can influence the other four varieties of age.
- **Functional age** represents our ability to accomplish the activities of daily life that we need and want to do, based on our demographic and our culture. Functional age training simply helps clients get better at performing these tasks.
- **Biological age** is how we compare with others who share our demographic and chronological age. Biological age training can address physiological issues, with goals such as reversing the effects of diabetes or reducing cholesterol or blood sugar levels.
- **Social age** is our ability to interact successfully with those in our cultural framework. Social age training involves working in small groups to accomplish task-dependent projects.
- **Psychological age** is our ability to use the brain's major functions to accomplish tasks that demonstrate independence and self-efficacy. Psychological age training adds neuroplasticity exercises that put various functions and sections of the brain to work (Bryant 2014).

The Two Sides of the Brain

When choosing exercises for functional, biological, social or psychological aging, we need to consider the major brain functions and the sections of the brain that control them:

- **Left.** The left side of the brain mostly controls speech, language, math, analytical skills, memories of names and words, and motor skills of the right side of the body.
- **Right.** The right side of the brain controls mostly creative skills (including problem solving), emotions, memories of images like faces, spatial zones and patterns of details, and motor skills of the left side of the body (Howard 2014).



Task 3: Solve It

This exercise combines problem solving with movement for functional age training:

Start with a puzzle. Example script: *We are going to organize a birthday party for a loved one. The theme of the party is red. To purchase everything we need for this party, we will go to two places, in order. Our first stop is a farmers' outdoor market selling only fruits and vegetables. Our second stop is a traditional grocery store selling other things, but no fruits or vegetables. What things can we purchase at our first stop? What things might we purchase at our second stop?*

Try to let the client(s) name at least five items for each of the two answers.

Task 4: "Walkie-Talkie"

This exercise works on memory and spatial skills for social age training:

March in place while holding the hand of a partner. The leader asks questions and guides the walk (or marches in place), changing directions as appropriate to create a physical and mental challenge. Questions should elicit a mixture of long- and short-term memory answers. After 3–5 minutes, change roles if appropriate. The goal here is to couple movement with verbal-dependent exercises. In addition to listening to the answers, use the client's breath

Coupling brain games with appropriate movements is one of the waves of the future for helping to change not *that* we age, but *how* we age.

during the response as a talk test to assess the effort level.

CONVERSATION EXAMPLES FOR "WALKIE-TALKIE"

One of you is "Friend A," and the other is "Friend 1." Friend A tells Friend 1 the last 4 digits of her phone number. Friend A then lets Friend 1 try the following games:

- Recite the digits you just heard.
- Recite the digits backward.
- Add up the digits, two at a time, and sum a grand total.
- Spell each digit forward.
- Spell each digit backward.

Repeat the above for up to 5 minutes, as appropriate, and then change roles.

Training Mind as Muscle

Neuroplasticity training often involves an approach that fuses the mental and physical. Whichever approach you take, your starting point is to understand the types of tasks the brain can do while the body is moving. Coupling brain games with appropriate movements is one of the waves of the future for helping to change not *that* we age, but *how* we age. ■

Lawrence Biscontini, MA, has been involved in brain training since an eye operation in 1972 left him

without sight for several months during recovery. As an advisory board member for the International Council on Active Aging and an "active ager" himself, he is dedicated to integrating current research into a practical approach that can keep our brains as young and sharp as possible. Contact him at www.findlawrence.com.

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Take the Quiz

www.ideafit.com/ifquiz or mail the quiz on page 75.

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Web Extra! This video explains the concept of neuroplasticity and shows how you start using it in your workouts right now. It features Bernadette C. O'Brien of Glenn Rock, New Jersey, our most chronologically enriched IDEA World presenter to date. WebExtra file: <http://bit.ly/IDEAWebExtrafindLawrenceNeuroplasticity>.