



## chapter summaries

### introduction

- Geroscience is the field of inquiry dedicated to studying how we age, what causes us to age, and how we can reduce the corrosive effects of aging.
- Aging is mostly due to the breakdown of our biological maintenance departments, our body's increasing inability to repair the day-to-day wear and tear adequately.
- Today, we humans are living much longer than we have for the majority of our existence. We are the only species capable of living past our prime.
- The human brain is so adaptable that it reacts to changes not only in its environment but also within itself. Your aging brain is capable of compensating for breakdowns in its own systems as you get older.

## CHAPTER 1

# your friendships

*Be a friend to others, and let others be a friend to you*

- Keep social groups vibrant and healthy; this actually boosts your cognitive abilities as you age.
- Stress-reducing, high-quality relationships, such as a good marriage, are particularly helpful for longevity.
- Cultivate relationships with younger generations. They help reduce stress, anxiety, and depression.
- Loneliness is the greatest risk factor for depression for the elderly. Excessive loneliness can cause brain damage.
- Dance, dance, dance. Benefits include exercise, social interactivity, and an increase in cognitive abilities.

## CHAPTER 2

# your happiness

*Cultivate an attitude of gratitude*

- Older people tend to score higher than younger people on clinical tests aimed at measuring happiness.
- The positivity effect is the phenomenon in which older people selectively pay much more attention to positive occurrences in their surroundings. They tend to remember these positive occurrences much more than negative ones.
- As you age and realize your own mortality, you tend to prize relationships above anything else. Prioritizing these relationships makes you happier. This phenomenon is called socioemotional selectivity theory.
- The risk of depression increases in seniors who face more health challenges—hearing loss, for example—than in healthy seniors.
- Optimism about one's own aging exerts measurable, positive effects on the brain.

## CHAPTER 3

# your stress

*Mindfulness not only soothes but improves*

- Stress is biologically intended to keep you out of danger. It is supposed to be a temporary state. Stay stressed too long, and it becomes damaging to your brain's systems.
- Strive to be positive about aging. If you feel young, your cognitive abilities improve.
- Practicing mindfulness consisting of contemplative exercises that ask you to focus your brain on the present, rather than the past or future, can both reduce stress and boost cognition.
- Improving your lifestyle choices needs to be a consistent and active part of your routine if you want to enjoy both physical and cognitive benefits as you age.

## CHAPTER 4

# your memory

*Remember, it's never too late to learn—or to teach*

- The brain's memory is like a laptop with thirty separate hard drives, each in charge of a specific type of memory.
- Some memory systems age better than others. Working memory (formerly short-term memory) can decline dramatically, causing forgetfulness. Episodic memory—stories of life events—also tends to decline.
- Procedural memory—for motor skills—remains stable during aging. Vocabulary increases with age.
- Learning a demanding skill is the most scientifically proven way to reduce age-related memory decline.

## CHAPTER 5

# your mind

*Train your brain with video games*

- Processing speed, the speed at which your brain takes in, processes, and reacts to outside stimuli, drops in the aging process. It is the greatest predictor of cognitive decline.
- Switching tasks becomes more difficult as you age. Consequently, it is easier to become distracted as you grow older.
- Specially designed video games like *NeuroRacer* have been shown to improve seniors' working-memory-with-distractions, working-memory-without-distractions, and Tests of Variables of Attention, beating twenty-year-olds who hadn't played the game.

## CHAPTER 6

# your mind: alzheimer's

*Look for 10 signs before asking, "Do I have Alzheimer's?"*

- Neuroscientists have a tough job teasing out typical, everyday aging from abnormal brain pathology. Just because you might show symptoms doesn't mean a pathology exists.
- Mild cognitive impairment is the term clinicians use to designate the beginning of brain pathologies. MCI doesn't mean seniors are necessarily on the path to dementia, Parkinson's, or Alzheimer's disease. Many seniors live long, happy lives with MCI.
- Dementia is a catchall term for a cluster of symptoms related to a loss of mental function. There are many age-related types.
- One in ten Americans over sixty-five lives with Alzheimer's. It is the most expensive disease to treat in the world. The average amount of time people live with an Alzheimer's diagnosis before they die is four to eight years.

## CHAPTER 7

# your food and exercise

*MIND your meals and get moving*

- Executive function—a suite of cognitive gadgets enabling emotional regulation and cognitive control—tends to fade with age, as the brain’s repair mechanisms break down.
- Greater physical activity means greater intellectual vigor (improvements in executive function) regardless of age.
- Though it is only 2 percent of your body’s weight, your brain consumes 20 percent of the calories you eat.
- Cutting caloric intake has been shown to reduce chemicals associated with age-wrecking inflammation, improve sleep and mood, and boost energy level—all findings associated with longer life.
- Diets rich in vegetables, nuts, olive oil, berries, fish, and whole grains (such as the Mediterranean diet or the MIND diet) have been shown to improve working memory and lower the risk of Alzheimer’s.

## CHAPTER 8

# your sleep

*For clear thinking, get enough (not too much) sleep*

- Scientists don’t actually know how much sleep you need per night. Nor do we fully understand why you need to sleep.
- The sleep cycle is born of a constant tension between hormones and brain regions vying to keep you awake, and hormones and brain regions trying to make you go to sleep. This is called opponent-process theory.
- Sleep, we are finding, doesn’t have as much to do with energy restoration as it does with processing memories and flushing out toxins in the brain.
- As you grow older, your sleep cycle becomes more fragmented, particularly the part of the cycle during which toxins are flushed out of the brain.
- Accruing good sleep habits by middle age (a stable sleep routine; no caffeine, alcohol, or nicotine six hours prior to

going to sleep) is the best way to avoid sleep-related cognitive decline in old age.

## CHAPTER 9

# your longevity

*You can't live forever, at least not yet*

- Aging is not a disease, rather a natural process. People don't die of old age; they die of biological processes that break down.
- Genetics is responsible for between 25 percent and 33 percent of the variance in life expectancy.
- The Hayflick limit is the threshold beyond which a cell can no longer divide, leading the cell to deterioration and, eventually, death.

## CHAPTER 10

# your retirement

*Never retire, and be sure to reminisce*

- People who retire from a job are at greater risk for physical and mental disabilities, including cardiovascular diseases, depression, and dementia.
- Nostalgia is good for you. People who regularly experience nostalgic stimuli are psychologically healthier than those who don't.
- Most seniors retrieve the clearest memories from their late teens/early twenties as well as from the most recent decade of their life.
- People who live in "Blue Zones," areas of the world where life expectancy is the longest, tend to be active, eat well, reduce stress, stay optimistic, and maintain a social life.