Artículo:

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RealAge: Are you as young as you can be?

And how simple it is to become someone who looks and feels younger than your years!

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PURPOSE

To describe a scale that can help put a value on health behavior choices.

To review the data from the last 18 years that demonstrate that more than 70% of arterial aging is preventable, more than 80% of cancer is due to one's environment, and more than 80% of accidents are not accidental.

SIGNIFICANCE

The metric or currency for healthy choices enables individuals to determine how long they wish to live and how healthy they want to be. It also serves as an index for perioperative risk.

GOAL

To get attendees to think about the value to length and quality of life of the health choices they make and to give them a means to motivate their patients to make healthy life choices.

OVERVIEW

1. Preventive gerontology: Aging and age related diseases are not inevitable.
2. RealAge: A metric or currency for functional or physiologic age.
3. Has age reduction been demonstrated?
4. There are habits that can retard or reverse aging.

AGING IS NOT INEVITABLE

Most data on perioperative outcomes indicate that age is one of the strongest predictors of morbidity after surgery. Functional decline is often associated with aging. We know that some of the physiologic changes are the result of calendar age. Some investigators have used the term "physiologic age" as an index of a patient's health status and risks.

We used to think that genes determined how long a person would live and when functional capabilities declined. That belief is wrong. The science of preventing aging, called preventive gerontology, has moved beyond that. The data, published largely in the last 18 years, indicate that more than 70% of heart disease, stroke, memory loss, impotency, decay in orgasm quality, and other complications of arterial aging are preventable; even that component of wrinkling of the skin associated with arterial aging ("the creased earlobe") is preventable; more than 80% of cancers are caused by the environment (where you live or work, what you eat, what your habits are —your voluntary choices and behaviors); and 80% of accidental deaths are preventable.

"So what, we have to die of something," you may say. True, but if your grandfather died at age 63 of heart disease, you do not have to die 63 calendar years after you were born. You can turn back the clock, in a sense, so that 63 calendar years after you were born, you could be 43 years old in what I call RealAge. Let me elaborate with an example.

What would you do if I gave you $100, no strings attached? Would you spend it or save it? Think of some of the things you could do with it. You could buy tickets to a pro-basketball game. Or a good pair of running shoes. You could go to that new restaurant that everyone is talking about. Or buy an armful of flowers for someone special. Maybe you would just treat yourself to a cappuccino every morning for a month. There are many things you could do with $100, but you could not buy a condominium or pay for a new car. You know exactly how far $100 goes. Because we can give some things a monetary value, we can compare spending a couple of hours watching hoops, owning a new pair of shoes, and paying the phone bill, and choose between them. With $100, we can either buy a pair of tickets or a pair of shoes, but not both. Money forces us to evaluate our choices.

I am not going to give you $100. Instead, I am going to give you something better: years. I am going to teach you how to add years to your life, quality, health-filled, vibrant years. I am going to show you how to live younger through a model that makes health decisions as easy to understand as what you can buy for $100.

The biggest problem with understanding health care decisions is that we have no common currency for medicine. We have no way of comparing health care decisions as diverse as buckling our seatbelts, exercising, or taking vitamins regularly. RealAge, however, presents a brand new model for thinking about health: age.

Whatever our background in medicine, there is a two-part question that interests all of us: How long will I live, and how healthy and vigorous will I be during my life? Whether the issue is to quit smoking, to exercise, or to wear sunscreen, the fundamental motivation for these actions is to ensure a longer, healthier life. Unfortunately, medical studies and news reports never make health issues that simple. RealAge unifies all health issues by determining exactly how they affect youth and vigor. Then through computer technology and statistical methodology, RealAge is able to interpret health risk as years of life. For example, think of a woman who looks 45 but is really 60 years old. Or remember how surprised you were to learn that a co-worker, who you thought was in his 50's, was actually 43 years old. When we say someone seems young for his age, we mean he has a mind and body as young and vibrant as someone much younger. The 60-year-old woman with a RealAge (a physiologic age) of 45 years has learned how to slow the pace of aging. The co-worker, on the other hand, has likely abused his body, causing it to age much faster than it should. Many similar examples can be found at any school reunion. Even though the alumni are approximately the same chronological age, some look, and no doubt feel, 10 or more years older than others.

RealAge measurements allow us to quantify the difference between our calendar age and our physiologic age. The RealAge program shows how simple it is to become someone who looks and feels younger than his years. We can slow the pace of aging and even reverse it. Getting younger can be relatively easy and painless. The idea is to feel more invigorated, energetic, and healthy. The goal is not only to live longer but to live younger.

RealAge establishes a measurement system to calculate the relative biological age of our bodies. With it someone can learn to evaluate health care decisions as diverse as getting an annual physical examination, buckling up a seatbelt, or jogging. Each action, as different as it appears from the other, directly impacts the health and longevity of a person's life.

Through RealAge we learn how to make choices. Healthy living involves multiple and highly varied decisions. Some of the decisions are easy, others a bit more difficult, but most of the changes that follow from the decisions are relatively painless. No one can do everything possible to get younger. But RealAge breaks health decisions down into steps that fit into our lifestyles. Then we can decide which aspects of healthy living affect us most. By quantifying our health decisions, RealAge gives us a standard for measuring their relative worth. It shows the impact in years that a decision can have and gives us the ability to make informed choices about our habits. Each of us can decide what matters, what is worth the effort, and what we can't change right now.

REALAGE: A METRIC FOR FUNCTIONAL OR PHYSIOLOGIC AGE

Age reduction —sound like a gimmick or a good title to attract someone to a lecture? Actually it is about the young science of preventive gerontology, and it is very real. The concept can dramatically change the way you think about and control your health. Gerontology is the science of aging and preventive gerontology is how to prevent aging— even turn it back.

A patient whom I saw preoperatively before femoral-popliteal reconstruction taught me the power of the RealAge concept. Simon Z had smoked for 28-30 years. His father died of a heart attack at the age of 57. No male in his family had lived past the calendar age of 57. After his father died, Simon Z began smoking cigars (he thought it safer than smoking cigarettes). He smoked about 20 cigars per day. He didn't inhale, he said, but if you took a ride in his big green Lincoln Continental in 1986, you would have had to inhale a dose of cigar smoke. He even resented the suggestion to open a window, because he recirculated the air in the car. His passengers were "smoking on the recycle system" in the Lincoln Continental. When Simon Z came to me as a patient, he could walk only a block and one-half on flat land before he had to stop because of leg pain. As someone who negotiated construction contracts and other deals for a large private shopping mall builder, Simon Z needed to walk. That walking limitation also hurt his exercise program. I told Simon Z that smoking made him six years older than his chronologic age, and considering the other details of his health history, he was probably eight years older than his chronologic age. Walking problems and smoking made a 49-year-old man 57 years old physiologically. I told him that if he stopped smoking immediately (I should have told him to sell the car too), by the time he was 57 calendar years of age, he would actually be 54 years old. Perhaps the reason his father and brothers had died before they reached the calendar age of 58 was that they were much older than 58 years in RealAge.

After undergoing an operation to aid circulation in his leg, Simon Z stopped smoking (two years later he also sold his big Lincoln). I will long remember the trip I made to California to celebrate his 58th birthday. He had made

it. In fact, rather than being 58, he was probably closer to 56 years in RealAge.

Simon Z and some of my other patients have learned the secret of RealAge. In Simon Z's case, change was not painless. In addition to quitting smoking, he exercised on a treadmill at 3.4 miles per hour at an incline of 12 degrees for a half-hour each day. By that effort alone, he was reducing his RealAge another 2.7 years.

In the past, age reduction was not a science. That is, Dean Ornish and others could say that certain behaviors increased one's risk for disease, but we did not have data that demonstrated that changing these factors retarded or reversed physical aging. We now know how to lower RealAge-the age at which your body functions. One of these data points for decreasing RealAge relates to smoking. If a 55-year-old male smokes two packs of cigarettes per day, his RealAge is eight years greater than that of someone who has never smoked. The physiologic depredation caused by smoking can be reversed if smoking is stopped soon enough.

The science behind the concept of RealAge is quite simple. Each of us ages because our arteries and our immune system age. That process also may be hastened by our genetic make-up. Let us use arterial aging as an example. A 51-year-old male may have arteries that allow him to live to 77 calendar years based on genetic make-up. But making a voluntary choice to do 3,500 KCal of physical activity a week, doing 30 minutes of resistance exercises a week, eating a little healthy fat first in the meal, eating food and supplements to total 400 μg of folate a day, 800 i.u. of vitamin E a day, and 1000 mg of vitamin C a day, eating five ounces of nuts a week, and taking 325 mg of aspirin a day, will reduce the aging of his arteries. Thus, by choosing these habits, the man may live to 81 calendar years. After ten years of these habits, the 51-year-old has reduced the age of his arteries by approximately 3.5 years, making his arteries like those of a 47.5-year-old male. Since arterial aging constitutes 40% of all aging, the man is 40% of 3.5 years, or 1.4 years younger.

In practice, we use a more sophisticated statistical program to account for co-variates, interactions, and the degree of aging or age regression that each choice, behavior, or habit contributes to the factors that age the body. The survival curves are called Kaplan-Meier curves. While the concept is important to understand, the actual working of the curves is not. What is true is that if my arteries are "younger," I am more vigorous. Healthy leg arteries are more important than calendar years in allowing me to run faster. If my brain and heart arteries are younger, I will maintain the intellect and ability to do physical activity. If my skin capillaries are younger, I have fewer wrinkles.

In 1987 we could not say with proof that taking aspirin (correct type and amount), fruit, or vitamins daily; eating breakfast; doing physical activities; being immunized; losing weight; controlling blood pressure; or having one alcoholic drink per night would decrease your age. But today we know that some choices can make your RealAge younger. Taking aspirin, eating nuts, stopping smoking, and performing physical activity are four choices that reduce physiologic age. There are others.

BEHAVIORS THAT MAY RETARD OR REVERSE AGING

1. Consume food containing vitamin C three times a day. Get more than 1200 mg a day of vitamin C in diet or supplements daily and consume at least 400 mg in any 12-hour period.
2. Consume 400 IU of vitamin E daily.
3. Consume 800 μg of folate (folic acid) daily in diet or supplement.
4. Consume food or supplements with 400 IU of vitamin D or expose your skin to 10 minutes of sun a day.
5. Take a B multivitamin every day. The multivitamin should not have iron and should have less than 5000 IU of vitamin A.
6. Do not take a supplement with more than 10,000 IU of vitamin A unless told to do so by your physician.
7. Do not take a supplement with iron in it unless told to do so by your physician.
8. Consume 6 mg of vitamin B6 a day in food or supplements. Getting the right amount of vitamins B6, C, D, E and folate in diet or supplements can make you 10 years younger.
9. Consume 1200 mg a day of calcium in diet or supplements. Calcium, flavinoids in vegetables, and 200 μg of selenium daily decrease your RealAge 0.6 years.
10. For men older than 40 yr and women older than 50 yr, take one 325-mg tablet of aspirin daily with a glass of warm water, after consulting with your doctor to determine whether you would benefit from such a regimen. An aspirin each night (for those who can take aspirin) makes your RealAge 1.9 years younger.
11. Take the medications prescribed by your doctor. Adhering to medication regimens prescribed by your doctor makes your RealAge 0.9 years younger.
12. Always tell your doctor and pharmacist about the medicines, pills, supplements, and herbs you take. Have your doctor check possible drug interactions before you add a new drug to your daily routine. Avoiding drug interactions makes your RealAge 0.7 years younger.
13. Get immunized.
14. Monitor your own health aggressively. Verifying whether your health is excellent, good, or fair (as opposed to feeling in poor health) makes your RealAge 12 years younger.

15. If you get a disease, do what is necessary to prevent that disease from causing chronic disability or aging you.

16. Find a physician to help you aggressively manage any chronic disease you may have. Several chronic diseases (diabetes, arthritis, asthma, liver disease, kidney disease, and heart disease) can make your RealAge 2 years older for each year the symptoms are untreated and the disease runs its course. Aggressive management can make your RealAge 0.75 years younger per year.

17. Know your blood pressure and keep it at or below 115/76 mmHg. Keeping your blood pressure at or below 115/76 (ideal for retarding aging) makes you more than 9 years younger than maintaining a blood pressure of 130/86, and more than 25 years younger than living with a blood pressure of 160/90 or greater. Reducing blood pressure from 130/86 to the ideal makes you 4.5 years younger in 6 months and the full 9 years younger in 3 years, if the reduction occurs before structural damage in the arteries. Blood pressure of 120-130/80-85 is considered normal but not ideal.

18. If postmenopausal, consider hormone replacement therapy.

19. Hormone replacement therapy that predictably makes a man's RealAge younger has not been scientifically proven. A strategy for reducing prostate aging can make the RealAge of a man 0.5 years younger.

20. Eat 10 helpings a week of tomatoes with olive oil, or tomato paste with a little oil.

21. Eat less than 10% (20 grams) saturated or trans fat (oils that are hardened by a process called hydrogenation) a day, but at least 10% mono- (olive oil, canola oil, omega 3 fish oils), and polyunsaturated fat (corn oil, soybean oil, safflower oil) a day. Eat a little healthy fat first in every meal. With proper eating habits you will be 27 years younger than if you ate the nutrient-poor, fat- and calorie-rich typical fast-food American diet.

22. Do what you can to reduce bad cholesterol (LDL) and increase good cholesterol (HDL) levels. HDL levels should be > 55 mg/dl and LDL levels <100 mg/dl. At the extremes, if a person with a low total cholesterol level of 175 mg/dl and an HDL (the good cholesterol) of > 55 mg/dl is compared to someone with a total cholesterol of 260 mg/dl and an HDL of 22 mg/dl, the first individual has a RealAge 16 years younger than the second.

23. Increase healthy cholesterol (HDL): stop smoking, lose weight if you are obese, exercise, consider taking statin drugs (pravastatin, lovastatin, simvastatin) to reduce cholesterol.

24. Eat a little healthy fat first in every meal.

25. Eat an age reduction breakfast.

26. Avoid all non-fruit snacks except nuts. Do not eat high-fat, high-calorie, nutrient-poor snack foods between meals.

27. Eat 4 fruits a day.

28. Eat 5 vegetable servings a day (a serving is the size of a pack of cards).

29. Eat fish three times a week.

30. Eat red meat once a week or less often.

31. Eat 25 grams of fiber a day.

32. Eat 1 ounce of nuts 5 times a week.

33. Avoid stress during meals and foods that make the middle of the hourglass wider: simple sugars, saturated and trans fats, red meat, and other empty calories.

34. Substitute olive or canola oil for two-thirds of the butter or margarine in recipes.

31. Floss daily and see a dental professional regularly.

32. See a dentist and dental hygienist every 6 months. Gingival and periodontal diseases cause aging of the immune and arterial systems. Compared to a 55-year old man free of periodontal disease, one with even non-bothersome periodontal diseases is 2 years older, and one with gingivitis is 4 years older.

33. If you are a man older than 40 yr, have 1-2 drinks a day; if you are a woman older than 40 yr, have 1/2 to 1 drink a day, providing there is no abuse potential or history of alcohol abuse in family. Alcohol (any type) can make the drinker 1.7 to 3 yr younger compared to an abstainer. Too much alcohol can make you 3.2 years older.

34. East less than or equal to what you use in caloric expenditure per week so that your body mass index is <23.

35. Reduce your weight gradually to what you weighed when you were 18 yr (women) or 21 yr (men) of age. There are three aging effects of obesity: your total weight, your weight now in relationship to your weight at age 18, and the weight lost or gained in any 5-year period. Together, these factors can make you 6 years younger or older.

36. Walk your dog, even if you do not have one.

37. Exercise enough to lower your resting heart rate below 66 beats per minute.

38. Burn 3500 kcal with physical activity a week (walking burns up about 5 kcal per minute).

39. Do 60 minutes of stamina building activity (something that makes you sweat or raises your heart rate >70% of maximum for age) per week.

40. Do 30 minutes of strength building and flexibility exercises a week.

41. Walk a minimum of 30 minutes a day for physical activities into your schedule. Physical activities burning 3500 kcal per week, 60 minutes of stamina activity per week, and 30 minutes of strength and flexibility exercises per week make your RealAge over 8 years younger.

42. Sleeping 8 hours (men) or 7 hours (women) a night makes you about 2 years younger.

43. Avoid tanning salons. Some sun (10-20 minutes every three days) makes your RealAge 0.9 years younger by producing active vitamin D. Wearing sunscreen for all additional exposures and avoiding tanning salons makes your RealAge 0.2 years younger.

44. Do not smoke or chew tobacco or be around people who do. Smoking one pack of cigarettes per day makes your RealAge over 8 years older than the non-smoker's. Stopping smoking makes your RealAge 1 year younger in 2 months and 7 years younger in 5 years.

45. Avoid passive smoke.

46. Do not accept a job with a pollution risk.

47. Do not live with a pollution risk.

48. Learn the pollution numbers of your potential living and work sites and work to live in the least polluted community. Pollution can be produced by fine (< 2.6 μm) or slightly larger (< 10 μm) particles, hydrocarbons, and sulfates in the air. Environmental pollution contaminates the inside as well as the outside of a workplace. Working in a pollution-free environment makes your RealAge 2.8 years younger.

49. Become well educated and continue your education. A college graduate who continues his education has a RealAge 2.5 years younger than the high school dropout.

50. Choose and keep a stable spouse who is well educated. If single, marry a well-educated person.

51. Practice safe sex. Risks for consenting adults who engage in casual sexual encounters are psychological stress and risk of infection(s) from sexually transmitted diseases that can increase the rate of aging. Avoiding casual sex with high-risk partners and using condoms correctly makes the RealAge of those having casual sex 5.5 to 6.2 years younger than it would otherwise be.

52. Practice a lot of safe sex. The more orgasms you have a year, the younger you are. The average number of orgasms for American men is 58 per year. Increasing the number through mutually monogamous or safe sex to 158 makes your RealAge at least 8 years younger than your calendar age.

53. Develop a group of friends to call upon during major life events.

54. Call frequently on friends who are experiencing a major life event.

55. Join and participate in a social group, be it an exercise group, church group, or community improvement group. Management of your stress and major life events by a support network or other stress reduction mechanisms reduces the aging effect of stress almost completely.

56. Learn to manage stress, reduce your stress level, and reframe stressful events.

57. Learn how to laugh at yourself. Laughter is a whole body experience that can turn pain into perceptions of joy. It opens lines of communication and reduces anxiety, tension, and stress. Laughter makes your immune system younger by 1.7 to 8 years.

58. Live below your income level. Financial stress can make your RealAge 2 to 3.2 years older.

59. Pay yourself first. Save the first 10% of your income every month.

60. Drive within 5 miles of the speed limit.

61. Do not drive after drinking alcohol or with anyone who has drunk alcohol or taken drugs. Accidents are one of the major causes of premature aging. Three major accident types that are largely preventable are motor vehicle accidents, home fires, and falls at home. Preventing accidents makes your RealAge 6 or more years younger.

62. Wear seat belts when you are in a car.

63. Drive a mid-size or larger car.

64. Do not use a cellular phone while driving. Your thought processes divert your attention from driving and make your RealAge 0.9 years older if you make 2 or more calls per day.

65. Use airbags unless you are an adult shorter than 5 feet 2 inches, are a child, or cannot sit further than 12 inches from the airbag.

66. Wear a helmet every time you ride on a bike.

67. Install and test smoke detectors for at least every floor and every bedroom in your home.

68. If you are older than 60 yr, review your home for potentially hazardous areas that may cause you to fall.

69. Identify your genetic risks and reduce them.

70. If your parents did not live past age 75 (or grandparents if your parents are not that old yet) choose an extra age-reduction strategy. Eating breakfast daily, avoiding unhealthful snacks, sleeping enough each night, and having long-lived parents makes you 5.7 years younger. If no first degree relative (parent, sibling) had breast, colon, or ovarian cancer, you are an additional 0.2 to 11 years younger than if your siblings or parents had those diagnoses.

Note Remember to consult a physician before starting or stopping any part of your age reduction plan. Calculations assume that each factor affects RealAge independently and is the only factor affecting RealAge. Use the RealAge program (www.RealAge.com) to determine the calculated effect of any one factor on your RealAge

Age reduction planning can make the RealAge of a 70-year old as much as 29 years younger. It sounds too good to be true, but that is what the data tell us. The first 5-8 years of an age reduction plan are relatively easy. After that, more effort is required. But at calendar age 70, isn't a RealAge of 41-44 yr worth some work?

Learn the major age reduction factors and choose to be younger. Eight factors for men and 9 for women can each make RealAge 8 or more years younger or older: aggressively controlling blood pressure and stress; increasing your social network; stopping or never starting smoking; eating a nutrient-rich, fat-poor, calorie-poor diet; performing three types of physical activity regularly; aggressively managing disease; identifying your genetic risks and reducing them; patrolling your health; and for postmenopausal women, working with your doctor to find an appropriate and comfortable hormone replacement regimen. Combined, these factors can make your RealAge as much as 25 years younger.

RealAge and Age Reduction are service marks registered by one of Dr. Roizen's patients. The patient has formed a corporation to provide software to allow patients and physicians to calculate their RealAge (www.realage.com). Dr. Roizen is a paid consultant of and holds an equity interest in that corporation.

Thus, the scientists who study how voluntary choices and habits affect our quality and longevity have in the last 12 years presented data that show we can actually live healthier (as if we were 10 years younger). These data form the basis of preventive gerontology, the science of preventing aging.

Are the concepts of RealAge and age reduction gimmicks? I don't think so. RealAge is a measure that can integrate our health and health practices into a number as easy to understand as our weight. RealAge can motivate us and let us know how we are doing at preventing the aging of our body's key physiologic systems. Do remember one caveat: most of the studies in this area are risk factor epidemiologic studies, not controlled trials.

In 1850, an article on the cause of malaria appeared in the Boston Medical and Surgical Journal. The anonymous author referred to earlier reports that "those who slept under mosquito nets escaped the disease" and that "gauze screen in the windows adds much to the security of the occupant of a chamber." This report was used to support the hypothesis that the nets and screens provided a mechanical barrier to the "spores" that caused malaria. It was not until 1898 that Ronald Ross discovered that the nets and gauze were preventing attacks from a parasite transmitted by mosquitoes.

Most of the studies that were sources for the health behaviors described above are risk factor epidemiologic studies, not controlled trials. Thus, although risk factor epidemiologic studies support taking aspirin, exercising, and consuming the vitamins in fruit as important items in a person's preventive gerontology armamentarium, the studies do not tell us why these recommendations work.

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