What is Longevity?

Healthy biological aging and longevity involve not only extending an individual's lifespan but also improving health and quality of life while aging. Both genetic and environmental factors, such as diet and lifestyle, are believed to be involved in the process of biological aging. Age-related chronic diseases include cardiovascular diseases (e.g., heart disease and stroke), cancer, type 2 diabetes, and neurodegenerative diseases (e.g., Alzheimer's disease and Parkinson's disease). These chronic conditions are among the leading causes of mortality and contribute to a reduced quality of life. Fortunately, modifiable lifestyle habits can help prevent chronic disease and improve longevity.

Causes and risk factors of chronic disease

The table below lists examples of causes and risk factors for age-associated chronic diseases.

Uncontrollable risk factors	Controllable risk factors
Genetic predisposition Urban pollution Exposure to pesticides Early malnutrition Delayed physical growth during childhood	Sedentary lifestyle Tobacco use Excessive calorie intake Excessive salt intake Excessive protein intake Excessive alcohol intake Obesity Abdominal adiposity

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Diet and Longevity

The table below summarizes longevity-promoting nutrients and the food sources in which they are found.

Nutrient	Function	Sources
Coenzyme Q10 (CoQ10)	Supports cardiovascular health by reducing inflammatory markers and oxidative stress	Organ meats (heart, liver, kidney), beef, pork, oily fish (e.g., trout, herring, sardines), spinach, cauliflower, broccoli, oranges
Omega-3 fatty acids	Anti-inflammatory; intake reduces the risk of chronic conditions (e.g., breast cancer, cardiovascular disease, bone loss, etc.)	Oily fish (e.g., herring, sardines, mackerel, anchovy, salmon, cod)
Prebiotics	Fermented by gut microbiota to produce protective short-chain fatty acids; promote beneficial bacteria and bacterial diversity linked to overall health and longevity	Leeks, garlic, onions, asparagus, Jerusalem artichokes, chicory, oats, wheat, soybeans
B vitamins	Required to metabolize homocysteine, a biomarker of aging and disease	Liver, eggs, tuna, lamb, legumes, brown rice, nutritional yeast, milk, yogurt
Resveratrol	Antioxidant and anti-inflammatory; inhibits glycation associated with cellular damage	Grapes, red wine, grape juice, berries, peanuts

Lifestyle and Longevity

Lifestyle factors, such as regular physical activity, moderate alcohol consumption, and a healthy diet, may reduce morbidity and mortality risk. Cessation of smoking reduces the risk of death from cancer, coronary heart disease, and chronic obstructive pulmonary disease. In overweight and obese individuals, weight loss of five to ten percent improves the metabolic risk factors involved in type 2 diabetes, cancer, and cardiovascular disease.

A dietary approach known as calorie restriction (CR) has been shown to promote longevity by improving cardiometabolic risk factors and promoting weight loss. CR involves reducing caloric intake by 20-40% while meeting nutrient requirements. For more information, consult the Fullscript handouts on the Calorie-Restricted Diet and Intermittent Fasting.

Cognitive function in aging can be impacted by socializing, sleep, and physical activity. Research in older adults has shown that social activity such as conversation and physical activity such as moderate walking may protect against cognitive decline. Additionally, regular sleep-wake schedules have been associated with increased longevity and may prevent age-related diseases.