





VALTER LONGO FOUNDATION

FASTING AND LONGEVITY

Nourishing the Body for a Long and Healthy Life The information provided here is intended for general knowledge only and is in no way a substitute for professional medical advice or treatment for specific medical conditions. Do not use this information to diagnose or treat a health problem or disease without consulting a qualified healthcare provider. Please consult your healthcare provider with any questions or concerns you may have regarding your condition.

The contents present in the booklet "Fasting and Longevity. Nourishing the Body for a Long and Healthy Life" are owned by the Valter Longo Foundation. They cannot be copied, reproduced, published or redistributed because they belong to the author himself, unless after affirmative written authorization to the request for use. Copying and reproduction of the contents in any manner or form is prohibited. For use in its entirety, you are kindly requested to send a request to: educazione@fondazionevalterlongo. org.

Copyright © 2024 – Fondazione Valter Longo. (All rights reserved)

Cover by Manuela Lupis

Our mission is to offer everyone the opportunity for a long and healthy life

Valter Longo Foundation

TABLE OF CONTENTS

FOREWORD	9
INTRODUCTION	11
FASTING IN NATURE	13
FASTING IN RELIGIONS	15
AGING, DISEASES AND THE ROLE OF FASTING	17
The Study of Youth	18
Programmed Longevity	19
Scientific Research on Aging	19
The Molecular Strategy to Extend Healthy Life	20
Intervening Directly on Aging	21
How Nutrients Affect Metabolism	22
What to Eat (and What Not to Eat) for a Long and Healthy Life	23
CALORIE RESTRICTION AND FASTING	27
Some Clinical Studies on Calorie Restriction	29
Fasting	32
Mechanisms Underlying Calorie Restriction and Fasting	33
What Occurs During Fasting	34
Which is Better, Calorie Restriction or Fasting?	37
FASTING AND HEALTH TODAY	39
Fasting 5:2	39
Alternate Day Fasting	40

24-hour Fast	40
Time-Restricted Eating	40
16-hour Intermittent Fasting	42
12-hour Intermittent Fasting	43
Other Forms of Intermittent Fasting	43
The Risks Associated with Skipping Breakfast	44
Therapeutic Fasting	46
THE FASTING-MIMICKING DIET	49
Fasting-Mimicking Diet	49
Scientific Basis of the Fasting-Mimicking Diet	50
The Fasting-Mimicking Diet: Preclinical Studies	51
The Fasting-Mimicking Diet: Clinical Studies	52
The Beneficial Effects of the Fasting-Mimicking Diet	53
The Fasting-Mimicking Diet: Possible Side Effects	54
How to Prepare for the Fasting-Mimicking Diet	55
Physical Exercise During the Fasting-Mimicking Diet	55
Refeeding After the Fasting-Mimicking Diet	55
Considerations for Those Interested in the Fasting-Mimicking Diet	56
Frequency of the Fasting-Mimicking Diet	56
FASTING AND NEURODEGENERATIVE DISEASES	59
Preclinical Studies	59
Recent Clinical Studies	60
Limitations of Clinical Trials	61
FASTING AND AUTOIMMUNITY	63
Multiple Sclerosis: Preclinical Studies	65
Multiple Sclerosis: Clinical Studies	66
Type 1 Diabetes	67
Type 1 Diabetes and Fasting: Current Studies	68

FASTING AND CANCER	71
The Warburg Effect: What Differentiates Tumor Cells From Healthy Ones	71
Differential Resistance to Stress	72
Not Only Fasting	73
The Role of Proteins	74
Fasting and Cancer: Preclinical Studies	76
Fasting and Cancer: Clinical Studies	77
Fasting and Cancer: Conclusion	81
FASTING AND DIABETES	83
What Is Diabetes?	83
Dietary Strategies for the Prevention and Control of Type 2 Diabetes	84
Fasting-Mimicking Diet and Diabetes: Preclinical Studies	85
Fasting-Mimicking Diet and Diabetes: Clinical Studies	85
FASTING AND CARDIOVASCULAR DISEASES	89
The Prevention of Cardiovascular Diseases in Animal Models: The Example of Monkeys	89
Clinical Studies on Calorie Restriction and Risk Factors for Cardiovascular Diseases	91
The Fasting-Mimicking Diet and Cardiovascular Diseases: Preclinical Studies	92
The Fasting-mimicking Diet and Cardiovascular Diseases: Clinical Trials, Prevention and Therapy	94
CONCLUSIONS: PRACTICAL ADVICE	97
The Pillars of Longevity	97
Consume Proteins in Moderate Quantity	98
Keep Blood Sugar Levels Moderate	99
Fats	99

Number of Meals	99
Mealtime Restriction	100
Fasting-Mimicking Diet Cycles	100
Fasting and the Valter Longo Foundation	100
APPENDIX Disclaimer - To Animal Rights Activists	103
ACKNOWLEDGEMENTS	105
NOTES AND BIBLIOGRAPHY	107

FOREWORD

The Valter Longo Foundation was founded in Italy in 2017 by Professor Valter Longo, Ph.D, Director of the Longevity Institute of the School of Gerontology at the University of Southern California (USC) in Los Angeles and Director of the Oncology and Longevity Program at the IFOM in Milan, Italy. Professor Longo was included by the American magazine "Time" in the list of the 50 most influential people of 2018 in the health sector and is known throughout the world for the creation of the "fasting-mimicking diet" and for his world-wide bestseller "The Longevity Diet". In 2021 the American scientific magazine "Science" described him as a pioneer in the field of nutrition and cancer.

The Valter Longo Foundation is a non-profit organization that aims to promote, implement, and optimize healthy and sustainable longevity for oneself, for others, and for the environment. This path towards longevity and health begins in childhood and continues throughout the entire life cycle, in order to create a correct lifestyle and be able to live in the best way possible so as to prevent various types of serious diseases, including tumors, diabetes, obesity, cardiovascular diseases, autoimmune diseases such as Crohn's disease, and neurodegenerative diseases such as Alzheimer's.

The mission of its founder and of the Foundation is to offer everyone without distinction the opportunity for a long and healthy life. To achieve its institutional goals, the Foundation dedicates its daily efforts from both a preventive and therapeutic point of view to:

• The promotion, financing and direct and immediate provision of health and social assistance and nutritional consultancy, based on certain scientific data. This aims to treat, prevent, or support people suffering from various pathologies and living in a particular emergency condition or experiencing psychological, physical, and economic distress. Additionally, it offers guidance to all those who wish to pursue healthy longevity. Raising awareness and educating the public of all ages on issues related to nutrition and a balanced and healthy lifestyle based on scientific data.

The book "Fasting and Longevity. Nourishing the Body for A Long and Healthy Life" was born from the desire to educate and raise awareness about aging, longevity, nutrition, prevention, and treatment of diseases. It provides valuable, useful, and practical information, along with concrete tools to empower individuals in making informed choices and living a long and healthy life.

This book pursues this goal, and the modest requested contribution will support the Valter Longo Foundation and its free programs. These programs benefit all of us, including patients facing critical health and financial conditions, schools, children, young people, families, teachers, centers for people with disabilities, and those in the third and fourth age. Additionally, the foundation extends its support to women embarking on a path to escape violence.

We thank you for your contribution and kindly ask for your continued support by following our activities and sharing them. Together, we strive to fulfill our mission of offering everyone the opportunity for a long and healthy life. "Help us help". Thank you!

Valter Longo Foundation

INTRODUCTION

Fasting represents an ancient practice that involves the voluntary renunciation of food intake for a specific period of time. This tradition has deep cultural, religious, and therapeutic roots in many areas of the world and can vary in terms of purposes, duration, and methods. Indeed, throughout history, fasting has been and continues to be adopted for a variety of reasons including spiritual reasons, improved health, weight control, exercise of self-discipline, and even for medical treatments in certain circumstances.

From a religious perspective, fasting is often associated with periods of purification, reflection, and devotion. Many religions including Islam, Christianity, Judaism, Buddhism, and Hinduism include fasting as an integral part of their ritual practices in different forms.

In addition to its religious significance, fasting has sparked interest for its potential health benefits.

Periodic fasting, for example, can contribute to:

- improving metabolism, that is, the set of biochemical reactions that produce the necessary energy and that allow our organism to function in such a way that the organism can grow and renew itself;
- promoting weight loss;
- increasing sensitivity to insulin, a hormone produced by the pancreas that lowers glucose (sugar) levels in the blood as it allows glucose to enter the cells where it is used to obtain energy;
- offering support in the prevention and treatment of chronic diseases such as, for example, diabetes, cancer, and cardiovascular diseases.

Currently, the significant interesting surrounding fasting is focused on its ability to slow aging in most species and to protect against various diseases, including neurodegenerative diseases,

metabolic disorders, and cancer.

However, experts' opinions on this topic sometimes vary. Therefore, the practice of fasting should be approached with caution, especially in cases of pre-existing health problems. It is, in fact, important to note that fasting is not suitable for everyone, and that people should take into consideration their individual situation, medical conditions and consult a health professional before undertaking any type of fasting.

The purpose of this book is precisely to offer a compendium and a point of reference for the general public. The objective is to define the various protocols about food restrictions and fasting, describing in detail the molecular, cellular, and metabolic mechanisms that come into play. Furthermore, on the basis of the most upto-date scientific articles and through clinical experience with the patients of the Valter Longo Foundation, also thanks to the direct training of professionals by Professor Longo, the different nutritional approaches are described, as applied to the various pathologies related to aging, such as cancer, diabetes, cardiovascular, autoimmune, and neurodegenerative diseases.

In summary, fasting is a complex topic that encompasses cultural, religious, health, and self-discipline aspects. Its rich history and multiple facets make it a topic of interest and debate in many communities and fields. For this reason, the Valter Longo Foundation has dedicated this new book in the "Nutrition, Health and Longevity" series to this fascinating and interesting topic for our health.

"FASTING AND LONGEVITY" - "NUTRITION, HEALTH AND LONGEVITY" SERIES

The series of informative books "Nutrition, Health, and Longevity" is enriched with a new book dedicated to fasting, an ancient and at the same time modern practice, to its power as a prevention tool for many diseases and as a support for standard therapies for those who suffer from many non-communicable diseases. This new book and the entire series stem from the desire to educate and raise awareness about healthy eating, physical exercise, and a balanced lifestyle. The aim is to bring scientific research data related to aging, longevity, nutrition, prevention, and treatment of diseases "from laboratory to plate" by entering homes and schools, among children, teenagers, adults, and older adults to offer useful and practical information and concrete tools to make informed choices and live a long and healthy life.

The books of the series:

- 1. Vitamins
- 2. Longevity News 1: Nutrition and Diseases
- 3. Recipes and Menus
- 4. Places of Longevity, Happiness, and the Foundation
- Minerals
- 6. Longevity News 2: Exercise, Lifestyle, and Environment

With the addition of:

7. Fasting and Longevity. Nourishing the Body for a Long and Healthy Life

VALTER LONGO FOUNDATION

The Valter Longo Foundation is a non-profit organization created to **optimize healthy and sustainable longevity**, which begins as early as childhood and continues throughout the entire life cycle. Our goal is to **promote a healthy lifestyle and balanced eating habits** to slow down and help counteract the onset of age-related and non-communicable diseases such as cancer, diabetes, obesity, cardiovascular, autoimmune, and neurodegenerative diseases. The Foundation's mission is to offer **everyone the opportunity for a long and healthy life**, with a particular focus on providing support to those suffering from illnesses and in a critical financial situation (www.fondazionevalterlongo.org).



Proceeds are donated to research and non-profit projects of the Valter Longo Foundation

