University of Groningen

Eating for science

Willems, Anouk Elise Maria

DOI:
[10.33612/diss.198349809](https://doi.org/10.33612/diss.198349809)

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Publisher's PDF, also known as Version of record

Publication date:
2022

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Willems, A. E. M. (2022). *Eating for science: The effect of lifestyle on prevention of non-communicable diseases*. [Thesis fully internal (DIV), University of Groningen]. University of Groningen.
<https://doi.org/10.33612/diss.198349809>

Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

The publication may also be distributed here under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license. More information can be found on the University of Groningen website: <https://www.rug.nl/library/open-access/self-archiving-pure/taverne-amendment>.

Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

Eating for Science

The effect of lifestyle on prevention
of non-communicable diseases

Anouk Willems

The work described in this thesis was conducted in the Behavioural Neurobiology department at the Groningen Institute for Evolutionary Life Sciences (GELIFES) at the University of Groningen, The Netherlands, and at the Applied Research Centre Food & Dairy at Van Hall Larenstein, University of Applied Sciences in Leeuwarden, The Netherlands.

Cover:	Zeefdrukstudio Corvo	www.zeefdrukstudiocorvo.nl
Lay-out & design:	Anouk Willems & Zeefdrukstudio Corvo	
Printing:	Ridderprint	www.ridderprint.nl

This research was funded by Van Hall Larenstein University of Applied Sciences, University Medical Centre Groningen, Centre of Expertise Food, MyMicroZoo, aXtion, and Hessing Supervers.

Printing of this thesis was supported by the Graduate School of Science and Engineering (GSSE) and the University of Groningen.

university of
 groningen

Eating for Science

The effect of lifestyle on prevention of non-communicable diseases

PhD thesis

to obtain the degree of PhD at the
University of Groningen
on the authority of the
Rector Magnificus Prof. C. Wijmenga
and in accordance with
the decision by the College of Deans.

This thesis will be defended in public on

Tuesday 25 January 2022 at 16.15 hours

by

Anouk Elise Maria Willems

born on 11 February 1992
in Breda

Promotores

Prof. dr. G. van Dijk

Dr. A.P. van Beek

Co-promotor

Dr. M. Sura-de Jong

Assessment Committee

Prof. dr. G.J. Navis

Prof. dr. H. Pijl

Prof. dr. A.A.M. Masclee

Contents

Chapter 1	7	General introduction
Chapter 2	27	Effects of macronutrient intake in obesity: a meta-analysis of low-carbohydrate and low-fat diets on markers of the metabolic syndrome
Chapter 3	57	Self-initiated dietary changes reduce general somatic and mental symptoms in a relatively healthy population
Chapter 4	81	Diet-induced improvement in perceived health is associated with changes in gut <i>Ruminococcus</i> and <i>Eubacterium</i>
Chapter 5	107	Blue Zone Bakkeveen: A case study of education on a long-term community-based lifestyle intervention
Chapter 6	125	Irregular shift work reduces resting metabolic rate: A Pilot Study
Chapter 7	139	General discussion
Appendix I	163	Nederlandse samenvatting voor de geïnteresseerde leek
Appendix II	169	English summary
Appendix III	175	Dankwoord
Appendix IV	181	About the author