EMGO+ in 2011
Annual Report

Health Care

LIFESTYLE, OVERWEIGHT AND DIABETES
MENTAL HEALTH
QUALITY OF CARE
MUSCULOSKELETAL HEALTH
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The EMGO Institute for Health and Care Research is going strong. This annual report indicates that 2011 accounted for even higher output in terms of peer-reviewed publications than the year before. However, when looking at our funding acquisition one sees a slightly different picture with a reduction in our external funding compared to 2010 to the level before that year. It cannot be ruled out that we are beginning to feel the consequences of the current poor financial climate. However, we are confident that we will be able to acquire sufficient external funding in the years to come, for instance through the funding programmes of the European Commission.

In this annual report we present with pride and pleasure the core information about who we are, what we do, what we strive for, and what we have accomplished. You will find information about the highlights of our research programs, our ongoing and newly started longitudinal studies, our academic collaborative centers, our quality control system, and our scientific and societal achievements. In addition, information about our institute’s inputs and outputs in terms of organization, projects, staff, grants, publications, citations, doctoral theses, societal impact, trends and so forth is readily available at http://www.emgo.nl/annual-report.

Yours sincerely,

on behalf of the EMGO Institute for Health and Care Research,

Prof. Johannes Brug, PhD
Director

Prof. Pim Cuijpers, PhD
Vice-director

Prof. Willem van Mechelen, MD, PhD
Vice-director
two

OVERVIEW

Introduction
The EMGO Institute for Health and Care Research (EMGO+) is an ‘interfaculty’ research institute. It brings together researchers from departments of three faculties, i.e. from the VU University Medical Center, and the VU University faculties of Psychology and Education, and Earth and Life Sciences. The aim of the institute is to further improve public and occupational health, mental health, primary care, rehabilitation and long-term care, by means of trans-disciplinary research. This 2011 annual report shows that EMGO+ is doing well.

In this first chapter, we present our mission, goals and strategy. Thereafter, separate chapters will report on the organization and achievements of our four research programs, EMGO+’s scientific output and societal impact, EMGO+’s committees that help us to ensure good quality control and strategic planning, our financial status and a list of our scientific publications.

Mission
The EMGO+ mission is to encourage, initiate, conduct and publish excellent research of international standing to improve public and occupational health, primary care, rehabilitation and long-term care.

Objectives
More specifically, by fulfilling its mission EMGO+ is aiming to contribute to improving evidence-based:
- public and occupational health;
- primary health care;
- mental health care;
- rehabilitation practice;
- long-term health and health care.

In these fields the institute aims to contribute to:
- strengthening the evidence-base for current ongoing practices;
- innovation of practice;
- innovation of relevant research methodology;
- provide input and direction for education and training for researchers and practitioners.
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OVERVIEW

Our aim is thus to perform translational and trans-disciplinary research of both high scientific quality and societal relevance. Research projects carried out at EMGO+ mainly have health outcomes or health determinants as primary endpoints of interest. The research is embedded in four research programs that link to main burdens of disease in the Netherlands, as well as internationally:

1. Lifestyle, Overweight and Diabetes (LOD)
2. Mental Health (MH)
3. Quality of Care (QofC)
4. Musculoskeletal Health (MSH)

EMGO+ focuses on applied and strategic research involving issues that are relevant for public and occupational health, mental health, primary care, rehabilitation, and long-term care. Many studies are either executed within large population-based cohorts or in public health and extramural medical practice settings, such as general practices, nursing homes, in specialized mental health care organizations, homes for the elderly, schools, worksites, occupational health care settings and in outpatient services. These latter studies are often conducted within so-called Academic Collaborative Centers, i.e. formal collaborations between EMGO+ and practice settings to conduct practice-based research of strong methodological rigor, in order to promote and enable evidence-based practice. Such studies include observational research and intervention studies.

Operation

EMGO+ is one of five research institutes primarily embedded within the VU University Medical Center (VUmc). The organizational structure is depicted in annex 1 of this report. EMGO+ hosts investigators based in research groups and departments of VUmc, the VU University Amsterdam and affiliated organizations. All research projects are grouped in one of our four research programs, each led by two program directors:

1. Lifestyle, Overweight and Diabetes
2. Mental Health
3. Quality of Care
4. Musculoskeletal Health

EMGO+ only accepts and supports research studies that fit within one of these programs, and that have rigorous methodology and adequate financial support. A quality insurance and control system involving an internal Science Committee, a quality handbook supported by an internal Quality Committee, and an external Advisory Board help us to stick to our standards. Studies that are embedded within EMGO+ are supervised by a full professor and advised by at least one other senior tenured staff member. All these studies are guided and supported by a formal research quality control infrastructure.
We conduct a self-evaluation every three years to reflect on the institute's strengths, weaknesses, opportunities and threats, to monitor trends in input and outputs of the institute, in order to inform new policy plans. Every six years EMGO+ undergoes an external evaluation, in line with the Standard Evaluation Protocol of the Netherlands Academy of Arts and Sciences. In 2010 EMGO+ was evaluated for the 2004-2009 period, covering the institute's transition to its present interfaculty organization. EMGO+ was rated as excellent. The institute as a whole as well as our four research programs were all rated as ‘excellent’, i.e. we received the best possible score. The 2004-2009 self evaluation report with its annexes and the external evaluation report are all available via our website.

**SWOT analysis**

The EMGO Institute for Health and Care Research puts much emphasis on the internal quality assurance and promotion efforts, primarily conducted by our standing committees, and on the research infrastructure consisting of research methodology and data management support, maintaining large scale longitudinal cohort studies as well as Academic Collaborative Centers to ensure and promote practiced based research. A full analysis of EMGO+’s strengths, weaknesses, opportunities and threats is depicted in annex 2 of this report.
PREFACE

Giel Nijpels

Marjolein Visser
Program directors: Prof. Giel Nijpels, MD, PhD and Prof. Marjolein Visser, PhD

Mission
Overweight and diabetes are two of the main public health problems of our society and are strongly linked to common lifestyle determinants such as physical inactivity and poor dietary habits. This research program is aiming to curb the obesity and diabetes epidemics by identification of the primary lifestyle and biological determinants and by evaluation of efficient ways to improve lifestyle in the context of chronic disease management.

Specific research themes

1. Patho-physiology of overweight and diabetes.
This theme includes the study of biological, genetic and behavioral determinants of overweight and diabetes and their potential interrelations.

Research within this theme aims to modify unhealthy lifestyles with a particular emphasis on improving dietary intake and promoting or increasing physical activity. This research is conducted in a variety of settings, including communities, schools and workplaces.

3. Care of patients with overweight and diabetes.
This theme studies the effectiveness and efficiency of healthcare aimed at chronic disease management of obesity and type 2 diabetes.

These themes are studied in children, adults and the elderly population.

Rationale and focus
Physical inactivity and overweight are two important factors contributing to the development of diabetes and cardiovascular disease. The program Lifestyle, Overweight and Diabetes combines the expertise of the pathophysiology and epidemiology of metabolic and cardiovascular abnormalities, expertise and practical experience of diabetes, prevention programs and the development of health care.
Future perspectives
The prevalence of obesity has risen over the last decades, and incidence and prevalence of type 2 diabetes is still on the rise, in the Netherlands as well as abroad. Further curbing these epidemics requires better insight in their biological, including genetic and behavioural determinants as well as environmental determinants and their interactions and interrelations. Furthermore, there is still a lack of evidence-based prevention schemes and the growing number of patients asks for evidence based chronic disease management interventions, including self-management schemes. For the coming years our research efforts will focus on gaining further insight in the causal pathways, effective lifestyle interventions to contribute to prevention, and on improving chronic disease management.
HIGHLIGHTS 2011
An example project
The DRINK study

The title of the study is: Effect of sugar-sweetened beverages on body weight in children: design and baseline characteristics of the Double-blind, Randomized INtervention study in Kids. The DRINK study. JC de Ruyter, MR Olthof, LDJ Kuijper, MB Katan.

The aim of this study is to examine the effect on body weight of covertly replacing sugar-sweetened by sugar-free beverages. Therefore the Double-blind, Randomized INtervention study in Kids (DRINK) was designed. Children were only eligible if they habitually drank sugar-sweetened beverages. For this study 642 healthy children (mean age 8.2) were recruited. Custom-made beverages containing 10% sugar and sugar-free beverages with the same sweet taste and look was designed, tested and produced. Children receive one 250 mL can of study beverage daily for 18 months. The primary outcome is the z-score of BMI for age. If children gain less body fat when drinking sugar-free than when drinking sugar-sweetened beverages that would show that liquid sugar indeed bypasses biological satiation mechanisms. It would also suggest that a reduction in liquid sugars could decrease bodyfat more effectively than reduction of other calorie sources.

A paper of importance
The Evaluation of Screening and Early Detection Strategies for Type 2 Diabetes and Impaired Glucose Tolerance (DETECT-2) update of the Finnish diabetes risk score for prediction of incident type 2 diabetes. Diabetologia. 2011 Sep;54(9):2468-70

The aim of this study was to update the Finnish diabetes risk questionnaire by using clinically diagnosed and screen detected type 2 diabetes, instead of drug-treated diabetes as an endpoint and by considering additional predictors. Data from 18,301 participants in studies of the Evaluation of Screening and Early Detection Strategies for Type 2 Diabetes and Impaired Glucose Tolerance (DETECT-2) project with baseline and follow-up information on oral glucose tolerance status were included. Incidence of type 2 diabetes within 5 years was used as the outcome variable. Improvement in discrimination and classification of the logistic regression model was assessed by the area under the receiver-operating characteristic (ROC) curve and by the net reclassification improvement. Internal validation was by bootstrapping techniques. Of the 18,301 participants, 844 developed type 2 diabetes in a period of 5 years (4.6%). The Finnish risk score had an area under the ROC curve of 0.74. Re-estimation of the regression coefficients improved the area under the ROC curve to 0.766. Additional items such as male sex, smoking and family history of diabetes (parent, sibling or both) improved the area under the ROC curve and net reclassification.
Bootstrapping showed good internal validity. The predictive value of the original Finnish risk questionnaire could be improved by adding information on sex, smoking and family history of diabetes. The DETECT-2 update of the Finnish diabetes risk questionnaire is an adequate and robust predictor for future screen-detected and clinically diagnosed type 2 diabetes in European populations.

An example of societal impact

An example of high societal impact research is the project ‘Short and long term effects of a lifestyle intervention for construction workers at risk for cardiovascular disease: a randomized controlled trial.

IF Groeneveld, KI Proper, AJ van der Beek, VH Hildebrandt, W van Mechelen’.
This paper was published in BMC Public Health 2011, 11:836.

The purpose of this study was to evaluate the effects on physical activity (PA), diet, and smoking of a lifestyle intervention consisting of individual counselling among male workers in the construction industry with an elevated risk of cardiovascular disease (CVD). In a randomized controlled trial including 816 male blue- and white-collar workers in the construction industry with an elevated risk of CVD, usual care was compared to a 6-month lifestyle intervention. The intervention consisted of individual counselling using motivational interviewing techniques, and was delivered by an occupational physician or occupational nurse. In three face to face and four telephone contacts, the participant’s risk profile, personal determinants, and barriers for behaviour change were discussed, and personal goals were set. Participants chose to aim at either diet and PA, or smoking. Data were collected at baseline and after six and 12 months, by means of a questionnaire. To analyse the data, linear and logistic regression analyses were performed. The intervention had a statistically significant beneficial effect on snack intake (b-1.9) and fruit intake (b 1.7) at 6 months. The effect on snack intake was sustained until 12 months; 6 months after the intervention had ended (b -1.9). The intervention effects on leisure time PA and metabolic equivalent-minutes were not statistically significant. The beneficial effect on smoking was statistically significant at 6 (OR smoking 0.3), but not at 12 months. Beneficial effects on smoking, fruit, and snack intake can be achieved by an individual-based lifestyle intervention among male construction workers with an elevated risk of CVD. Considering the rising prevalence of unhealthy lifestyle and CVD, especially in the aging population, implementation of this intervention in the occupational health care setting is recommended. The study received much attention in the daily newspapers and Iris Groeneveld won the Catharina Pijls thesis award and was nominated for the VU Junior societal impact award.
Scientific output
Based on the publication and citation analysis of the Center for Science & Technology Studies (CWTS; the organization who conducts publication and citation analysis for the Dutch University Medical Centers and their research institutes) the CWTS crown indicator (the mean normalized citation score (MNCS), i.e. the impact of a research unit's articles, compared to the world citation average in the subfields in which the research unit is active, 1997-2010) for the Lifestyle, Overweight and Diabetes program is 1.92.

Table 1: Total number and quality of publications in 2011

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>Lifestyle, Overweight and Diabetes</strong></td>
<td><strong>Number</strong></td>
</tr>
<tr>
<td>Scientific papers published in indexed(^1) journals</td>
<td>218</td>
</tr>
<tr>
<td>Proportion of publications in journals with a top quartile impact factor for the relevant research field</td>
<td>53%</td>
</tr>
<tr>
<td>Scientific papers published in non-indexed journals</td>
<td>3</td>
</tr>
<tr>
<td>Books and book chapters</td>
<td>4</td>
</tr>
<tr>
<td>PhD-theses</td>
<td>9</td>
</tr>
<tr>
<td>Conference papers</td>
<td>n.a.(^*)</td>
</tr>
<tr>
<td>Professional publications</td>
<td>5</td>
</tr>
<tr>
<td>Publications aimed at the general public</td>
<td>2</td>
</tr>
</tbody>
</table>

\(^1\) Indexed in the [Science and/or Social Science Citation Index](http://example.com)

\(^*\) not available
Table 2: Acquisition in 2011 (in k€) and the annual average in 2007-2011 per type of funding

<table>
<thead>
<tr>
<th>Lifestyle, Overweight and Diabetes</th>
<th>2011</th>
<th>Mean per year 2007-2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Funding(^1)</td>
<td>1,150.4</td>
<td>2,027.5</td>
</tr>
<tr>
<td>Contract Funding(^2)</td>
<td>1,541.1</td>
<td>1,558.0</td>
</tr>
<tr>
<td>Industry Funding(^3)</td>
<td>32.5</td>
<td>283.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2,724.0</td>
<td>3,869.1</td>
</tr>
</tbody>
</table>

\(^1\) Research Funding: are funds allocated by the Netherlands Organization for Scientific Research, the Netherlands Organization for Health Research and Development, and the European Commission.

\(^2\) Contract Funding: are funds allocated by the so-called money-box funds (Dutch Heart Foundation, Dutch Diabetes Research Funds, Dutch Cancer Society, et cetera) as well as allocated grants directly from the government and government grants allocated through ‘College voor Zorgverzekeringen’.

\(^3\) Industry Funding: are funds allocated by businesses, the pharmaceutical industries in particular and other additional smaller funds without a peer review procedure.

Human resources

On 31/12/2011, 15.48 FTE tenured staff and 31.26 non-tenured staff participated in the LOD research program. Administrative support for the program is 0.2 FTE.

Table 3: Research staff – Lifestyle, Overweight and Diabetes (in FTE)

<table>
<thead>
<tr>
<th>Lifestyle, Overweight and Diabetes</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tenured staff</td>
<td>12.60</td>
<td>14.44</td>
<td>13.25</td>
<td>16.28</td>
<td>15.48</td>
</tr>
<tr>
<td>Non-tenured staff</td>
<td>11.80</td>
<td>14.00</td>
<td>29.20</td>
<td>29.63</td>
<td>31.26</td>
</tr>
<tr>
<td>PhD-students</td>
<td>22.10</td>
<td>22.60</td>
<td>23.60</td>
<td>26.29</td>
<td>28.82</td>
</tr>
<tr>
<td><strong>Total research staff</strong></td>
<td><strong>46.50</strong></td>
<td><strong>51.04</strong></td>
<td><strong>66.15</strong></td>
<td><strong>72.20</strong></td>
<td><strong>70.56</strong></td>
</tr>
</tbody>
</table>
three

LIFESTYLE, OVERWEIGHT AND DIABETES

- Senior research staff and post docs*

M.C. Adriaanse, PhD
Ms. M.J. Alssema, PhD*
Ms. T.M. Altenburg, PhD*
Ms. M.A.E. Bokhorst-de van der Schueren, PhD
Ms. S.D.M. Bot, PhD*
Ms. I.A. Brouwer, PhD
Prof. J. Brug, PhD
Ms. J.M.M. Chin A Paw, PhD
Ms. Prof. J.M. Dekker, PhD
Ms. Prof. M. Diamant, MD, PhD
Prof. R.J.B.J. Gemke, MD, PhD
Prof. R.J. Heine, MD, PhD
Ms. A.A.W.A. van der Heijden, PhD*
Prof. R.A. Hira Sing, MD, PhD
Ms. J.G. Hugtenburg, PhD
Ms. K. van den Hurk, PhD*
Ms. W. IJzelenberg, PhD*
Ms. Prof. E. Kampman, PhD
Prof. M.B. Katan, PhD
Ms. Prof. L. Kingo, PhD
Ms. J.E. van Kist-Holthe tot Echten, MD, PhD
PJ. Kostense, PhD
Ms. M.L.A. de Kroon, MD, PhD
Ms. H.M. Kruizenga, PhD
J. Lakerveld, PhD*
Prof. W. van Mechelen, MD, PhD
Ms. J. de Meij, MSc
Ms. S.I.J. Niemer, MSc
Prof. M.G.A.A.M. Nijpels, MD, PhD
Ms. M.R. M. Olthof, PhD
Ms. K.M. Oude Hengel, MSc
Ms. Prof. B.C.P. Polak, MD, PhD
Ms. M.N.M. van Poppel, PhD
Ms. K.I. Proper, PhD
Ms. C.M. Renders, PhD
Ms. A.J.C. Roodenburg, PhD
Ms. L.A. Schaap, PhD
Ms. Prof. A.J. Schuit, PhD
Prof. J.C. Seidell, PhD
Ms. A.S. Singh, PhD*
Prof. Y.M. Smulders, MD, PhD
Prof. F.J. Snoek, PhD
Ms. I.H.M. Steenhuis, PhD
Ms. M.M. van Stralen, PhD*
Prof. J.W.R. Twisk, PhD
Ms. S.J. te Velde, PhD
Ms. E de Vet, PhD
Ms. Prof. M. Visser, PhD
PJ.M. Weijts, PhD
Ms. L.M.C. Welschen, PhD*
Ms. C. van der Wijden, MSc
Ms. H.A.H. Wijnhoven, PhD*
Ms. M. de Wit, PhD*
PREFACE

Brenda Penninx

Hans Koot
Mission
The research program Mental Health (MH) has as central objectives to encourage, initiate, conduct and publish excellent research to increase our understanding of mental health and stimulate evidence-based mental health care and prevention, thereby improving overall public health. When studying mental health, the focus is mainly on the entire developmental trajectory towards the most common mental disorders, especially focusing on depression, anxiety and disruptive disorders.

Specific research themes
- 1. Epidemiology of Mental Health. This theme includes observational research in the community setting, the general practice setting as well as the psychiatric care setting that increases our evidence-base for the occurrence, the determinants and consequences of mental health disorders.
- 2. Prevention and treatment in Mental Health. This theme refers to research that contributes to evidence-based information on innovative prevention and treatment interventions to improve mental health and reduce associated disability.
- 3. Developmental perspective in Mental Health. This theme refers to research that examines developmental trajectories of psychopathology across the lifespan, as they often start in childhood and continue into late adulthood.

Rationale and focus
Common mental disorders have a major impact on public health and are among the conditions with the world-wide highest disease burden. Consequently, prevention of mental health disorders as well as more effective treatment of mental health disorders is needed to further improve overall (mental) health. By applying observational as well as intervention research, the Mental Health program contributes to a better evidence base for the existence, development, prevention and treatment of mental health disorders thereby improving general mental health.
Future perspectives
In the near future, we aim to further build on both our observational as well as intervention research themes. For observational research we will have more longitudinal data available from current research infrastructures that will allow us to examine risk factors of and developmental trajectories in the course of mental health. In addition, in the subsequent years we expect to expand our involvement in international study projects, and to extend our focus on the interaction between somatic and mental health research through newly initiated research projects.
HIGHLIGHTS 2011

An example project

NOCDA study: Netherlands Obsessive Compulsive Disorder Association study

Patricia van Oppen, Anton JLM van Balkom, Johannes H Smit, Merijn Eikelenboom; GGZ inGeest/VUmc, Amsterdam.
In cooperation with: Marina de Wolf Centre for Anxiety Research, Ermelo; Centre for Anxiety Disorders ‘Overwaal’, Lent; Dimence, GGZ Overijssel; LUMC Department of Psychiatry, Leiden University Medical Center; the Mental Health Care Institute Noord- en Midden-Limburg, Venray; and the Academic Anxiety Centre, PsyQ Maastricht

The NOCDA study is a multicentre naturalistic cohort study on the course and outcome of Obsessive Compulsive Disorder (OCD) in patients referred to seven academic and non-academic mental health organizations throughout the Netherlands. The NOCDA study is the first study on the long-term course of OCD to incorporate biological, genetic parameters as well as psychological and social determinants in its design.

We included 419 OCD patients within an integrated multicentre research infrastructure. Participants are contacted five times within a six-year period for clinical measurements: at baseline and after one, two, three and six years. Comprehensive measurements will be performed at baseline and after two, four and six years at one of the participating mental health care centres by a trained and experienced research nurse or psychologist. All five measurements within this six-year period involved validated semi-structured interviews and self-report questionnaires which gathered information on the severity of OCD and its co-morbidity as well as information on general wellbeing, quality of life, daily activities, medical consumption and key psychological and social factors. The baseline measurements also include DNA and blood sampling and data on demographic and personality variables. Data is being archived in a safe, confidential and enduring system, and will be disclosed and made available to researchers. Specific publication protocols have been developed to regulate access to the database. This project will contribute important information on determinants of long-term course and consequences of OCD, which will be written down in scientific and lay-public publications in the near future.

A paper of importance


Arterial stiffness gains attention as a potential mechanism underlying the frequently found association between depression or anxiety and cardiovascular disease. However, observations regarding stiffness and psychopathology were often based on small samples. The current study aimed to examine whether subjects with a diagnosis of depressive or anxiety disorder showed increased stiffness and to explore associations between various psychiatric characteristics and arterial stiffness. The sample included 449 cases with DSM-IV based lifetime diagnoses of depressive and/or anxiety disorder and 169 control subjects. Subjects were participating in the Netherlands Study of Depression and Anxiety and were aged 20 to 66 years.
Characteristics included comorbidity, subtype of disorder, symptom severity and duration, age of onset, and use of antidepressant medication. Arterial stiffness was measured by calibrated radial tonometry (heart rate normalized central augmentation index [AIx75]; in percentage) and carotid M-mode ultrasound (distensibility coefficient). After adjustment for covariates, AIx75 was increased in current (1-month) depression or anxiety (15.7% vs. 13.3% in control subjects, p = .01). Disorder characteristics associated with AIx75 were depression and anxiety comorbidity (15.3%, p = .02), higher depression severity ($\beta = .10, p < .001$) and anxiety severity ($\beta = .10, p < .001$), and longer symptom duration ($\beta = .07, p = .01$). No significant associations were found between distensibility coefficient and psychopathology. This study indicates that current depressive or anxiety disorders were associated with a higher central augmentation index, a manifestation of early wave reflection because of arterial stiffness. Exposure to depression and anxiety may therefore enhance the development and progression of atherosclerosis and other cardiovascular conditions.

**An example of societal impact**

Lust for Life is a project within the National Care for the Elderly Programme. It aim to improve integrated access to care and welfare for older persons with either depressive symptoms (indicated prevention) or major depression. Many organizations in West Friesland and Amsterdam and the departments of psychiatry and general practice of VUmc are joining forces to make this implementation project possible. With a coherent care provision that is better suited to the individual needs of elderly people, many of them should be better able to cope with depressive symptoms or major depression, experience a greater degree of independence, keep functions, and rely less on care services. The program is implemented, adjusted and evaluated in four consecutive waves, in an innovative stepped wedge design. A total of about 350 older adults have started with the treatment, in which district nurses play an unexpectedly large (and welcome) role. The integrated provision of services with different and constantly changing remuneration systems is complicated, and the current cuts in the mental health care budget may delay successful implementation, but preliminary results show the power of the integrated model. The project is a good example of how implementation of new research findings can lead to better preference-led depression care for the elderly.
**Scientific output**

Based on the publication and citation analysis of the Center for Science & Technology Studies (CWTS; the organization who conducts publication and citation analysis for the Dutch University Medical Centers and their research institutes) the CWTS crown indicator (the mean normalized citation score (MNCS), i.e. the impact of a research unit’s articles, compared to the world citation average in the subfields in which the research unit is active, 1997-2010) for the Mental Health program is 1.52.

Table 4: Total number and quality of publications in 2011

<table>
<thead>
<tr>
<th>Mental Health</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Scientific papers published in indexed journals</td>
<td>286</td>
</tr>
<tr>
<td>Proportion of publications in journals with a top quartile impact factor for</td>
<td>59%</td>
</tr>
<tr>
<td>the relevant research field</td>
<td></td>
</tr>
<tr>
<td>Scientific papers published in non-indexed journals</td>
<td>7</td>
</tr>
<tr>
<td>Books and book chapters</td>
<td>38</td>
</tr>
<tr>
<td>PhD-theses</td>
<td>18</td>
</tr>
<tr>
<td>Conference papers</td>
<td>n.a.*</td>
</tr>
<tr>
<td>Professional publications</td>
<td>44</td>
</tr>
<tr>
<td>Publications aimed at the general public</td>
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1 Indexed in the Science and/or Social Science Citation Index

* not available

Table 5: Acquisition in 2011 (in k€) and the annual average in 2007-2011 per type of funding

<table>
<thead>
<tr>
<th>Mental Health</th>
<th>2011</th>
<th>Mean per year 2007-2011</th>
</tr>
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<tbody>
<tr>
<td>Research Funding¹</td>
<td>5,147.6</td>
<td>3,419.4</td>
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<tr>
<td>Contract Funding²</td>
<td>2,060.5</td>
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<tr>
<td>Industry Funding³</td>
<td>158.1</td>
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<tr>
<td><strong>Total</strong></td>
<td>7,366.2</td>
<td>6,395.3</td>
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</tbody>
</table>

1 Research Funding: are funds allocated by the Netherlands Organization for Scientific Research, the Netherlands Organization for Health Research and Development, and the European Commission.

2 Contract Funding: are funds allocated by the so-called money-box funds (Dutch Heart Foundation, Dutch Diabetes Research Funds, Dutch Cancer Society, et cetera) as well as allocated grants directly from the government and government grants allocated through ‘College voor Zorgverzekeringen’.

3 Industry Funding: are funds allocated by businesses, the pharmaceutical industries in particular and other additional smaller funds without a peer review procedure.
Human resources
On 31/12/2011, 22.60 FTE tenured staff and 19.80 FTE non-tenured staff participated in the MH research program. Administrative support for the program is 0.2 FTE.

Table 6: Research staff – Mental Health (in FTE)

<table>
<thead>
<tr>
<th>Mental Health</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tenured staff</td>
<td>11.90</td>
<td>9.93</td>
<td>16.31</td>
<td>22.66</td>
<td>22.60</td>
</tr>
<tr>
<td>Non-tenured staff</td>
<td>5.80</td>
<td>9.20</td>
<td>27.00</td>
<td>28.74</td>
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<tr>
<td>PhD-students</td>
<td>16.90</td>
<td>18.70</td>
<td>40.10</td>
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<tr>
<td><strong>Total research staff</strong></td>
<td><strong>34.60</strong></td>
<td><strong>37.83</strong></td>
<td><strong>83.41</strong></td>
<td><strong>97.20</strong></td>
<td><strong>95.46</strong></td>
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### Senior research staff and post docs

<table>
<thead>
<tr>
<th>Name</th>
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<th>Institution</th>
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<tbody>
<tr>
<td>Prof. A.J.L.M. van Balkom, MD, PhD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ms. M. Bartels, PhD</td>
<td></td>
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<tr>
<td>Prof. A.T.F. Beekman, MD, PhD</td>
<td></td>
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<tr>
<td>S. Begeer, PhD</td>
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<td>Ms. C.E.M. van Beijsterveldt, PhD</td>
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<tr>
<td>Ms. Prof. D.I. Boomsma, PhD</td>
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<tr>
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<tr>
<td>Prof. J. Dekker, PhD</td>
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<tr>
<td>Ms. A. Dols, PhD</td>
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<tr>
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<tr>
<td>Ms. T. Donker, PhD</td>
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<tr>
<td>Prof. Th.A.H. Doreleijers, MD, PhD</td>
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<tr>
<td>Ms. N. Draijer, PhD</td>
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<td>H.H.M. Draisma, PhD</td>
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<tr>
<td>Ms. Prof. R.M. Droës, PhD</td>
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<tr>
<td>Prof. R. van Dyck, MD, PhD</td>
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<tr>
<td>E. van Exel, MD, PhD</td>
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<tr>
<td>Ms. Prof. C.M. van der Feltz-Cornelis, MD, PhD</td>
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<tr>
<td>Ms. C. Finkenauer, PhD</td>
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<td>Prof. A.J.F.M. Kerkhof, PhD</td>
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<td>Ms. Prof. F. Lamers-Winkelman, PhD</td>
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<td>Ms. F.J.M. Meiland, PhD</td>
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<td>Ms. M.H.M. de Moor, PhD</td>
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<td>Ms. L.M.C. Nauta-Jansen, PhD</td>
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<td>A. Popma, MD, PhD</td>
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<td>B. Terluin, MD, PhD</td>
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<td>Ms. Prof. I. Verdonck - de Leeuw, PhD</td>
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<td>Prof. R.R.J.M. Vermeiren, MD, PhD</td>
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<td>Ms. L. Warmerdam, PhD</td>
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<td>Ms. A.M. Willemsen, PhD</td>
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<td>Ms. A.H.M. Willemsen, PhD</td>
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</table>
Daniëlle Timmermans

Bregje Onwuteaka-Philipsen

(photo: Martijn Schuit)
Program directors: Prof. Bregje Onwuteaka-Philipsen, PhD and Prof. Daniëlle Timmermans, PhD

Mission
The research program Quality of Care (QofC) wants to improve the quality of prevention programs and healthcare services, empowering people to make informed health decisions, to prevent or delay the onset of chronic disease and disablement, to improve the quality of life of disabled patients, and of patients in their terminal phase.

Specific research themes

1. Health, Communication and Decision Making. Research aims to improve the quality of information about e.g. health risk information and treatments and to improve the communication and decision making of patients and doctors for treatment decisions in order to enable health care consumers and patients to have the role in the decision making process that they want.

2. Disease, Disability and Participation. Research in this theme focuses on personal factors and environmental factors that might hinder or help maintaining functional autonomy and quality of life of people with chronic illness or a disability by means of observational and intervention studies.

3. Effectiveness and Safety of Care. Research in this theme focuses on preventive care, as well as curative care and describes and monitors the quality and safety of care by using and developing specific quality indicators, and by intervention studies to improve collaboration between professionals or organization of care aimed to improve the quality of care.

Rationale and focus
A long healthy life requires not only disease specific prevention and care, but also attention for more generic themes such as effective health communication, patient perspectives in prevention and care, and patient safety issues. In this program research focuses on the organization of care, such as regulations for end-of-life care, on health professionals, such as educational programs in genetics, and on individual health care consumers, such as improving quality of life of chronically ill and information needed to make health decisions.

Research within this program focuses on all stages in life: genetic predisposition to disease, development of risk factors, onset of disease, early manifestation, progression, rehabilitation and the end of life. Medical, psychological, psychosocial, ethical as well as judicial perspectives are explicitly taken into account.
Future perspectives
In order to make the program more coherent and to make the best use of the multidisciplinary expertise in the program, different actions are undertaken to encourage active and concrete collaborations between researchers from different departments within and across the four research themes. Further priorities in this program’s policy plan are to strengthen international cooperative projects, and to further develop and strengthen and apply the expertise on mixed methods in health care research.
HIGHLIGHTS 2011
An example project
EUROIMPACT, A Marie Curie Initial Training Network funded by the European Commission (http://www.euro-impact.eu)
Bregje Onwuteaka-Philipsen, Anneke Francke, Luc Deliens, Roeline Pasman, Natalie Evans, Maaike De Roo

EUROIMPACT will bridge the gap between individual research institutes, multiple disciplines and different sectors and enhance cross-fertilization of currently fragmented research activities leading to a reduction of fragmentation on a topic of great EU relevance.

EUROIMPACT will train 12 junior and 4 experienced researchers from a wide range of EU countries in studying palliative care and its quality in Europe and identify tools to improve it. EUROIMPACT involves 6 universities/research institutes in Belgium, the Netherlands, the United Kingdom, Norway and Italy, all at the forefront of palliative care research training representing a wide spectrum of disciplines and professions.

At EMGO+ two junior researchers will follow a PhD-trajectory: Natalie Evans will work on advance care planning and communication in end-of-life care and Maaike de Roo will work on Quality Indicators for palliative care. For this they use existing data sources of national and international studies. As all EUROIMPACT fellows, they follow an extensive training program specifically developed for the project. Furthermore they are seconded six months to one of the partners. EMGO+ will also receive 3 fellows (based in Brussels, Lancaster, and Trondheim) for a six months secondment. In 2012 an experienced researcher will start at EMGO+ to work on the development of a handbook on palliative care for older people using the scientific output of the different PhD students already working in the project and working together with expert institutes conducting research in this field.
A paper of importance


Background.

Sophisticated approaches are needed to improve the quality of care for elderly people living in residential care facilities. We determined the effects of multidisciplinary integrated care on the quality of care and quality of life for elderly people in residential care facilities.

Methods.

We performed a cluster randomized controlled trial involving 10 residential care facilities in the Netherlands that included 340 participating residents with physical or cognitive disabilities. Five of the facilities applied multidisciplinary integrated care, and five provided usual care. The intervention, inspired by the disease management model, consisted of a geriatric assessment of functional health every three months. The assessment included use of the Long-term Care Facility version of the Resident Assessment Instrument by trained nurse-assistants to guide the design of an individualized care plan; discussion of outcomes and care priorities with the family physician, the resident and his or her family; and monthly multidisciplinary meetings with the nurse-assistant, family physician, psychologist and geriatrician to discuss residents with complex needs. The primary outcome was the sum score of 32 risk-adjusted quality-of-care indicators.

Results.

Compared with the facilities that provided usual care, the intervention facilities had a significantly higher sum score of the 32 quality-of-care indicators (mean difference - 6.7, p = 0.009; a medium effect size of 0.72). They also had significantly higher scores for 11 of the 32 indicators of good care in the areas of communication, delirium, behaviour, continence, pain and use of antipsychotic agents.

Interpretation.

Multidisciplinary integrated care resulted in improved quality of care for elderly people in residential care facilities compared with usual care. Trial registration: www.controlled-trials.com trial register no. ISRCTN11076857.

An example of societal impact

Patient participation

For long scientists and funding agencies were setting the agenda for medical and health research. Also, the research process was controlled by scientists. A decade ago this began to change as parties became more aware of patients’ rights to be heard and respected. This trend has resulted in a proliferation of new methodologies for user involvement and new patient roles, among them the patient research partner, a patient who is an equal member of a research team. Yet, many questions are still unanswered relating to the subjectivity of patients and the integration of their experiential knowledge with scientific knowledge.
Karen Schipper has an hereditary kidney disease and became an academic researcher. This double identity enabled her in her PhD to systematically investigate under what conditions experiential knowledge of patients can be generated and used in scientific research without losing its unique characteristics. She concludes that dialogue is an attractive and ethical way of participation. Patients need the deliberative context of a safe environment to articulate a genuine voice and shared agenda that is complementary to the agenda of academic researchers. Dialogue does not offend researchers and leads to shared control and the fusion of perspectives and knowledge. Through dialogue research gets better tuned to patients’ needs.


**Scientific output**

Based on the publication and citation analysis of the Center for Science & Technology Studies (CWTS; the organization who conducts publication and citation analysis for the Dutch University Medical Centers and their research institutes) the CWTS crown indicator (the mean normalized citation score (MNCS), i.e. the impact of a research unit’s articles, compared to the world citation average in the subfields in which the research unit is active, 1997-2010) for the Quality of Care program is 1.35.

Table 7: Total number and quality of publications in 2011

<table>
<thead>
<tr>
<th>Quality of Care</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Scientific papers published in indexed¹ journals</td>
<td>210</td>
</tr>
<tr>
<td>Proportion of publications in journals with a top quartile impact factor for</td>
<td>45%</td>
</tr>
<tr>
<td>the relevant research field</td>
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<tr>
<td>Scientific papers published in non-indexed journals</td>
<td>6</td>
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<tr>
<td>Books and book chapters</td>
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<td>PhD-theses</td>
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<tr>
<td>Conference papers</td>
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<td>Professional publications</td>
<td>51</td>
</tr>
<tr>
<td>Publications aimed at the general public</td>
<td>3</td>
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</tbody>
</table>

¹ Indexed in the Science and/or Social Science Citation Index

* not available
Table 8: Acquisition in 2011 (in k€) and the annual average in 2007-2011 per type of funding

<table>
<thead>
<tr>
<th>Quality of Care</th>
<th>2011</th>
<th>Mean per year 2007-2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Funding¹</td>
<td>2,271.6</td>
<td>2,499.8</td>
</tr>
<tr>
<td>Contract Funding²</td>
<td>2,765.8</td>
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<tr>
<td>Industry Funding³</td>
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</tr>
<tr>
<td><strong>Total</strong></td>
<td>5,037.4</td>
<td>5,057.2</td>
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</table>

¹ Research Funding: are funds allocated by the Netherlands Organization for Scientific Research, the Netherlands Organization for Health Research and Development, and the European Commission.

² Contract Funding: are funds allocated by the so-called money-box funds (Dutch Heart Foundation, Dutch Diabetes Research Funds, Dutch Cancer Society, et cetera) as well as allocated grants directly from the government and government grants allocated through ‘College voor Zorgverzekeringen’.

³ Industry Funding: are funds allocated by businesses, the pharmaceutical industries in particular and other additional smaller funds without a peer review procedure.

Human resources

On 31/12/2011, 22.54 FTE tenured staff and 36.07 FTE non-tenured staff participated in the QofC research program. Administrative support for the program is 0.2 FTE.

Table 9: Research staff – Quality of Care (in FTE)

<table>
<thead>
<tr>
<th>Quality of Care</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tenured staff</td>
<td>14.80</td>
<td>14.55</td>
<td>14.33</td>
<td>19.30</td>
<td>22.54</td>
</tr>
<tr>
<td>Non-tenured staff</td>
<td>22.20</td>
<td>22.80</td>
<td>23.00</td>
<td>27.53</td>
<td>36.07</td>
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<tr>
<td>PhD-students</td>
<td>12.80</td>
<td>15.00</td>
<td>19.59</td>
<td>19.95</td>
<td>20.66</td>
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<tr>
<td><strong>Total research staff</strong></td>
<td><strong>49.80</strong></td>
<td><strong>52.35</strong></td>
<td><strong>56.92</strong></td>
<td><strong>66.78</strong></td>
<td><strong>79.27</strong></td>
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</table>
## QUALITY OF CARE

### Senior research staff and post docs*

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ms. Prof. T.A. Abma, PhD</td>
<td></td>
</tr>
<tr>
<td>Ms. M.E. de Boer, PhD*</td>
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<tr>
<td>Ms. C.R.L. Boot, PhD</td>
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<td>P. Borry, PhD</td>
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<td>Prof. J. Brug, PhD</td>
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<td>Ms. M.C. de Bruijne, PhD</td>
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<td>T.P. de Cock, PhD</td>
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<td>Ms. Prof. M.C. Cornel, MD, PhD</td>
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<td>Ms. O.C. Damman, PhD*</td>
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<td>Ms. V.E.T. Dörenberg, PhD</td>
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<tr>
<td>C. Douglas, PhD*</td>
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<td>Prof. R.M. Droes, PhD</td>
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<td>Ms. S.F.A. Duijts, PhD</td>
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<td>Prof. J.M. Festen, PhD</td>
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<td>Ms. Prof. A.L. Francke, PhD</td>
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<td>Ms. B.J.M. Frederiks, PhD, LLM</td>
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<td>D.H.M. Frijters, PhD</td>
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<td>E.L.J. George, PhD*</td>
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<td>S.T. Goverts, PhD</td>
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<td>Ms. L. Henneman, PhD</td>
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<td>Prof. C.M.P.M. Hertogh, MD, PhD</td>
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<td>T. Houtgast, PhD</td>
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<td>M. Huismans, PhD</td>
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<td>Ms. Prof. E. Hutton, PhD</td>
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<td>Ms. A.P.D. Jansen, PhD*</td>
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<td>Ms. J. de Jonge, PhD</td>
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<td>Prof. L.P. ten Kate, PhD</td>
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<td>Prof. H.C.G. Kemper, PhD</td>
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<td>T. Koelewyn, PhD*</td>
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<td>Ms. S.E. Kramer, PhD</td>
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<tr>
<td>Prof. F.E. van Leeuwen, PhD</td>
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<tr>
<td>Prof. J. Legemaate, PhD, LLM</td>
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<tr>
<td>J. Lyzenga, PhD*</td>
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<tr>
<td>Ms. J. Manniëns, PhD</td>
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<tr>
<td>Ms. F.J. Meiland, PhD</td>
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<tr>
<td>P. Merkus, MD, PhD</td>
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<tr>
<td>B.A.C. Molewijk, PhD</td>
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<tr>
<td>Ms. A.C. Moll, PhD</td>
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<tr>
<td>Ms. R. van Nispen, MD, PhD</td>
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<tr>
<td>Prof. M.E. Numans, MD, PhD</td>
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<tr>
<td>Ms. Prof. B.D. Onwuteaka-Philipsen, PhD</td>
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<tr>
<td>Ms. S. van der Pas, PhD*</td>
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<tr>
<td>Ms. H.R.W. Pasman, PhD</td>
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<td>Ms. A.M.C. Plass, PhD</td>
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<td>H.N. Plomp, PhD</td>
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<tr>
<td>Ms. Prof. B.C.P. Polak, MD, PhD</td>
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<td>Ms. F.R.M. Portrait, PhD</td>
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<tr>
<td>Prof. G.H.M.B. van Rens, MD, PhD</td>
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<tr>
<td>Prof. M.W. Ribbe, PhD</td>
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<tr>
<td>Prof. P.J. Ringens, MD, PhD</td>
<td></td>
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<tr>
<td>Ms. H.G. van der Roest, PhD*</td>
<td></td>
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<tr>
<td>Ms. L.A. Schaap, PhD*</td>
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<tr>
<td>T. Schellart, PhD, MBA</td>
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<tr>
<td>Prof. F. Schellevis, MD, PhD</td>
<td></td>
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<tr>
<td>M. Smalbrugge, PhD</td>
<td></td>
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<tr>
<td>Prof. T. Smid, PhD</td>
<td></td>
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<tr>
<td>J.C.M. Smits, PhD</td>
<td></td>
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<tr>
<td>Ms. J.T. van der Steen, PhD</td>
<td></td>
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<tr>
<td>Ms. Prof. D.R.M. Timmermans, PhD</td>
<td></td>
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<tr>
<td>Ms. R.B. Veenhuizen, PhD</td>
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<tr>
<td>E. Vermeulen, PhD*</td>
<td></td>
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<tr>
<td>Ms. S. Weinreich, PhD*</td>
<td></td>
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<tr>
<td>Prof. G.A.M. Widdershoven, PhD</td>
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<tr>
<td>Ms. J. Wojtkowiak, PhD*</td>
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<tr>
<td>Ms. A.A. Zekveld, PhD*</td>
<td></td>
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<tr>
<td>Prof. G.I.J.M. Zwetsloot, PhD</td>
<td></td>
</tr>
</tbody>
</table>

* Senior research staff and post docs

**Note:** The asterisk (*) denotes post-doctoral researchers.
Program directors: Prof. Allard van der Beek, PhD and Prof. Maurits van Tulder, PhD

Mission
The mission of the program is improving musculoskeletal health (MSH) and reducing the burden of musculoskeletal disorders.

Specific research themes
- 1. Epidemiology
- 2. Prevention
- 3. Treatment

Rationale and focus
The MSH program contributes to this mission by seeking knowledge about the development and lifelong maintenance of a healthy musculoskeletal system and about the occurrence, prognosis, prevention and treatment of musculoskeletal disorders. The goals of the MSH program are to initiate, conduct and publish excellent research that contributes to evidence-based practice on musculoskeletal disorders and health in the settings of public health, occupational health, primary and secondary health care, and rehabilitation practice. The MSH program plays an active role in the broad implementation of research results.

Future perspectives
The MSH program has identified several opportunities for the near future, such as increasing collaboration with research institute MOVE; increasing collaboration with READE, the rehabilitation center Amsterdam; increasing activities in sports medicine and physical activity; initiating activities in the field of exercise = medicine. The latter will also be the primary focus of a new collaborative research program of EMGO+ and MOVE.
HIGHLIGHTS 2011

An example project

FUPRO-MS III: Long-term prognosis of functional outcome in patients with Multiple Sclerosis.

Jiska Kempen, Heleen Beckerman, Vincent de Groot, Dirk Knol, Chris Polman, Guus Lankhorst

Studies of daily functioning are essential in slowly progressive diseases such as Multiple Sclerosis (MS). The FUPRO-MS study aims to determine the course of functioning and the rate of change in MS patients on neurological deficits, physical functioning, cognitive functioning and mental health, social functioning and general health in the 10-years since their definite diagnosis. The long-term prospective follow-up study commenced in 1998-2000 and included an incidence cohort of 156 patients with a definite diagnosis of MS. Participants were examined systematically, beginning immediately after definite diagnosis, followed by the time points 6 months, 1, 2, 3, 6 and 10 years. Results showed that the time course of the EDSS, SF36 physical functioning, FIM motor function, and FIM cognitive function could be best described by polynomial models. Neurological disability and physical functioning worsened significantly, with a time course dependent on whether a patient had MS of the relapse onset type or non-relapse onset type. Cognitive and social functioning worsened significantly over time, mental health, social role due to physical limitations, and general health changed only slightly.

A paper of importance


This paper reports a systematic review on the effects of spinal manipulative therapy (SMT) for chronic low-back pain. An experienced librarian searched for RCTs in multiple databases up to June 2009. RCTs that examined manipulation or mobilization in adults with chronic low-back pain were included. The primary outcomes were pain, functional status, and perceived recovery. Secondary outcomes were return-to-work and quality of life. Two authors independently conducted the study selection, risk of bias assessment, and data extraction. GRADE was used to assess the quality of the evidence. We included 26 RCTs (total participants = 6070), 9 of which had a low risk of bias. Approximately two-thirds of the included studies (N = 18) were not evaluated in the previous review. The authors concluded that high-quality evidence suggests that there is no clinically relevant difference between SMT and other interventions for reducing pain and improving function in patients with chronic low-back pain.
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MUSCULOSKELETAL HEALTH

An example of societal impact
Maurice Driessen, Han Anema, Karin Proper, Paulien Bongers, Allard van der Beek
The Stay@Work study evaluating the (cost-)effectiveness of Participatory Ergonomics to prevent low-back and neck pain among workers.

The Netherlands Organisation for Health Research and Development (ZonMw) awards so-called ‘Pearl’ projects. These ‘Pearl’ projects present extremely innovative results that can be implemented nationwide, show excellent cooperation between scientific and societal partners, or have attention for aspects such as diversity, patient involvement or innovation. MSH’s Stay@Work study received this prestigious ‘Pearl’ project status in 2011. The study evaluated the (cost-)effectiveness of Participatory Ergonomics to prevent low-back and neck pain among workers. 5,759 workers, who were employed in 37 departments of four large Dutch companies were studied at baseline and after 6 and 12 months. The PE method involves close cooperation between workers, supervisors, management and occupational health professionals, since these groups of stakeholders define problems and solutions together in working groups. Furthermore, several workers were appointed as ‘Ergocoaches’, which facilitated actual implementation of preventive measures. ZonMw reported this large-scale Stay@Work study with so many participating workers to be unique worldwide. According to ZonMw this project was only possible due to the already well-established cooperation between EMGO+ and the companies involved.
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MUSCULOSKELETAL HEALTH

Scientific output
Based on the publication and citation analysis of the Center for Science & Technology Studies (CWTS; the organization who conducts publication and citation analysis for the Dutch University Medical Centers and their research institutes) the CWTS crown indicator (the mean normalized citation score (MNCS), i.e. the impact of a research unit’s articles, compared to the world citation average in the subfields in which the research unit is active, 1997-2010) for the Musculoskeletal Health program is 2.09.

Table 10: Total number and quality of publications in 2011

<table>
<thead>
<tr>
<th>Musculoskeletal Health</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Scientific papers published in indexed(^1) journals</td>
<td>135</td>
</tr>
<tr>
<td>Proportion of publications in journals with a top quartile impact factor for the relevant research field</td>
<td>47%</td>
</tr>
<tr>
<td>Scientific papers published in non-indexed journals</td>
<td>1</td>
</tr>
<tr>
<td>Books and book chapters</td>
<td>4</td>
</tr>
<tr>
<td>PhD-theses</td>
<td>6</td>
</tr>
<tr>
<td>Conference papers</td>
<td>n.a.*</td>
</tr>
<tr>
<td>Professional publications</td>
<td>10</td>
</tr>
<tr>
<td>Publications aimed at the general public</td>
<td>0</td>
</tr>
</tbody>
</table>

\(^1\) Indexed in the Science and/or Social Science Citation Index

\(^*\) not available

Table 11: Acquisition in 2011 (in k€) and the annual average in 2007-2011 per type of funding

<table>
<thead>
<tr>
<th>Musculoskeletal Health</th>
<th>2011</th>
<th>Mean per year 2007-2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Funding(^1)</td>
<td>1,321.7</td>
<td>1,046.3</td>
</tr>
<tr>
<td>Contract Funding(^2)</td>
<td>1,055.9</td>
<td>1,637.5</td>
</tr>
<tr>
<td>Industry Funding(^3)</td>
<td>0.0</td>
<td>7.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2,377.6</strong></td>
<td><strong>2,691.5</strong></td>
</tr>
</tbody>
</table>

\(^1\) Research Funding: are funds allocated by the Netherlands Organization for Scientific Research, the Netherlands Organization for Health Research and Development, and the European Commission.

\(^2\) Contract Funding: are funds allocated by the so-called money-box funds (Dutch Heart Foundation, Dutch Diabetes Research Funds, Dutch Cancer Society, et cetera) as well as allocated grants directly from the government and government grants allocated through ‘College voor Zorgverzekeringen’.

\(^3\) Industry Funding: are funds allocated by businesses, the pharmaceutical industries in particular and other additional smaller funds without a peer review procedure.
Human resources

On 31/12/2011, 14.23 FTE tenured staff and 12.26 FTE non-tenured staff participated in the MSH research program. Administrative support for the program is 0.2 FTE.

Table 12: Research staff – Musculoskeletal Health (in FTE)

<table>
<thead>
<tr>
<th>Musculoskeletal Health</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tenured staff</td>
<td>9.20</td>
<td>13.24</td>
<td>10.89</td>
<td>15.72</td>
<td>14.23</td>
</tr>
<tr>
<td>Non-tenured staff</td>
<td>14.70</td>
<td>12.80</td>
<td>15.50</td>
<td>15.82</td>
<td>12.26</td>
</tr>
<tr>
<td>PhD-students</td>
<td>7.70</td>
<td>8.90</td>
<td>14.00</td>
<td>17.31</td>
<td>19.74</td>
</tr>
<tr>
<td><strong>Total research staff</strong></td>
<td><strong>31.60</strong></td>
<td><strong>34.94</strong></td>
<td><strong>40.39</strong></td>
<td><strong>48.85</strong></td>
<td><strong>46.23</strong></td>
</tr>
</tbody>
</table>

- **Senior research staff and post docs**

J.R. Anema, MD, PhD
Prof. J.G. Becher, MD, PhD
Ms. H. Beckerman, PhD
Prof. A.J. van der Beek, PhD
Ms. B.M. Blatter, PhD
M. de Boer, PhD
Ms. Prof. P.M. Bongers, PhD
Ms. L. Buffart, PhD*
Ms. A.J. Dallmeijer, PhD
Prof. J. Dekker, PhD
Ms. P.J.M. Elders, MD, PhD
V. de Groot, MD, PhD
Ms. I.J.M. Hendriksen, PhD
M.W. Heymans, PhD
V.H. Hildebrandt, PhD
Ms. Prof. M. Hopman-Rock, PhD
Ms. Prof. H.E. van der Horst, PhD
Ms. M.A. Huysmans, PhD*
Ms. E.S.M. de Klerk - de Lange, MD, PhD

D.L. Knol, PhD
Ms. M. van der Leeden, PhD
Ms. S.S. Leone, PhD*
Prof. P.Th.A.M. Lips, MD, PhD
O.R. Maarsingh, MD, PhD*
Prof. W. van Mechelen, MD, PhD
R.W.J.G. Ostelo, PhD
R.S.G.M. Perez, PhD
S.M. Rubinstein, PhD*
Ms. P.E.M. van Schie, PhD
Ms. N.M. van Schoor, PhD*
Prof. T. Smid, PhD
Ms. C.B. Terwee, PhD
Prof. M.W. van Tulder, PhD
E.A.L.M. Verhagen, PhD
Ms. S. Vermeulen, PhD
Ms. Prof. H.C.W. de Vet, PhD
Ms. Prof. M. Visser, PhD
Scientific output
In the Netherlands the research performance of all 8 medical faculties is externally benchmarked by the Centre for Science and Technology Studies (CWTS; www.cwts.nl) of the University of Leiden. This benchmark concerns a bibliometric analysis of all research output. According to the CWTS assessment in 2011 EMGO+ researchers co-authored 866 scientific publications; 849 were published in ISI indexed journals (table 13 and 14). A full list is printed on the final pages of this report. The number of publications in total and per 10 FTE direct-funded research staff has increased for international/indexed scientific publications. It has decreased for national/non-indexed scientific publications in comparison to previous years (table 16). This decrease is partly caused by a different way of listing the national publications by CWTS. Since 2011 the national publications are listed as 'professional publications' and not anymore as non-indexed scientific publications. The proportion of publications in the top scientific fields was lower than in previous years (table 14).

CWTS calculates for between faculties and between institutes comparisons a so-called crown indicator for which 1 represents world average. The 2011 CWTS bibliometric analysis of research papers in peer-reviewed international scientific journals reports a crown indicator of 1.72 for EMGO+’s research (table 19). This reflects that the scientific impact of EMGO+’s research is 72% above world average in the scientific fields that EMGO+ contributes to. All four research programs have a crown indicator well above 1.0 (www.emgo.nl/about-emgo/scientific-achievements/). It should be noted that CWTS has introduced in 2011 a new way of calculating the Crown Indicator, which makes direct between years comparisons difficult.

In 2011, 42 students defended their PhD theses. The total amount of € 17,5M obtained in grant money in 2011 will help us to maintain our research activities in the years to come.
Table 13: Total number of indexed\(^1\) and non-indexed scientific publications per research program and for the Institute

<table>
<thead>
<tr>
<th></th>
<th>LOD</th>
<th>MH</th>
<th>QofC</th>
<th>MSH</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of scientific papers published in indexed journals</td>
<td>218</td>
<td>286</td>
<td>210</td>
<td>135</td>
<td>849</td>
</tr>
<tr>
<td>Total number of scientific papers published in non-indexed journals</td>
<td>3</td>
<td>7</td>
<td>6</td>
<td>1</td>
<td>17</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>221</strong></td>
<td><strong>293</strong></td>
<td><strong>216</strong></td>
<td><strong>136</strong></td>
<td><strong>866</strong></td>
</tr>
</tbody>
</table>

\(^1\) Indexed in the Science and/or Social Science Citation Index

Table 14: Total number of publications in journals with a top quartile impact factor for the relevant research field in SCI or SSCI\(^1\)/total number of all indexed (international) publications (% of publication in top quartile journals) per research program

<table>
<thead>
<tr>
<th>Year</th>
<th>LOD</th>
<th>MH</th>
<th>QofC</th>
<th>MSH</th>
<th><strong>Total</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>64/91 (68%)</td>
<td>48/68 (71%)</td>
<td>48/80 (60%)</td>
<td>65/117 (56%)</td>
<td>225/355 (63%)</td>
</tr>
<tr>
<td>2008</td>
<td>59/110 (54%)</td>
<td>56/98 (57%)</td>
<td>42/94 (45%)</td>
<td>73/109 (67%)</td>
<td>230/411 (56%)</td>
</tr>
<tr>
<td>2009</td>
<td>66/128 (52%)</td>
<td>128/189 (68%)</td>
<td>49/115 (43%)</td>
<td>94/144 (65%)</td>
<td>337/576 (59%)</td>
</tr>
<tr>
<td>2010</td>
<td>89/139 (64%)</td>
<td>175/270 (65%)</td>
<td>107/199 (54%)</td>
<td>101/178 (57%)</td>
<td>472/786 (60%)</td>
</tr>
<tr>
<td>2011</td>
<td>117/218 (53%)</td>
<td>170/286 (59%)</td>
<td>94/210 (45%)</td>
<td>63/135 (47%)</td>
<td>444/849 (52%)</td>
</tr>
</tbody>
</table>

\(^1\) Indexed in the Science and/or Social Science Citation Index
Table 15: FTE total research staff, number of dissertations, international/indexed scientific publications and national/non-indexed scientific publications, 2007-2011

<table>
<thead>
<tr>
<th>Year</th>
<th>Total research staff¹</th>
<th>Dissertations</th>
<th>International/ indexed scientific publications²</th>
<th>National/ non-indexed scientific publications³</th>
<th>Other publication⁴</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>162.4</td>
<td>29</td>
<td>415</td>
<td>66</td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>181.0</td>
<td>36</td>
<td>446</td>
<td>78</td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>254.1</td>
<td>51</td>
<td>664</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>285.0</td>
<td>52</td>
<td>786</td>
<td>157</td>
<td>210</td>
</tr>
<tr>
<td>2011</td>
<td>291.5</td>
<td>42</td>
<td>849</td>
<td>17</td>
<td>197</td>
</tr>
</tbody>
</table>

¹ Concerns all research staff (in FTE)
² Until 2009 international publications are listed; since 2010 indexed scientific publications are listed
³ Until 2009 national publications are listed; since 2010 non-indexed scientific publications are listed; since 2011 national publications are listed as professional publications
⁴ Other publications are: professional publications, popular publications, books and book chapters

Figure 1: FTE total research staff, number of dissertations, international/indexed scientific publications and national/non-indexed scientific publications, 2007-2011.
Table 16: Number of dissertations and publications, 2007-2011 per 10 FTE direct funded research staff, excluding PhD students

<table>
<thead>
<tr>
<th>Year</th>
<th>DF research staff¹</th>
<th>Dissertations</th>
<th>International/indexed scientific publications²</th>
<th>National/non-indexed scientific publications³</th>
<th>Other publications⁴</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>43.9</td>
<td>6.6</td>
<td>94.6</td>
<td>15.0</td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>49.1</td>
<td>7.3</td>
<td>90.9</td>
<td>15.9</td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>68.5</td>
<td>7.4</td>
<td>97.0</td>
<td>11.0</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>69.5</td>
<td>7.5</td>
<td>113.1</td>
<td>22.6</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>62.5</td>
<td>6.7</td>
<td>135.8</td>
<td>2.7</td>
<td></td>
</tr>
</tbody>
</table>

¹ Concerns the realised appointments with directly funded research formation and the additional research formation from VUmc departments participating in EMGO⁺

² Until 2009 international publications are listed; since 2010 indexed scientific publications are listed

³ Until 2009 national publications are listed; since 2010 non-indexed scientific publications are listed; since 2011 national publications are listed as professional publications

⁴ Other publications are: professional publications, popular publications, books and book chapters

Figure 2: Number of dissertations and publications, 2007-2011 per 10 FTE direct funded research staff, excluding PhD students.
seven

EMGO+ IN 2011

Table 17: Number of dissertations and publications, 2007-2011 per 10 FTE tenured, direct university funded research staff (DFRS)

<table>
<thead>
<tr>
<th>Year</th>
<th>DFRS (FTE)¹</th>
<th>Dissertations 10 FTE DFRS</th>
<th>International/ indexed scientific publications/ 10 FTE DFRS²</th>
<th>National/ non-indexed scientific publications 10 FTE DFRS³</th>
<th>Other publications/ 10 FTE DFRS⁴</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>48.5</td>
<td>6.0</td>
<td>85.4</td>
<td>13.6</td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>50.5</td>
<td>7.1</td>
<td>88.5</td>
<td>15.5</td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>54.9</td>
<td>9.3</td>
<td>120.9</td>
<td>13.7</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>55.4</td>
<td>9.4</td>
<td>142.0</td>
<td>28.4</td>
<td>37.9</td>
</tr>
<tr>
<td>2011</td>
<td>51.1</td>
<td>8.2</td>
<td>166.2</td>
<td>3.3</td>
<td>38.6</td>
</tr>
</tbody>
</table>

¹ DFRS = tenured, direct university funded research staff
² Until 2009 international publications are listed; since 2010 indexed scientific publications are listed
³ Until 2009 national publications are listed; since 2010 non-indexed scientific publications are listed; since 2011 national publications are listed as professional publications
⁴ Other publications are: professional publications, popular publications, books and book chapters

Figure 3: Number of dissertations and publications, 2007-2010 per 10 FTE tenured, direct university funded research staff (DRS).
Table 18: Top 10 citation toppers of EMGO+ of articles published in 2005-2011

<table>
<thead>
<tr>
<th>Rank</th>
<th>Citation count</th>
<th>Publication</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>309</td>
<td>Terwee CB, Bot SD, de Boer MR, van der Windt DA, Knol DL, Dekker J, Bouter LM, de Vet HC. Quality criteria were proposed for measurement properties of health status questionnaires. Journal of Clinical Epidemiology. 2007; 60: 34-42.</td>
</tr>
</tbody>
</table>
# EMGO+ IN 2011


Note: this list contains articles published in 2005-2011 on projects embedded in the EMGO+ Institute mentioned in any of the Annual reports of which at least one of the authors is still working as a senior researcher at the EMGO+ Institute. The top 10 articles with the highest citations, according to the (Social) Science Citation Index on 23 March 2012, are included in the table.

Table 19: CWTS crown indicator (trend analysis 1997-2010) per VUmc research institute

<table>
<thead>
<tr>
<th>Year</th>
<th>CCA-V-ICI</th>
<th>EMGO+</th>
<th>ICaR-VU</th>
<th>NCA</th>
<th>MOVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997-2009</td>
<td>1.63</td>
<td>1.72</td>
<td>1.41</td>
<td>2.25</td>
<td>1.49</td>
</tr>
</tbody>
</table>

Note: A crown indicator of 1.72 reflects that the scientific impact of EMGO+’s research is 72% above world average in the scientific fields that EMGO+ contributes to.
Societal impact

EMGO+ aims to produce excellent scientific research, but we really only fulfill our potential when that research benefits society at large. Striving for societal impact not only justifies our use of public funds, but also gives EMGO+ direction. We use the Dutch Health Council proposed indicators of societal impact to evaluate and monitor our performances. In 2011 EMGO+ researchers worked on 35 clinical guidelines on various topics in the form of co-authorships. A detailed list of the clinical guidelines can be found on our website (www.emgo.nl/about-emgo/societal-impact/).

In 2011, EMGO+ staff was also involved as committee members or co-authors in the publication of 37 health policy reports on a great variety of topics. For a short overview of health policy reports, please be referred to www.emgo.nl/about-emgo/societal-impact/. In addition to the clinical guidelines and health policy reports, there are trial reviews, national journal articles and books that we consider important for societal impact as well. These publications are listed in the publication list in chapter 13.

In 2011, the results of EMGO+ research projects attracted substantial attention from the media. Members of our staff were interviewed on television about 16 times, and some 21 interviews on national public radio were broadcasted. Interviews and articles about research projects and their results were published locally or nationally in more than 43 newspapers and 97 magazines and newsletters and on at least 132 different websites on the internet.

Another indicator of societal impact is the number of invitations of EMGO+ staff receives to deliver lectures to healthcare professionals, policy makers and non professionals. Topics covered in these presentations can also be found on our website www.emgo.nl/about-emgo/societal-impact/

EMGO+ staff members sit on many boards and committees, of which a selection is also presented on www.emgo.nl/about-emgo/societal-impact.
EMGO+ IN 2011

Members of our staff are frequently involved in teaching programs based on the results of EMGO+ research projects. The most important contributions to the post initial education of healthcare professionals are listed on the same website, with the exception of our contributions to the regular curriculum of the bachelor and master programs of medicine and health sciences.

The internet is arguably the most important source of health information. Therefore, websites can be highly relevant for measuring the societal impact of EMGO+’s research. The list of our most important websites is placed on our website www.emgo.nl/about-emgo/societal-impact/. The websites are divided into four categories: health information, research infrastructure, collaborating partners and research projects.

New professors
One new professor was appointed in 2011:

- On June 28th 2011 Mattijs Numans, coordinator Julius Primary Care Network JHN at Julius Center UMC Utrecht and general practitioner, was appointed Professor of ‘Innovation and Quality Academic Primary Care’. This endowed chair is embedded at the department of General Practice and the EMGO+ Institute.

EMGO+ awards
The EMGO+ awards are traditionally announced during the annual EMGO+ retreat, which was held on May 19th. Ludeke Lambeek received the EMGO+ Science Award for the best scientific paper titled ‘Effect of integrated care for sick listed patients with chronic low back pain: economic evaluation alongside a randomised controlled trial’.

The Societal Impact Award was given to Hanneke Wijnhoven for the project ‘Short Nutritional Assessment Questionnaire 65+’.
EMGO+ fellowships
One of the main goals defined in the EMGO+ project proposal was to promote and initiate interfaculty research initiatives. To achieve this, EMGO+ junior and senior fellowships were introduced in 2009. Investment in these post-doc positions is also aiming to improve talent-development in the institute. During the two year period of the fellowship, the fellows are supported and trained to pursue the high-quality and most prestigious grants, especially those issued by the European Commission and the Netherlands Organization for Scientific Research.

Two EMGO+ fellowships were appointed in 2011 to:

- Maartje van Stralen, LOD, working at the department of Public and Occupational Health;
- Eric van Exel, MH, working at the department of Psychiatry.
An example of an EMGO+ fellowship:
Dr. Maartje van Stralen, EMGO+ junior fellowship

Children in developed countries spend a lot of time in sedentary behaviours, such as TV-viewing, playing videogames and exploring the internet. Moreover, children spend more time sedentary than on any other activity except for sleeping. Recent reviews showed a positive association between time spend sedentary and overweight, and a negative association with aerobic fitness, independent of physical activity. It is thus of great Public Health importance to develop effective interventions aimed at changing sedentary behaviour in children.

In order to change sedentary behaviour, knowledge about risk groups (i.e. moderators), determinants (i.e. mediators over time) and working mechanisms of sedentary behaviour interventions (i.e. mediators of interventions) is needed. Identifying mediators of sedentary behaviour change can prompt future intervention developers to target relevant predictors, strengthen effective intervention components and remove ineffective strategies resulting in more cost-efficacious interventions. In addition, identifying moderators can stimulate intervention developers to specifically target risk groups or to seek for new strategies for non-responders. However, little is known about the moderators and mediators of sedentary behaviour. In addition, mediation and moderation analyses are still in its infancy, especially in medical sciences.

The overall aim of Maartje’s fellowship is to extend the knowledge on relevant mediators and moderators of sedentary behaviour in children.

The following key-objectives will be addressed:
1) to extend the knowledge on advanced statistical techniques used for mediation and moderation analyses by comparing different statistical techniques in a methodological paper;
2) to identify risk-groups of sedentary behaviour in children by conducting moderation analyses using existing data sets;
3) to identify mediators by conducting advanced mediation analysis using existing survey and intervention data sets.

The knowledge obtained from this project will bring the field of mediation and moderation analyses in overweight prevention to a higher level and will optimize future sedentary behaviour interventions in children.
An example of an EMGO+ Travel Grant:
Dr. Ruth van Nispen, Quality of Care Fellow

As an EMGO+ Quality of Care Fellow, I had the privilege to visit a renowned institute of choice. Last summer, I was invited by dr. Keziah Latham, senior lecturer and researcher, to visit her ‘Vision and Eye Research Unit’ (VERU) at Anglia Ruskin University in Cambridge (UK).

Right in the centre of Cambridge I stayed in a student room of the historic Christ’s College, where the young Charles Darwin once studied. From my window I had a view on one of the court yards with his statue in the middle. I also visited the impressive King’s and Queens colleges, and the botanical gardens. If you want to breathe science, Cambridge truly is the place to be!

Inspired by the surroundings, dr. Latham and I formulated some mutual goals. These were developing a constructive collaboration in research by exploring possibilities for exchanging (PhD-) students, and by writing grant applications and scientific papers together, which we immediately started. In a research seminar for scientists and summer students, I gave an overview of my work in low vision research.

To get in-depth information on important research topics, we had meetings with a number of researchers at VERU, and with medical professionals at Addenbrooks hospital, and Cam Sight rehabilitation centre for the visually impaired. I learned a lot from my visit to Anglia Ruskin University, e.g. they are very good at pilot studies to develop adequate research questions for larger studies. Finally, we were both very pleased with our agreements and collaboration. To express their appreciation they gave me the honorary title of Visiting Research Fellow, which will give me the opportunity for practical visits in the near future.
Personal Grants and Awards
In 2011 a number of EMGO+ colleagues have been able to obtain prestigious prizes or personal grants. A few examples are:

- Vici Grant (i.e. more senior fellowship from the Dutch NWO Innovation Research Incentive Scheme): Brenda Penninx.
- Bas Mulder Award (Dutch Cancer Society KWF): Laurien Buffart.
- ZonMw Parel: Han Anema.
- Burgerpenning: Willem van Mechelen.
- KNAW Merian Award: Dorret Boomsma.

For the complete list of all personal grants, awards and prizes that EMGO+ researchers have received in 2011, please surf to our website www.emgo.nl/about-emgo/societal-impact/.

International Collaboration
Diabetes and overweight, musculoskeletal disorders, mental health problems, and quality of care issues are of international importance, and excellent scientific research requires an international arena. EMGO+ researchers participate in diverse international scientific networks, collaborate intensively with international colleagues, participate in and help lead a range of relevant international societies, and sit on editorial boards of different international scientific journals. In this brief annual report we would like to explicitly mention three highlights in international collaboration in 2011.

- In 2011 Luc Deliens was appointed as co-chair of the research network of the European Association of Palliative Care.
- In 2011 EMGO+ was partner in 15 European Commission funded projects.
- In 2011 Raymond Ostelo was appointed as Honorary Professorial Fellow within the Musculoskeletal Division of the George Institute for Global Health.

More detailed lists of international collaboration per program can be found at www.emgo.nl/about-emgo/international-collaboration/.
EMGO+ was externally evaluated in 2010. The institute as well as its four research programs were rated as excellent. In its evaluation report, the committee was very positive about the Institute’s viability and future perspectives. This external evaluation covered the 2004-2009 period. In 2010, EMGO+’s output in terms of publications, PhD theses, and acquired research grants was again better than in 2009.

The external evaluation committee recommended to further rationalize and strengthen the Institute’s governance structure, and to promote cross program collaboration, as well as further strengthening the collaboration with more basic sciences, especially in the Musculoskeletal Health and Mental Health programs, and to further strengthen the focus in the Quality of Care program. These issues are indirectly covered in the 2011-2012 EMGO+ policy plan, so that the Institute’s performance can be maintained in the years to come.

From a financial perspective it should be noted that there was a marked drop in income from M€ 29 in 2010 tot M€ 17,5 in 2011. This may seem more worrying than it is; when looking back further, the 2011 income is comparable to the income in the years before 2010. However, we should not rule out that this drop in income also reflects the current poor economical climate and we should prepare for that.

The research output in terms of completed PhD-thesis’ and publications has maintained itself at a relatively stable and high level.

EMGO+’s VU/VUmc campus collaboration with CCA/V-ICI, the Cancer and Immunology Institute, the Neuroscience Campus Amsterdam, the Human Movement Sciences Institute MOVE and the Cardiovascular Disease Research Institute IcaR-VU will be further improved and formalized where and when needed. An example of a new collaborative initiative is the effort together with MOVE and groups of the University Medical Center and the Faculty of Human Movements Sciences, both of the University of Groningen to establish the Netherlands Sports Sciences Institute.

In the Netherlands there is a push for aggregation of higher education into larger units, in order to provide a more efficient structure, but also to create better conditions for top-level research. As part of this ambition VU University Medical Center and the Academic Medical Center of the University of Amsterdam have started in 2011 talks in order to come to strategic alliances. The outcome of these talks will certainly have bearing on the future of EMGO+.
STRENGTHS

DATA MANAGEMENT
Data management support is one of the EMGO+ crucial research facilities.

The main tasks and responsibilities of the central data management department within EMGO+ are:

- The development, maintenance and facilitating of an integrated data management infrastructure to promote and facilitate a standardised working method in every project.
- Data management consultancy to researchers and providing executive data management support when necessary in the areas of data collection, data processing, data-handling, data cleaning, data-documentation and data-archiving.
- Dedicated support for large (longitudinal) cohort studies within EMGO+.
- The organization of working meetings with decentralized data managers to promote and exchange standards and best practices.

In 2011 a further step was made in the expansion of the data management infrastructure and now consists of (IT) facilities for:

- Online questionnaires for research participants.
- Online data collection for the registration of patient data through practices like general practitioners, therapists etc participating in research projects.
- Data-entry and building face to face and telephone interviews.
- Clinical (Trial) data management and (e)CRF’s.
- Controlling and managing the dataflow in research projects.
- Web based provision of datasets in cohort studies.

These applications are a mix of self-developed generic applications and connections and the configuration of environments around standard programmes.

In 2011 a start was made with the development of an integrated data management system, based on data warehouse principles, for the import, cleaning, transformation, storage and documentation of longitudinal cohort data.

Besides the development and facilitating of an infrastructure, the data management department is also available for various forms of executive or advisory service provision. These services are primary intended for EMGO+ but in some cases also available for researchers from other VUmc departments or external clients. Basic support and first instruction are free of charge, but more operational tasks are invoiced internally, and should therefore be covered by project funding.
In 2011 (funded) executive data management support, in the areas of data collection and data processing, was provided to about 40 research projects. Activities consisted of the design and creation of data entry and interview systems, databases for controlling and managing the dataflow in projects, setting up online questionnaires and research databases, the conversion and reorganisation of files and the creation of syntax files for data cleaning and data transformation. Furthermore data management participated in the BROK course with the focus on Good Clinical Data Management Practices and twice a year an introductory course SPSS was given. Every 3 months a working meeting with decentralized data managers was organized. Additional executive support was made available to support a number of the large EMGO+ cohort studies in particular to eliminate the backlogs in various data management activities.

The data management department is part of the VUmc Division Office 6 were most of the research support facilities for the VUmc are situated. In 2011 the data management department consisted on average of 5 FTE’s. Besides that in 2011 two more data management employees were appointed to give support to all of the VUmc cohort studies.
STRENGTHS

STANDING COMMITTEES

Science Committee
In 2011 the members of the Science Committee were: Ingeborg Brouwer, PhD (chair), Cécile Boot, PhD (secretary), Marcel Adriaanse, PhD, Marjan Alssema, PhD (until November 2011), Ingrid Baart, PhD, Meike Bartels, PhD, Sander Begeer, PhD (until September 2011), Judith Bosmans, PhD, Jacqueline Broerse, PhD, Annet Dallmeijer, PhD, Sophia Kramer, PhD, Piet Kostense, PhD, Niels Smits, PhD, Natasja van Schoor, PhD, and Evert Verhagen, PhD. Secretarial support was provided by Karin Johnson.

The Science Committee consists of EMGO+ senior staff and meets every two weeks. Each of EMGO+’s research programs has at least three representatives on the Science Committee. The committee gives solicited and unsolicited advice to the management team. The main task of the Science Committee is to advise the management team on the methodological quality of all new research proposals brought forward by researchers for inclusion in the EMGO+ research programs.
nine

In 2011, advice was given on more than 105 new research proposals. The majority of these research proposals met EMGO+'s methodological standards. In most cases, the committee's advice consisted of minor suggestions for improving the research proposal. Only after approval of the management team, advised by the Science Committee, will a project be labelled within the institute and can affiliated personnel be allocated. In addition, approval of the EMGO+ Science Committee is required before evaluation of a project by the Medical Ethical Committee of the VU University Medical Center. A list of approved protocols in 2011 can be found on the website.

Finally, the Science Committee was responsible for the selection and ceremony of the EMGO+ science and societal impact awards, which were awarded during the annual meeting of EMGO+.

Quality Committee
The Quality Committee is responsible for developing, implementing and maintaining a system for quality assurance and control for the institute. The system is aimed at supporting and improving the research process. Moreover, the Quality Committee advises the directorate on quality issues. To fulfil its tasks the quality committee audits research projects, maintains and expands a web-based quality manual and provides personal introductions to all newly appointed researchers within the institute. The Quality Committee consists of a representation of various professions, programs and departments of the institute. In 2011 the members were: Pascal Borry, PhD, Marleen van der Horst, Msc, Wim Kraan, MSc, Michel Paardekooper, PhD (quality officer), Carry Renders, PhD, Esther van 't Riet, PhD, Annemieke van Straten, PhD (Chair) and Agnes Willemen, PhD.

In 2011 the Quality Committee has audited 15 research projects. The quality officer has given 56 personal introductions for newly appointed investigators. A campaign to promote the proper handling of privacy sensitive data was continued. All projects with an unknown privacy status were asked to provide the status information. The development of a web-based self evaluation for the EMGO+ researchers resulted into a first version. A guideline on handling missing data and renewed guidelines about questionnaires were published on the website.
PhD Committee
The PhD Committee consists of four senior investigators and one PhD student. Mai Chin A Paw, PhD (senior staff), Prof. Eco de Geus, PhD (senior staff), Femke van Nassau, MSc (PhD student), Raymond Ostelo, PhD, (Chair) and Prof. Marjolein Visser, PhD (senior staff).

The central objective of the PhD Committee is to facilitate a high quality supervision of and education for the PhDs’ of the EMGO+ Institute in order to deliver excellent researchers.

The PhD Committee advises the directorate on matters concerning education, supervision and assessment of PhD students. The PhD committee is responsible for reviewing the ‘education and supervision agreement’ that is designed and signed at the beginning of each PhD project. This agreement lists the auxiliary courses as defined by EMGO+ and other selected courses that the student must complete alongside the PhD research project. The overall aim of the agreement is to ensure a course program that combines a general academic education with specialized training tailored to the individual PhD student and project requirements. Supervised by the PhD Committee PhD students can choose one of four ‘PhD training profiles’: clinical epidemiology, social sciences, health care professionals, and a free profile. The committee further reviews the evaluations of PhD trajectories conducted by the main supervisor after ten months and three years into the usual four year period.

Beyond its review and advice functions, the committee offers assistance when PhD students find themselves in a dispute with their supervisors, and directs and supports a ‘PhD student buddy system’ that links each new PhD student to a more experienced student in order to provide new students a way to get quickly introduced within the institute.

External Advisory Committee
An external advisory board advises the management team of EMGO+ on policy plans, evaluations, and other relevant research and organizational issues. Members of this External Advisory Committee in 2011 were (in alphabetical order): Prof. S. Buitendijk, PhD (Professor of Maternal Health and Midwifery at AMC, Professor of Maternal and Child Health at LUMC, Head Child Health Program at TNO), Prof. R. van Dyck, MD, PhD (Chair - Former head of department Psychiatry VUmc), Prof. W. Gerritsen, MD, PhD (Director CCA/V-ICI, VUmc), Prof. A. Knottnerus, MD, PhD (Chair of the Netherlands Health Council), M.N. Pieters, PhD (Director of the Public Health and Health Services Division, RIVM), Prof. F.D. Pot, PhD (Professor of Social Innovation, Radboud University Nijmegen), Prof. K. Stronks, PhD (Head of the department of Social Medicine, AMC/UvA).
VUmc Knowledgecenter Measurement Instruments
The Knowledgecenter Measurement Instruments (www.kmin-vumc.nl) is an infrastructure of experts in the field of clinimetrics (Caroline Terwee, PhD (coordinator), Prof. Riekie de Vet, PhD, Wiencke Mokkink, PhD, Raymond Ostelo, PhD; Prof. Joost Dekker, PhD), psychometrics (Dirk Knol, PhD), and medical informatics (Ilse Jansma, MSc, clinical librarian). The Knowledgecenter Measurement Instruments has been set up in January 2010. It is part of the department of Epidemiology and Biostatistics and embedded in the EMGO Institute for Health and Care Research.

The mission of the Knowledgecenter Measurement Instruments is to optimize the quality of measurement in health science and medical research by consultations, education, and research. For this purpose, the center gives advice and cooperates with researchers from different fields of health science and medical research in searching for available measurement instruments, examining the quality of the available measurement instruments, choosing the most appropriate measurement instrument for a certain purpose, and designing and performing studies on measurement properties of measurement instruments.

Consultations
The Knowledgecenter offers researchers tailored advice and support in searching for measurement instrument(s) and designing and performing studies on measurement properties of instruments. In 2011 more than 30 researchers visited the center for advice and more than 100 researchers asked advice by e-mail or telephone.

Education
A major achievement was the publication of our textbook ‘Measurement in Medicine’ in August 2011. The Knowledge Center gave three 3-day courses in Clinimetrics in 2011: two for researchers (one organised by EpidM and one in Denmark), and one for research master students of the VU. In addition, a 1-day course was given in Sweden. Three workshops were organized on systematic reviews of measurement properties. One of them was given at the Annual international ISOQOL meeting in Denver. Four students did their internships at the Knowledge Center Measurement Instruments. A guideline on measurement instruments was revised for EMGO+ quality handbook.
Research
The Knowledgecenter performs research to optimize and develop new methodology in the field of measurement and validation of measurement instruments. The clinimetrics working group aims to improve the knowledge on clinimetrics by writing methodological articles on clinimetric issues and by performing methodological and applied clinimetric research. This group consists of 15 investigators, including PhD students, postdocs, and senior researchers from the various EMGO+ research programs. They convene once a month to discuss clinimetric issues on the basis of own research, manuscripts in preparation, or methodological papers from the literature. Main research topics of interest are the methodology of systematic reviews of measurement instruments, methods to determine minimal important changes in patient reported outcomes, and the application of item response theory methods to improve health status measurement instruments.

An important current project of the Knowledge Center is the Dutch/Flemish translation of the Patient Reported Outcomes Measurement Information System (PROMIS) for measuring aspects of health status using computer-adaptive testing (www.nihpromis.org). In 2011 Rianne Hoopman defended her PhD thesis on quality of life assessment among Turkish and Moroccan cancer patients in the Netherlands. Jasper Schellingerhout defended his thesis on neck pain in primary care, which included two systematic reviews of the measurement properties of neck-specific questionnaires. Currently, 7 PhD students are working on clinimetric projects. In 2011, the Knowledge Center published 41 clinimetric articles.
Two scientific symposia were organized in 2011. First, the Knowledge Center organised the annual EMGO+ retreat around the theme 'measurement and measurement instruments of the future'. Second, a pre-conference symposium was organised in cooperation with the Dutch chapter of the International Society for Quality of Life Research (ISOQOL-NL) on quality of life assessment in ethnic minority people. In addition, a workshop was provided at the annual scientific meeting of physiotherapists. Presentations were given at Oxford University and Odense University and for several other groups (e.g. for the Medical Ethics Committee of the VUmc, for training of general practitioners, and at several research meetings).

In 2011 the Knowledge Center received two grants for starting new research; a grant from the European League Against Rheumatism (EULAR, € 130,000) for the development and cross-cultural validation of a patient-reported computer animation questionnaire for measuring functional limitations in patients with arthritis, and a grant from the Dutch Physiotherapy Association (€ 39,946) for the validation of three PROMIS item banks in patients with chronic pain. In addition, the Knowledge Center was involved in two successful grant applications in collaboration with other groups from the University of NewCastle (Measurement in autism spectrum disorder under review £ 263,910) and the University of Amsterdam (Cross-cultural validation of the SQUASH, € 125,000).

**Health technology assessment**

The ever-rising cost of healthcare demands questions about how limited resources can be allocated to optimize health within the population. Health technology assessment (HTA) is an important tool in answering those questions.

HTA is scientific research that systematically examines the short- and long-term consequences of the application of health-related technologies. It is characterized by its multidisciplinary and comprehensive nature. HTA's goal is to disseminate objective, valid, and reliable information that informs both the daily practice of healthcare professionals and the far-reaching decisions of policymakers.

While it overlaps with other research sectors such as epidemiology, HTA at EMGO+ focuses on economic evaluation. At EMGO+, with its ample expertise in intervention studies, economic HTA evaluations are conducted alongside randomized controlled trials of diagnostic, preventive, and therapeutic interventions within the four research programs.
In addition to economic evaluations, HTA researchers at EMGO+ also perform systematic reviews on interventions’ effectiveness (within the framework of the Cochrane Collaboration), develop evidence-based guidelines, and evaluate the implementation of those guidelines. The HTA Unit’s main objective is to establish a high quality scientific research program, but it also consults, offers support and advice concerning economic evaluations to colleagues within the VUmc, and educates, training students in economic evaluation.

**Prognosis and Prediction**

Prognostic and prediction studies aim to distinguish between patients with a favorable and poor outcome. The aim of a prognostic model is to estimate (predict) the probability of a particular outcome as optimally as possible, and not just to explore the causality of the association between a specific factor and the outcome (explanatory). The results of these predictive studies are important to inform the patients about the probable course of their disease, to make adequate treatment decisions, or to plan health care facilities. Furthermore, evidence for causal prognostic factors may trigger the development of new interventions. The prediction working group of EMGO+ examines which methods are most adequate to design and analyze prognostic factors and prediction studies. Guidelines have been produced for EMGO+ researchers for the optimal performance of prognosis and prediction studies.

**Longitudinal data analysis**

Longitudinal data analysis aims to measure change in repeated measurements over time and the factors that influence this change. A typical feature of these measurements is that they are clustered. If measurements are taken from the same individual, within and between individual change can be assessed. The clusters than consist of repeated measurements over time obtained from a single individual. Measurements obtained from the same individual will induce positive correlation. Techniques have been developed that are able to account for this correlation. Most used techniques are generalized estimating equations (GEE) and Mixed models. When information is obtained from different measurement levels, i.e. time and individuals, these techniques are also called multilevel techniques.

EMGO+ is well known for their large longitudinal cohort studies that are conducted in the different research programs. Specific methodological expertise exists within EMGO+ to offer support and advice concerning longitudinal data analysis and to conduct high quality methodological longitudinal research.
Mixed methods

When research questions are leading for the choice of a research method, a mix of quantitative and qualitative methods will often be the most appropriate method. For instance, quantitative methods can give insight in the frequency of a phenomenon, while qualitative methods can shed light on the way this phenomenon is experienced and impacts the life of people who encounter this phenomenon.

Especially within the research program Quality of Care there is substantial experience with mixed methods of research. This not only requires knowledge on both quantitative and qualitative methods, but also on how to combine these types of methods within one research project. Mixed methods is more than combining results of separate quantitative and qualitative studies on the level of interpretation, but require integrating both methods in the design and analysis of a study. An example is nesting of a qualitative study in a quantitative framework: the information collected in for instance a quantitative survey is used to select a relevant selection of respondents for in-depth interviews.
LONGITUDINAL STUDIES
EMGO+ continues to manage four major large-scale longitudinal studies that form an important basis for much of our research.

The Amsterdam Growth and Health Longitudinal Study (AGGO, www.aggo.nl) was initiated in 1974, to monitor the growth, health, and lifestyle of 600 boys and girls entering secondary school over a period of four years. After the original four years, the follow-up was extended to take measurements when the participants were 21-, 27-, 29-, 32-, and 36 years old. In 2006, almost 350 41-year-old participants attended the tenth repeated measurement, so that almost 30-year follow-up data are now available.

The Hoorn Study (Hoorn Study, www.hoornstudy.org) was initiated in 1989 to study the prevalence and determinants of type 2 diabetes in the general population in the Netherlands. The Hoorn Study cohort has been monitored ever since and has been extended to include additional study populations. Furthermore, in 1996, to support diabetes care in the study region, the Diabetes Care System West-Friesland was initiated and a diabetes research center was built.

The Netherlands Study of Depression and Anxiety (NESDA, www.nesda.nl) is a ten year longitudinal investigation into the course of depression and anxiety disorders in the adult population, and was started in 2003. NESDA was recently enriched with NESDO, the Netherlands Study of Depression in Older Adults, http://nesdo.amstad.nl), a longitudinal study that examines the course of depression in older adults (60+ years).

Another major cohort study within EMGO+ is the Longitudinal Aging Study Amsterdam (LASA, www.lasa-vu.nl). The LASA-team, under Prof. Dorly Deeg’s leadership, ensured extensive additional funding for this study, enabling a new wave of data collection.
New cohort studies that will also require the input of longitudinal data analyses expertise have started in recent years. With the formation of the interfaculty research institute, the world famous Netherlands Twin Registry (NTR, www.tweelingenregister.org) and the Amsterdam Born Children and their Development (ABCD, www.abcd-studie.nl) study are also embedded with EMGO+. NTR is managed by the department of Biological Psychology and is embedded in EMGO+ as well as in the Neurosciences Campus Amsterdam (NCA, www.neurosciencecampus-amsterdam.nl). NTR aims at providing insight into what extent the causes of differences between individuals are determined by genetic and environmental influences.

The Amsterdam Born Children and their Development (ABCD) study is led by the Municipal Health Service of Amsterdam and is conducted in close collaboration with the Academic Medical Center of the University of Amsterdam. ABCD aims at analyzing the effect of early risk factors on child health outcomes.

In recent years three further main cohorts studies were started within the institute. The Advance Directive Cohort (ADC), consisting of people with one or more of the 4 most common advance directives in the Netherlands, aims at getting insight in motives and expectations underlying the completion of an advance directive, whether wishes concerning the end of life change over time, and the role of advance directives in situations in which they have become applicable.

The ChecKid study aims to provide recent data on the prevalence of overweight, obesity, (un)healthy nutrition, physical (in)activity behavior, and environmental determinants of these behaviors among 4 to 12 year old children in Zwolle.
The Generations2 study is a large study on the development of parenting and mental health. A cohort of 5,000 women in the Amsterdam area will be followed through their first pregnancy and the first six years of their children's lives. The second pregnancy and child will also be a focus of investigation. The overall question is how women are prepared for parenthood, how they adjust to actual parenting challenges, and how mental models of parenting and their own attachment backgrounds as well as psychophysiological indicators of affect-regulation predict attachment in the child and socio-emotional development. The Generations2 project is an initiative from the department of Clinical Child and Family Studies.

RADAR (Research on Adolescent Development And Relationships, www.radar.vu.nl) employs a design that is innovative in several respects. The study is comprehensive in its coverage of the various relationships in adolescence, it uses an extensive five-year longitudinal design (20 assessments of the parent-adolescent relationship, 20 of the adolescent-best friend relationship and 8 of the adolescent-intimate partner relationship during 2 years), it uses multi-actor questionnaire and observational data for all relationships, has a full-recursive design and studies aspects of adolescent development that are known to change and vary across adolescence (relationships, personality and identity, problem behaviour). The study uses a dual data-collection strategy: panel members will be visited every year in their homes, and will also answer questions through the Internet at various moments in the year (five days during a week each three months). Five cohorts will be followed: early adolescent normal and antisocial adolescents and their families, middle adolescent normal adolescents and their families, and early adolescent regular and antisocial Moroccan adolescents and their families.
### Table 20: EMGO+ Longitudinal Studies

<table>
<thead>
<tr>
<th>Longitudinal study</th>
<th>Research Leader(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABCD (Amsterdam Born Children and their Development)</td>
<td>Prof. Reinoud Gemke, PhD</td>
</tr>
<tr>
<td>ADC (Advance Directives Cohort)</td>
<td>Prof. Bregje Onwuteaka-Philipsen, PhD and Roeline Pasman, PhD</td>
</tr>
<tr>
<td>AGGO (The Amsterdam Longitudinal Growth and Health Study)</td>
<td>Prof. Willem van Mechelen, MD, PhD and Prof. Jos Twisk, PhD</td>
</tr>
<tr>
<td>ChecKid</td>
<td>Prof. Remy Hira Sing, MD, PhD, Carry Renders, PhD and Tommy Visscher, PhD</td>
</tr>
<tr>
<td>Generations²</td>
<td>Prof. Carlo Schuengel, PhD and Mirjam Oosterman, PhD</td>
</tr>
<tr>
<td>Hoorn Study</td>
<td>Prof. Jacqueline Dekker, PhD and Prof. Giel Nijpels, MD, PhD</td>
</tr>
<tr>
<td>LASA (The Longitudinal Aging Study Amsterdam)</td>
<td>Prof. Dorly Deeg, PhD</td>
</tr>
<tr>
<td>NESDO (The Netherlands Study of Depression in Older People)</td>
<td>Hannie Comijs, PhD</td>
</tr>
<tr>
<td>NESDA (The Netherlands Study of Depression and Anxiety)</td>
<td>Prof. Brenda Penninx, PhD</td>
</tr>
<tr>
<td>NTR (Netherlands Twin Registry)</td>
<td>Prof. Dorret Boomsma, PhD</td>
</tr>
<tr>
<td>RADAR (Research on Adolescent Development and Relationships)</td>
<td>Prof. Hans Koot, PhD</td>
</tr>
</tbody>
</table>

### One example: The Hoorn Study

In 1989 the EMGO Institute of the VU University Medical Center (VUmc) initiated the Hoorn Study, to study the prevalence and determinants of type 2 diabetes in the general population in the Netherlands. The Hoorn Study cohort has been monitored ever since, and has been extended to include additional study populations. By means of repeated medical examinations, and follow-up of morbidity and mortality in a well-defined population, it is possible to study new (genetic) risk factors, biomarkers and effective methods for the prevention and treatment of chronic diseases. The many facets of diabetes are being studied in a translational, multidisciplinary approach, involving collaboration with specialists from various fields of research. The topics range from molecular biology to prevention and thus truly from molecule to society.
The Hoorn Study is supported by the EMGO+ Institute and the VUmc, and has received grants from the Netherlands Diabetes Research Foundation and the Netherlands Organization for Health Research and Development and the Netherlands Heart Foundation.

Many (inter)national collaborations have lead to a good use of the available data and samples, and to over 200 scientific publications. So far 21 PhD theses in Amsterdam only have been based on data from the Hoorn Study.

Detailed information on the available data and publications can be found at www.hoornstudy.org.

**Objectives**
The initial objective of the Hoorn Study was to determine the prevalence of type 2 diabetes and associated risk factors in a representative sample of the Dutch population. The objectives were later extended to study risk factors for diabetes and cardiovascular disease and other diabetes complications in prospective follow-up of the Hoorn Study cohort.

**Design**
The Hoorn Study is a population-based cohort study in the Netherlands. In 1989, a random sample was taken from the municipal register of Hoorn. Of the 3,553 men and women aged 50-75 years who were invited, 2,540 (71.5%) agreed to participate. 56 non-Caucasian subjects were excluded, resulting in the initial Hoorn Study cohort of 2,484 subjects. All participants, except those who were on glucose-lowering medication, underwent an oral glucose tolerance test, which consists of drinking a solution of 75 g glucose in 300 ml water after an overnight fast. A physical examination was carried out, and questionnaires on health status and lifestyle were completed.

**Cohort study with repeated measurements of glucose status**
In 1996-1998, original participants of the Hoorn Study were invited for a follow-up medical examination, including the oral glucose tolerance test. Of the initial cohort, 150 subjects had died and 108 subjects had moved away from Hoorn before 1996. 140 other subjects were not invited for logistic reasons. Of the remaining 2,086 subjects who were invited for the follow-up examination, 1,513 (72.5%) participated.

**Follow-up medical examinations in selected subjects**
To study possible differences in the etiology of cardiovascular disease in subjects with and without diabetes, extensive examinations of cardiac and vascular function, fat distribution, and homocysteine and lipid metabolism were carried out in selected subjects in the Hoorn Study in 2000-2001.
As many patients with diabetes had died during follow-up, newly-diagnosed diabetic subjects who were identified through a screening study in the region, were also included. In 2005-2007 a follow-up study, focusing on cognitive function was performed. 3 groups of participants were selected based on their risk factor profile at the time of the third examination in 2000-2001. Of the 647 participants who attended the third examination in 2000-2001 462 fulfilled the criteria for one of the three described groups. After excluding persons who had died (n=52) or could not be contacted (n=25) the remaining 385 persons were invited, of whom 277 persons between 65 and 90 years old participated in the fourth examination (response rate 72%).

In 2007-2009, all participants of the original Hoorn Study, who participated in the year 2000-follow-up examination and the screened patients in 2000 were invited for a new follow-up. The examinations included assessment of cardiovascular structure and function, cardiovascular risk factors, and the presence of diabetes complications. Of 746 invited subjects, 481 participated.

**Follow-up of morbidity and mortality**
In collaboration with the general practitioners and the local hospital, morbidity and mortality in the Hoorn Study cohort is being monitored. The population register of the city of Hoorn provides information on the vital status of the participants who gave informed consent. Causes of death and information about morbidity are extracted from the medical records in the general practices and the local hospital.

**Biobanking**
At each visit, spare samples were stored at -80 degrees for future research questions. In addition, DNA was isolated to study genetic determinants of diabetes and diabetes complications and determinants of effectiveness of medication.
RESEARCH CENTERS AND ACADEMIC COLLABORATIVE CENTERS

The ambition of EMGO+ is to conduct research that has a true impact on the daily practice of extramural health care. In order to facilitate this ambition EMGO+ has established over the years a number of Research Centers (table 21) and Academic Collaborative Centers (table 22). The Research Centers cover specific topics of dedicated research and service to the public, whereas the Academic Collaborative Centers provide direct links with daily practice. In Academic Collaborative Centers, research, policy and practice are brought together. Research Centers and Academic Collaborative Centers that were active in 2011 are all described on EMGO+’s website (www.emgo.nl/research/infrastructure/).

Table 21: EMGO+ Research Centers

<table>
<thead>
<tr>
<th>Research centers</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body@Work</td>
<td>Joint forces of EMGO+ and TNO (Applied Scientific Research) to research, consult, and solve problems in the broad field of occupational health.</td>
</tr>
<tr>
<td>Center of Expertise in Palliative Care</td>
<td>Enhancing the quality of palliative care.</td>
</tr>
<tr>
<td>Knowledgecenter Measurements Instruments</td>
<td>Improving the quality of measurements in medical and health science research as well as clinical practice.</td>
</tr>
<tr>
<td>Health Technology Assessment Unit (HTA)</td>
<td>Establishing a high quality research program, by offering consult, support and advice concerning economic evaluations to colleagues within VU University Medical Center.</td>
</tr>
<tr>
<td>Knowledge Center for Insurance Medicine</td>
<td>Research aiming at improving work disability assessments.</td>
</tr>
<tr>
<td>Knowledge Center Overweight</td>
<td>Enhancing knowledge about the etiology, prevention, treatment options and consequences of overweight and obesity.</td>
</tr>
<tr>
<td>Safety4Patients</td>
<td>Enhancing insight into the method and culture that can improve patient safety and to apply these in the health care setting.</td>
</tr>
</tbody>
</table>
## STRENGTHS

### Table 22: EMGO+ Academic Collaborative Centers

<table>
<thead>
<tr>
<th>Academic collaborative centers</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic Network Medical Practice for Frail Elderly (GeriMedica)</td>
<td>General practitioners, teachers and researchers work together to improve the quality of primary care concerning frail elderly.</td>
</tr>
<tr>
<td>Bipolar Disorders</td>
<td>Contributes to restoration and maintenance of health and well being of patients with bipolar disorders (manic depressive illness) and others involved, through research, health care innovation, education and health advocacy.</td>
</tr>
<tr>
<td>Child and Youth Health Care North-Holland VUmc</td>
<td>Improves knowledge transfer between the academic collaborative center, health policy, research and education.</td>
</tr>
<tr>
<td>Depression and Anxiety</td>
<td>Provides an environment in with research and vocational training strengthen and inspire relevant professionals and researchers.</td>
</tr>
<tr>
<td>Domiciliary Care – Overweight</td>
<td>Integrates primary care for both children and the elderly (60+) with overweight and obesity in Zwolle.</td>
</tr>
<tr>
<td>Healthcare Inspection</td>
<td>Aim to build a scientific evidence base for health care inspection activities and to provide insight in the process and effects of inspection activities on health care.</td>
</tr>
<tr>
<td>Insurance Medicine</td>
<td>Improving the quality of work disability assessments and developing and evaluating new return-to-work strategies and tools.</td>
</tr>
<tr>
<td>KLM Health Services</td>
<td>Improving work conditions, lifestyle and workers health.</td>
</tr>
<tr>
<td>Network of General Practices</td>
<td>Integrates scientific research, medical education, vocational training and innovation in general-practice care.</td>
</tr>
<tr>
<td>University Network of Organizations for Elderly Care (UNO)</td>
<td>(i) Improvement of patient care via consensus on assessment instruments, use of research outcome data, guideline implementation, exchange of best-practices and collegial peer-review and support among relevant professionals; (ii) participation in VUmc research projects and feed-back on quality of care; and (iii) participation in education for medical students (VUmc-compas).</td>
</tr>
</tbody>
</table>
Old Age Psychiatry | Focuses on heterogeneity of affective disorders in old age, studied from three perspectives: population based epidemiological studies, collaborative care studies carried out mostly in primary care, and studies in clinical populations.

Occupational and Environmental Health Service VU/VUmc | Focuses on both the prevention of work-related complaints and disease, and on effective return-to work intervention for those off work because of sickness.

Severe Mental-illness 1,2 and 3 | Focuses on the epidemiology of long-term mental illness and on the recovery and rehabilitation in long-term care.

University Network of Organizations for elderly care (UNO) | Building a bridge between research and practice in long term elderly care, especially nursing home care.

One example: Research Center for Insurance Medicine
The Dutch Research Center for Insurance Medicine (Kenniscentrum Verzekeringsgeneeskunde (KCVG)) is a joint initiative of 1) the Coronel Institute of Occupational Health, Division of Clinical Methods and Public Health, Academic Medical Center in Amsterdam, 2) the Department of Social Medicine, University Medical Center Groningen, 3) the Department of Public and Occupational Health, EMGO Institute for Health and Care research, VU University Medical Center, and 4) the Social Medical Affairs Division of the Dutch Employee Insurance Schemes Implementing Body.

The purpose of the KCVG is to promote the quality and scientific support of insurance medicine by developing and evaluating methods, guidelines, tools and interventions. The KCVG, in collaboration with the AMC, the UMCG and the VUmc, aims to raise the issue of insurance medicine in schools with medical students and specialist registrars in insurance medicine. The KCVG strives to work in partnership with other educational institutes in order to be active in as wide a range of research fields as possible.

Organisations Participating in the KCVG Research Programme
- Coronel Institute of Occupational Health, AMC, Amsterdam
- Department of Social Medicine, UMCG, Groningen
- Social Medical Affairs Division, UWV, Amsterdam
- Department of Public and Occupational Health, EMGO Institute for Health and Care research, VUmc, Amsterdam
The Research Programme
The aim of the KCVG research programme is to develop scientifically based methods, guidelines and tools for insurance medicine and to determine the effectiveness of interventions. Examples of this are evaluation methods, methods for the promotion of quality control, and control of evidence-based medicine on behalf of the insurance physicians. These methods and guidelines can be used by insurance physicians in their practice. The UVW has set up an academic workplace that provides the KCVG with manpower, experience and statistical information. Some of the themes in the current research programme that are dealt with by the KCVG are:

- Causes and consequences of health-related incapacity for work.
- Prevention and reduction of health-related incapacity for work.
- Consequences of new regulations with regard to insurance medicine.

Organisational structure of the KCVG
The management of the KCVG is in the hands of the Programme Council, which consists of:

- Professor J.R. Anema (chairman, VUmc)
- Professor A.J. van der Beek (VUmc)
- Professor M.H.W. Frings-Dresen (AMC)
- Professor H. Wind (Foundation Institute Gak (Stichting Instituut Gak)/AMC
- Professor J.J.L. van der Klink (UMCG)
- Dr S. Brouwer (UMCG)
- Dr H. Kroneman (UWV)
- Doctorandus D. Holtkamp (Programme Manager KCVG)
Since 1989 the department of Epidemiology & Biostatistics organizes in co-operation with the EMGO+ institute a postgraduate epidemiology program called EpidM. The program includes a Master’s Program in Epidemiology and offers additional courses in epidemiological and advanced statistical methods.

The Master’s Program is a 2.5 years, part-time program of 60 EC. The theoretical part (27 EC) consists of six compulsory courses and three optional courses. The program also includes a scientific internship (33 EC).

The Master’s Program trains postgraduates from a range of disciplines (Medicine, Health Sciences, Biomedical Sciences, Pharmaceutical Sciences etc.). It focuses on applied research in primary care and public health. The program provides the methodological tools for evidence-based medicine and evidence-based health policy. The students taking part in the program are researchers (including PhD students) and professionals working in the health services field. They often combine their work (including clinical work) with research activities. The research that they carry out at their place of work represents their scientific internship.

In January 2010 a new curriculum of the Master’s Program in Epidemiology has started. In January 2011 this new curriculum has been accredited by the Accreditation Organization of The Netherlands and Flanders (NVAO). NVAO independently ensures the quality of higher education in the Netherlands and Flanders by assessing and accrediting programs and contributes to enhancing this quality. This means that upon successful completion of the program students will receive a Master of Science degree. In 2010 and 2011, subsequently 22 and 29 students enrolled in the Master’s Program.

Furthermore in 2011, 390 students attended one or more courses of EpidM, resulting in a total of 634 course registrations. 29% of these students were employees of the EMGO+, 13% of the VU University Medical Center and the remaining 58% were students employed at a range of other institutes.

The epidemiology program EpidM is entirely funded from course fees and is not supported by regular government funding for higher education. The fact that the program attracts certainly enough students to be in a financially good shape, indicates that the program is well attended, and the course evaluations indicate that the program is well appreciated by the participating students. More information can be found on [http://www.epidm.nl](http://www.epidm.nl).
**RESEARCH STAFF OF THE INSTITUTE**

Table 23: Research staff of the institute, 2007-2011 (in FTE)

<table>
<thead>
<tr>
<th></th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EMGO</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tenured, direct university funded research staff (DFRS)</td>
<td>48.5</td>
<td>52.2</td>
<td>54.9</td>
<td>55.4</td>
<td>51.1</td>
</tr>
<tr>
<td>Tenured, externally funded research staff</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>18.5</td>
<td>23.8</td>
</tr>
<tr>
<td>Non-tenured staff</td>
<td>54.5</td>
<td>58.7</td>
<td>94.6</td>
<td>101.7</td>
<td>99.4</td>
</tr>
<tr>
<td>PhD-students</td>
<td>59.5</td>
<td>65.1</td>
<td>97.3</td>
<td>109.4</td>
<td>117.3</td>
</tr>
<tr>
<td><strong>Total research staff</strong></td>
<td>162.5</td>
<td>176.0</td>
<td>246.8</td>
<td>285.0</td>
<td>291.5</td>
</tr>
</tbody>
</table>

Table 24: Overview research staff per type of funding, 2007-2011 (FTE per year)

<table>
<thead>
<tr>
<th>Year</th>
<th>Research staff Direct funding(^1)</th>
<th>Research staff Research funding(^2)</th>
<th>Research staff Contract funding(^2)</th>
<th>Research staff Industry funding(^2)</th>
<th>Total RF + CF + IF(^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>57.61</td>
<td>34.98</td>
<td>64.38</td>
<td>5.43</td>
<td>104.79</td>
</tr>
<tr>
<td>2008</td>
<td>65.83</td>
<td>47.35</td>
<td>65.22</td>
<td>2.60</td>
<td>115.17</td>
</tr>
<tr>
<td>2009</td>
<td>73.21</td>
<td>66.38</td>
<td>91.12</td>
<td>9.79</td>
<td>167.29</td>
</tr>
<tr>
<td>2010</td>
<td>86.77</td>
<td>89.80</td>
<td>99.82</td>
<td>8.64</td>
<td>198.26</td>
</tr>
<tr>
<td>2011</td>
<td>80.90</td>
<td>93.28</td>
<td>112.50</td>
<td>4.84</td>
<td>210.62</td>
</tr>
</tbody>
</table>

\(^1\) Concerns the yearly average of the direct funding realized formation within the guaranteed formation for the Institute, plus the additional research formation from the departments of General Practice, Nursing Home Medicine, Public and Occupational Health, and a part of the research formation from the departments of Nutrition and Dietetics, Audiology, Endocrinology, Pediatrics, Epidemiology and Biostatistics, Clinical Genetics, Medical Psychology, Ophthalmology, Psychiatry, Rehabilitation Medicine and the faculties of Earth and Life Sciences and Psychology and Education.

\(^2\) Research funding, contract funding and industry funding formation concerns the real appointments on acquired grants or at the expense of reserves until December 31\(^{st}\) 2011.
ADDITIONAL KEY INFORMATION

FINANCIAL STATUS

EMGO+ has never in its history acquired more than the € 28.9 million in 2010. The acquisition level in 2011 is on about the same level as the years before 2010. Examples of 5 major grants in 2011 are:

- € 1.5M – The Netherlands Organization for Scientific Research – Vici grant Versnelt depressie de biologische veroudering?
- € 0.9M – Sanofi Aventis Germany / European Union – DIRECT Study
- € 0.9M – The Netherlands Organization for Health Research and Development – project Folic acid / preterm birth
- € 0.5M – Alpe d’Huzes / Dutch Cancer Society KWF – the TES trial
- € 0.65M – Dutch Cancer Society KWF – POLARIS Study

Table 25: Acquisition of grants per year, 2007-2011 (in €)

<table>
<thead>
<tr>
<th>Year</th>
<th>Direct Funding (DF)</th>
<th>Research funding (RF)</th>
<th>Contract funding (CF)</th>
<th>Industry funding (IF)</th>
<th>RF + CF + IF</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>6,785,073</td>
<td>4,134,805</td>
<td>6,816,592</td>
<td>378,183</td>
<td>11,329,580</td>
</tr>
<tr>
<td>2008</td>
<td>7,256,214</td>
<td>3,564,580</td>
<td>8,593,411</td>
<td>404,109</td>
<td>12,562,100</td>
</tr>
<tr>
<td>2009</td>
<td>10,060,858</td>
<td>10,538,287</td>
<td>8,582,927</td>
<td>580,960</td>
<td>19,702,174</td>
</tr>
<tr>
<td>2010</td>
<td>9,813,318</td>
<td>18,815,942</td>
<td>9,713,825</td>
<td>437,078</td>
<td>28,966,845</td>
</tr>
<tr>
<td>2011</td>
<td>9,215,444</td>
<td>9,891,265</td>
<td>7,423,260</td>
<td>190,600</td>
<td>17,505,125</td>
</tr>
</tbody>
</table>

Direct Funding  Is university funding.  Concerns the annual available budgets allocated by VU/VUmc.  To convert formation into money, we used:
1 FTE Research Staff: € 102,700  (in 2010 € 102,700, 2009 € 102,700, 2008 € 94,005, 2007 € 90,666)

Research Funding  Are funds allocated by the Netherlands Organization for Scientific Research, European Union, and the Netherlands Organization for Health Research and Development.

Contract Funding  Are funds allocated by the so-called money-box funds (Dutch Heart Foundation, Dutch Diabetes Research Funds, Dutch Cancer Society, etc) as well as allocated grants directly from the government and government grants allocated through ‘College voor Zorgverzekeringen’.

Industry Funding  Grants allocated by businesses, the pharmaceutical industries in particular and other additional smaller funds without a peer review procedure.
eleven                  ADDITIONAL KEY INFORMATION

Figure 4: Acquisition of grants per year, 2007-2011 (in €)

Table 26: Acquired external grants in 2011 per research program (in €)

<table>
<thead>
<tr>
<th>Research Program</th>
<th>Research funding</th>
<th>Contract funding</th>
<th>Industry funding</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total LOD</td>
<td>1,150,369</td>
<td>1,541,115</td>
<td>32,500</td>
<td>2,723,984</td>
</tr>
<tr>
<td>Total MH</td>
<td>5,147,627</td>
<td>2,060,524</td>
<td>158,100</td>
<td>7,366,251</td>
</tr>
<tr>
<td>Total QofC</td>
<td>2,271,571</td>
<td>2,765,767</td>
<td>-</td>
<td>5,037,338</td>
</tr>
<tr>
<td>Total MSH</td>
<td>1,321,698</td>
<td>1,055,854</td>
<td>-</td>
<td>2,377,552</td>
</tr>
<tr>
<td>Total EMGO⁺</td>
<td>9,891,265</td>
<td>7,423,260</td>
<td>190,600</td>
<td>17,505,125</td>
</tr>
</tbody>
</table>
EFFORTS TO PREVENT DIABETES AND CARDIOVASCULAR DISEASES IN PRIMARY CARE

An Innovative Lifestyle Intervention for Adults at Risk

Jeroen Lakerveld
LIFESTYLE, OVERWEIGHT AND DIABETES

1. de Kroon MLA. The Terneuzen Birth Cohort. Detection and prevention of overweight and cardiometabolic risk from infancy onward.; Promotor: Prof. dr. R.A. Hira Sing; Prof. dr. S. van Buuren; Co-promotor: Dr. C.M. Renders; Dr. J.P. van Wouwe. (Cat. A).

2. Groeneveld IF. Health under construction. A lifestyle intervention for construction workers at risk for cardiovascular disease.; Promotor: Prof. dr. W. van Mechelen; Prof. dr. A.J. van der Beek; Co-promotor: Dr. K.I. Proper. (Cat. A).

3. Heim N. Obesity in old age. Criteria and consequences; Promotor: Prof. dr. ir. M. Visser; Prof. dr. ir. J.C. Seidell; Co-promotor: Dr. ir. M.B. Snijder. (Cat. A).

4. Lakerveld J. Efforts to prevent diabetes and cardiovascular diseases in primary care; Promotor: Prof. dr. M.G.A.A.M. Nijpels; Prof. dr. M.W. van Tulder; Co-promotor: Dr. S.D.M. Bot; Dr. M.J.M. Chin A Paw. (Cat. A).

5. Ujcic-Voortman JK. Ethnic disparities in cardiovascular disease risk: the distribution of risk factors among Amsterdam residents with a Turkish and Moroccan ethnic background; Promotor: Prof. dr. ir. J.C. Seidell; Prof. dr. A.P. Verhoeff; Co-promotor: Dr. C.A. Baan. (Cat. A).

6. van ’t Riet E. Hyperglycemia: causes and consequences; Promotor: Prof. dr. ir. J.M. Dekker; Prof. dr. M.G.A.A.M. Nijpels; Co-promotor: Dr. M.J. Alssema. (Cat. A).

7. van den Hurk K. Diabetes and the Heart; Promotor: Prof. dr. ir. J.M. Dekker; Prof. dr. M.G.A.A.M. Nijpels; Co-promotor: Dr. O. Kamp; Dr. M.J. Alssema. (Cat. A).

8. Vermeer WM. Small, medium or supersize? The development and evaluation of interventions targeted at portion size; Promotor: Prof. dr. ir. J.C. Seidell; Co-promotor: Dr. I.H.M. Steenhuis. (Cat. A).

9. Weijerman ME. Consequences of Down syndrome for patients and family; Promotor: Prof. dr. R.J.B.J. Gemke; Prof. dr. A.M. van Furth. (Cat. A).
MENTAL HEALTH

1. Dozeman E. Prevention of depression and anxiety in residential homes for the elderly; Promotor: Prof. dr. A.T.F. Beekman; Prof. dr. H.E. van der Horst; Co-promotor: Dr. D.J.F. van Schaik; Dr. H.W.J. van Marwijk. (Cat. A).

2. Estourgie-van Burk GF. Variation in growth and the influence of early growth in later life: a twin-sibling study; Promotor: Prof. dr. D.I. Boomsma; Prof. dr. Delemarre-van de Waal; Prof. dr. W.P.F. Fetter; Co-promotor: Dr. M. Bartels. (Cat. A).

3. Fassaert TJL. Ethnic differences and similarities in care for anxiety and depression in the Netherlands; Promotor: Prof. dr. J.J.M. Dekker; Prof. dr. A.P. Verhoeff; Prof. dr. A.T.F. Beekman; Co-promotor: Dr. M. de Wit. (Cat. B).


5. Paxling B. Internet-delivered treatments for generalized anxiety disorder factors; Promotor: Prof. dr. W.J.M.J. Cuijpers; Prof. dr. G. Andersson; Co-promotor: Prof. dr. H.F.E. Smit. (Cat. A).
6. Schouws S. Cognitive impairment in older persons with bipolar disorder; Promotor: Prof. dr. A.T.F. Beekman; Co-promotor: Prof. dr. M.L. Stek; Dr. H.C. Comijs. (Cat. A).

7. Seekles WM. Stepped Care Treatment for depression and anxiety in primary care; Promotor: Prof. dr. W.J.M. Cuijpers; Prof. dr. A.T.F. Beekman; Co-promotor: Dr. A. van Straten; Dr. H.W.J. van Marwijk. (Cat. A).

8. Seldenrijk A. Depression, anxiety and subclinical cardiovascular disease; Promotor: Prof. dr. B.W.J. Penninx; Prof. dr. M. Diamant; Co-promotor: Dr. H.P.J. van Hout; Dr.H.W.J. van Marwijk. (Cat. A).

9. te Boekhorst S. Group living homes for older people with dementia. Concept and effects.; Promotor: Prof. dr. J.A. Eefsting; Prof. dr. A.M. Pot; Co-promotor: Dr. M.F.I.A. Depla; Dr. J. de Lange. (Cat. A).

10. Tulner D. Heart in mind, mind in heart. Neurobiological aspects of depression post myocardial infarction; Promotor: Prof. dr. J. Korf; Prof. dr. H. den Boer; Prof. dr. A. Honig; Co-promotor: Dr. N.J.G.M. Veeger. (Cat. D).

11. van 't Hof E. Low cost psychological interventions in low- and middle-income countries. Stepping stones to narrow the treatment gap; Promotor: Prof. dr. W.J.M.J. Cuijpers; Prof. dr. D. Stein; Co-promotor: Prof. dr. I. Marks; Dr. A. van Straten. (Cat. A).

12. van Bastelaar KMP. Web-based cognitive behaviour therapy for depression in adults with Type 1 or Type 2 diabetes. (VU University Amsterdam; Promotor: Prof. dr. F.J. Snoek; Prof. dr. W.J.M.J. Cuijpers; Co-promotor: Dr. F. Pouwer. (Cat. A).

13. van den Kommer TN. Cognitive decline in late-life: biological markers and early identification of persons at risk for dementia. (VU Medical Center Amsterdam; Promotor: Prof. dr. D.J.H. Deeg; Prof. dr. C. Jonker; Co-promotor: Dr. M.G. Dik; Dr. H.C. Comijs. (Cat. A).

14. van der Aa N. Causes of variation in adolescent wellbeing; Promotor: Prof. dr. D.I. Boomsma; Co-promotor: Dr. M. Bartels. (Cat. A).


17. van Houwelingen CA. Studies into train suicide; Promotor: prof.dr. D.G.M. Beersma; prof. dr. A.J.F.M. Kerkhof. (Cat. B)

18. Wiersma JE. Psychological characteristics and treatment of chronic depression; Promotor: Prof. dr. A.T.F. Beekman; Co-promotor: Dr. P.C. van Oppen; Dr. D.J.F. van Schalk. (Cat. A).
CARE IN THE LAST MONTHS OF LIFE

End-of-Life Care registration in the Netherlands by a network of General Practitioners

EBUN ABARSHI
QUALITY OF CARE

1. Abarshi EAB. Care in the last months of life. End-of-life care registration in the Netherlands by a network of general practitioners.; Promotor: Prof. dr. L.H.J. Deliens; Prof. dr. B.D. Onwuteaka-Philipsen; Co-promotor: Dr. M.A. Echteld). (Cat. A).

2. Claassen EAM. The risky self. How people perceive and respond to being at risk for diabetes and cardiovascular disease; the role of genetic riks information and self-concept.; Promotor: Prof. dr. D.R.M. Timmermans; Prof. dr. Th.M. Marteau; Co-promotor: Dr. L. Henneman. (Cat. A).

3. de Boer M. Advance directives in dementia care. Perspectives of people with Alzheimer's disease, elderly care physicians and relatives.; Promotor: Prof. dr. C.M.P.M. Hertogh; Prof. dr. J.A. Eefsting; Co-promotor: Prof. dr. R.M. Droës. (Cat. A).

4. Hesselink BAM. Policies and guidelines on end-of-life care decision-making in Dutch health care institutions; Promotor: Prof. dr. B.D. Onwuteaka-Philipsen; Prof. dr. G. van der Wal; Co-promotor: Dr. H.R.W. Pasman; Dr. A. van der Heide. (Cat. A).


6. Jansma JD. Patient safety education for medical residents; Promotor: Prof. dr. A.B. Bijnen; Prof. dr. C. Wagner. (Cat. A).

7. Sitvast J. Photography as a nursing instrument in mental health care; Promotor: Prof. dr. T.A. Abma; Prof. dr. G.A.M. Widdershoven. (Cat. B).


9. van den Bosch WF. De HSMR beproefd. Aard en invloed van meetfouten bij het bepalen van het gestandaardiseerde ziektenhuissterftecijfer; Promotor: Prof. dr. C. Wagner. (Cat. B).
PARTICIPATORY ERGONOMICS TO PREVENT LOW BACK PAIN AND NECK PAIN AT THE WORKPLACE
MUSCULOSKELETAL HEALTH

1. Collins S. Complex Regional Pain Syndrome type 1. Assessment and treatment targeting central sensitization.; Promotor: Prof. dr. W.W.A. Zuurmond; Prof. dr. S.A. Loer; Co-promotor: Dr. R.S.G.M. Perez. (Cat. A).

2. de Leeuw MA. Psoas compartment - sciatic nerve block for prosthetic hip surgery. Clinical efficacy versus undesirable side effects; Promotor: Prof. dr. W.W.A. Zuurmond; Co-promotor: Dr. R.S.G.M. Perez. (Cat. A).

3. Driessen MT. Participatory ergonomics to prevent low back pain and neck pain at the workplace; Promotor: Prof. dr. A.J. van der Beek; Prof. dr. ir. P.M. Bongers; Co-promotor: Dr. K.I. Proper; Prof. dr. J.R. Anema. (Cat. A).

4. Oostlander AE. Crohn and bone. A quest for the mechanism of inflammation-induced osteoporosis.; Promotor: Prof. dr. P.T.A.M. Lips; Prof. dr. J. Klein Nulend; Co-promotor: Dr. N. Bravenboer; Prof. dr. W.F. Lems; Dr. A.A. van Bodegraven. (Cat. A).

5. Samoocha D. Empowerment of disability benefit claimants prior to their disability assessments; Promotor: Prof. dr. A.J. van der Beek; Prof. dr. J.R. Anema; Co-promotor: Dr. D. Bruinvels. (Cat. A).

6. van Rijssen HJ. Communication between social insurance physicians and work disability claimants; Promotor: Prof. dr. A. van der Beek; Prof. dr. J.R. Anema; Co-promotor: Dr. A.J.M. Schellart. (Cat. A).

Cat A: dissertation at EMGO+, prepared at EMGO+
Cat B: dissertation at EMGO+, prepared externally with an EMGO+ senior advisor
Cat C: external dissertation, prepared at EMGO+
Cat D: external dissertation, prepared externally
LIFESTYLE, OVERWEIGHT AND DIABETES

Scientific Publications - Indexed


<table>
<thead>
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<th>PUBLICATIONS</th>
</tr>
</thead>
</table>


116. Prins RG, Ball K, Timperio A, Salmon J, Oenema A, Brug J, Crawford D. Associations between availability of facilities within three different neighbourhood buffer sizes and objectively assessed physical activity in adolescents. Health and Place 2011; 17: 1228-34.


171. van der Zwan LP, Scheffer PG, Dekker JM, Stehouwer CDA, Heine RJ, Teerlink T. Systemic inflammation is linked to low arginine and high ADMA plasma levels resulting in an unfavourable NOS substrate-to-inhibitor ratio: the Hoorn Study. Clinical Science 2011; 121: 71-8.


198. Versnel N, Welschen LMC, Baan CA, Nijpels G, Schellevis FG. The effectiveness of case management for comorbid diabetes type 2 patients; the CasCo study. Design of a randomized controlled trial. BMC Family Practice 2011; 12.


211. Weijs PJM, Kool LM, van Baar NM, van der Zee SC. High beverage sugar as well as high animal protein intake at infancy may increase overweight risk at 8 years: a prospective longitudinal pilot study. Nutrition journal 2011; 10.


**Scientific Publications - Non-Indexed**


**Books and book chapters**


**Professional Publications**


**Popular Publications**


Scientific Publications - Indexed


thirteen


54. Cuijpers P. The patient perspective in research on major depression. BMC Psychiatry 2011; 11.


144. Licht CMM, Penninx BWJH, de Geus EJC. To include or not to include? A response to the meta-analysis of heart rate variability and depression. Biological Psychiatry 2011; 69: e1-e4.


148. Luong HTT, Chaplin J, McRae AF, Medland SE, Willemsen G, Nyholt DR, Henders AK, Hoekstra C, Duffy DL, Martin NG, Boomsma DI, Montgomery GW, Painter JN. Variation in BMPR1B, TGFRB1 and BMPR2 and control of dizygotic twinning. Twin Research and Human Genetics 2011; 14: 408-16.


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Scientific Publications - Non-Indexed


Professional Publications


7. Honig A, Kerselman GF. Reaction on ‘assisted suicide in psychiatry; current situation and notes on a recent case (I)’. Tijdschrift voor psychiatrie 2011; 53: 783-4.


thirteen


Popular Publications
### Scientific Publications - Indexed


39. Dingelhoff I, Smits M, Zwaan L, Lubberding S, van der Wal G, Wagner C. To what extent are adverse events found in patient records reported by patients and healthcare professionals via complaints, claims and incident reports? BMC Health Services Research 2011; 11.


77. Kemper PF, de Bruijne MC, van Dyck C, Wagner C. Effectiveness of classroom based crew resource management training in the intensive care unit: Study design of a controlled trial. BMC Health Services Research 2011; 11.


92. Molewijk AC, Ahlzen R. Clinical Ethics Committee Case 13: should the school doctor contact the mother of a 17-year-old girl who has expressed suicidal thoughts? Clinical Ethics 2011; 6: 5-10.


103. Pieper MJ, Achterberg WP, Francke AL, van der Steen JT, Scherdin EJA, Kovach CR. The implementation of the serial trial intervention for pain and challenging behaviour in advanced dementia patients (STA OP!): a clustered randomized controlled trial. BMC Geriatrics 2011; 11.


120. Rurup ML, Deeg DJH, Poppelelaars JL, Kerkhof AJFM, Onwuteaka-Philipsen BD. Wishes to die in older people a quantitative study of prevalence and associated factors. Crisis 2011; 32: 194-203.


<table>
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<tr>
<th>Number</th>
<th>Author(s)</th>
<th>Title</th>
<th>Journal</th>
<th>Year</th>
</tr>
</thead>
</table>


154. van Berkel J, Proper KI, Boot CRL, Bongers PM, van der Beek AJ. Mindful “vitality in practice”: an intervention to improve the work engagement and energy balance among workers; the development and design of the randomised controlled trial. BMC Public Health 2011; 11.


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169. van der Weerd W, Timmermans DRM, Beueurjean DJMA, Oudhoff J, van Steenbergen JE. Monitoring the level of government trust, risk perception and intention of the general public to adopt protective measures during the influenza A (H1N1) pandemic in the Netherlands. BMC Public Health 2011; 11.


176. van Nispen RMA, Knol DL, Langelaan M, van Rens GHMB. Re-evaluating a vision-related quality of life questionnaire with item response theory (IRT) and differential item functioning (DIF) analyses. BMC Medical Research Methodology 2011; 11.

178. van Rijssen HJ, Schellart AJM, Anema JR, van der Beek AJ. Determinants of physicians’ communication behaviour in disability assessments. Disability & Rehabilitation 2011; 33: 1157-68.

179. van Rijssen HJ, Schellart AJM, Anema JR, de Boer WEL, van der Beek AJ. Systematic development of a communication skills training course for physicians performing work disability assessments: from evidence to practice. BMC Medical Education 2011; 11.


197. Wong A, Boshuizen HC, Schellevis FG, Kommer GJ, Polder JJ. Longitudinal administrative data can be used to examine multimorbidity, provided false discoveries are controlled for. Journal of Clinical Epidemiology 2011; 64: 1109-17.


Scientific Publications - Non-Indexed


Books and book chapters


thirteen

PUBLICATIONS


Professional Publications


46. Widdershoven GAM. Eigen verantwoordelijkheid is goed, gezamenlijke regie is beter. Week van reflectie 2011; 17.


**Popular Publications**


MUSCULOSKELETAL HEALTH

Scientific Publications - Indexed


PUBLICATIONS


PUBLICATIONS


60. Lopes AD, Costa LOP, Saragiotto BT, Yamato TP, Adami F, Verhagen EAML. Musculoskeletal pain is prevalent among recreational runners who are about to compete: an observational study of 1049 runners. Journal of Physiotherapy 2011; 57: 179-82.


114. van Dongen JM, Proper KI, van Wier MF, van der Beek AJ, Bongers PM, van Meel PM, van Tulder MW. Systematic review on the financial return of worksite health promotion programmes aimed at improving nutrition and/or increasing physical activity. Obesity reviews 2011; 12: 1031-49.


125. van Tulder MW. Health technology assessment (HTA) increasingly important in spine research. European Spine Journal 2011; 20: 999-1000.


134. Zwerver F, Schellart AJM, Anema JR, Rammeloo KC, van der Beek AJ. Intervention mapping for the development of a strategy to implement the insurance medicine guidelines for depression. BMC Public Health 2011; 11.


Scientific Publications - Non-Indexed


Books and book chapters

thirteen


Professional Publications


Popular Publications
ANNEX 1: ORGANIZATIONAL STRUCTURE EMGO+
ANNEX 1: ORGANIZATIONAL STRUCTURE EMGO+

Figure 5: Organizational structure EMGO+
EMGO⁺ has a direct management structure. Research is coordinated within four research programs, each managed by two program directors who advise the directorate on eligibility of studies, developments and performance of the four research programs. Within and across these programs themes and specific studies are initiated and led by senior researchers.

A directorate, consisting of a director and two vice-directors takes responsibility for the daily management of the institute, mandated by the board of deans of the participating faculties, and supported and advised by a management committee of department chairs. Additionally an external advisory committee of experts from outside EMGO⁺ advises the directorate on policy and research-related matters.

The Science Committee advises the directorate on eligibility of studies within EMGO⁺, the Quality Committee advises the directorate, program directors and all researchers on quality control and quality promotion concerning all aspects of scientific research. The PhD Committee advises on all matters concerning PhD training.
# ANNEX 2: SWOT ANALYSIS EMGO+

## SWOT analysis

### Strengths

<table>
<thead>
<tr>
<th>Staff</th>
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<tbody>
<tr>
<td>- Talented and highly motivated investigators;</td>
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<td>- Multi-disciplinary staff resulting in trans-disciplinary collaboration;</td>
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<tr>
<td>- Methodological expertise;</td>
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<tr>
<td>- Strong link with master programs in Health Sciences and Psychology, and a research master program in Lifestyle &amp; Chronic Disease, from which PhD candidates are and can be recruited.</td>
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<tr>
<th>Governance</th>
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<tbody>
<tr>
<td>- Strong research program leaders and research theme initiators;</td>
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<tr>
<td>- Clear leading role for research institutes in defining and implementing research policy, strategy and operations within VU University Medical Center.</td>
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<tr>
<th>Output</th>
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<tbody>
<tr>
<td>- Large scientific output in terms of peer reviewed scientific papers, PhD theses, external research funding;</td>
</tr>
<tr>
<td>- High scientific quality in terms of citation indices; Strong societal relevance and significant societal impact.</td>
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<tr>
<th>Research themes</th>
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<tbody>
<tr>
<td>- Focus on important and emerging research themes and target populations (mental health, musculoskeletal health, obesity &amp; diabetes; youth, workforce/employees, elderly);</td>
</tr>
<tr>
<td>- Direct link to two of the five main focus themes of the VU University Medical Center, i.e. ‘trans and extra mural health care’ and ‘physical activity’, and strong bonds with the other main themes, especially ‘Brain’ (Neurosciences) and ‘Cancer &amp; immunology’.</td>
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<tr>
<th>Infrastructure</th>
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<tr>
<td>- A series of ongoing large cohort studies, some of which are long-running, some of which have recently been established;</td>
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<tr>
<td>- Established quality control and promotion system;</td>
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<tr>
<td>- Well-organized data-management infrastructure;</td>
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<tr>
<td>- Good methodology and statistics support;</td>
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<tr>
<td>- Several formal and established academic collaborative centers, i.e. ‘workplaces’ where research and practice meet.</td>
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<tr>
<th>Funding</th>
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<tbody>
<tr>
<td>- University funding for a substantial proportion of senior research staff;</td>
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<tr>
<td>- Continuous acquisition success from a range of funding sources.</td>
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<tr>
<th>Other</th>
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<tbody>
<tr>
<td>- Strong national reputation of the institute;</td>
</tr>
<tr>
<td>- Strong international reputation of different specific groups and research themes within the institute, and within each of the research programs.</td>
</tr>
</tbody>
</table>

### Weakness

<table>
<thead>
<tr>
<th>Staff</th>
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<tbody>
<tr>
<td>- Small international staff and relatively few international PhD students;</td>
</tr>
<tr>
<td>- Suboptimal number of staff that have acquired highly prestigious personal grants and fellowships, such as from the Netherlands Organization for Scientific Research (NWO) Innovation Research Incentives Scheme (“vernieuwingsimpuls”) or the European Commission’s ERC program. Growth is however apparent in recent years.</td>
</tr>
</tbody>
</table>
ANNEX 2: SWOT ANALYSIS EMGO+

Governance
- To date an unclear division of roles between research institutes and faculties in defining and implementing research policy, strategy and operations.

Infrastructure
- Lack of sufficient structural university funding for data management, especially as related to continuation of the large cohort studies;
- Differences in funding, administrative and IT systems between the VU University Medical Center and the VU university faculties.

Funding
- Strong dependency on external funding.
- Sub-optimal level of European Commission and other international funding.

Other
- Low attention and support for true internationalization on the VU/VU University Medical Center campus;
- Lack of formal collaboration agreements with excellent institutes internationally.

Opportunities

Staff
- Use fellowships, the track record and expertise of successful EMGO+ partners and university support system to further maintain and improve success in obtaining personal grants such as within the Innovation Research Incentive Scheme (‘vernieuwingsimpuls’) of ZonMW or ERC starting grants;
- Use strong and extensive international contacts that provide opportunities for acquiring international funding and establishing more formal international collaborations;
- Use (International Research) masters program in health sciences and psychology are good sources for scouting talent for PhD candidates.

Governance
- Active and financial support from the three faculties who participate in EMGO+;
- Growing role of interfaculty research institutes in shaping and implementing research policy and practice on the VU University Campus.

Output
- Quality of research provide opportunities for continuous publications in highest ranking journals in the relevant fields.

Research themes
- Demand for evidence-based primary care and public health, including occupational health;
- International interest in general practitioners as gate-keepers to the healthcare system;
- Increasing focus and funding opportunities on youth health promotion and care;
- Aging populations in most countries including the Netherlands; research regarding prevention and care for the elderly is of growing priority;
- (still) Growing attention for obesity, physical inactivity and mental health problems as main determinants of burden of disease;
- Good opportunities for further collaboration with other research institutes on the VU/VUMc campus:
  • CCA/V-ICI (the VUMc Cancer and Immunology Research Institute in cancer rehabilitation and end of life research within the Quality of Care program;
  • MOVE (the VUMc/VU interfaculty Movement Sciences research institute) in musculoskeletal health research;
  • NCA (the Neurosciences Campus Amsterdam, i.e. the VUMc/VU interfaculty neurosciences research institute) in the Mental Health program.
## ANNEX 2: SWOT ANALYSIS EMGO+

### Threats

- **Infrastructure**
  - Formal and financial support on the VU/VU University Medical Center’s campus, including from the Board of the VU and VUmc for trans-disciplinary research and interfaculty research institutes;
  - Recently established support from VU University Medical Center for improvement of research infrastructure, including research project management, data-management and bio banking.
- **Funding**
  - Improved support for and possible opportunities to obtain European Commission funding, based on initial and growing success and ongoing improvements in acquisition support infrastructure.
- **Other**
  - Strong international networks of research staff provide good opportunities for further internationalization

### Staff

- Growing success in acquisition of external research funds depends on stable and in some years even somewhat reduced permanent university-funded staff;
- Lack of opportunities for talented junior staff/post docs to get tenure.

### Output

- Funding agencies focus more and more on implementation instead of ‘true’ research, making acquisition for research purposes more difficult;
- Strong and still growing competition in the field.

### Research themes

- Dependency on research programming of external funding agencies.

### Infrastructure

- The size of the institute and its acquisition success puts high demands on important quality assurance and promotion systems such as:
  - The quality committee
  - The scientific committee
  - Databackup support
  - Biostatistical support
  - Management team and program leaders
- The fact that different groups within the institute are located in different buildings hinders more intensive collaboration, and developing a true joint ‘culture’.

### Funding

- Decreases in university funding because of budget cuts because of the present national and international economic situation;
- Decreasing availability of external funding because of the same reason;
- Funding agencies appear to become more focused on fast results, implementation, and economic valorisation and relevance in stead of ‘mere’ or ‘true’ research.

### Other

- The growth of the institute over the last decade, and further because of the formation of EMGO+, as well as requests from other research institutes, makes fruitful collaboration and communication to ensure full and efficient use of expertise challenging.
LIFESTYLE, OVERWEIGHT AND DIABETES
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