

# Institute for Biomedicine of Aging

## Chair of Internal Medicine (Geriatrics)

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### Director

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### Research focus

- Clinical nutrition in older persons
- Mobility and function
- Clinical care for geriatric patients

### Structure of the Institute

Professorships: 2  
Personnel: 30  
• Doctors (of Medicine): 2  
• Scientists: 22 (thereof funded externally: 20)  
• Graduate students: 15

### Special structural feature

Prof. Dr. C.C. Sieber is head of the Internal Medicine of the Kantonsspital Winterthur (Switzerland).

### Research

The demographic change poses a challenge for the public health care systems. In the future, the approach of diagnose-specific action in older persons will not be enough for the main goal of preservation of independence, mobility, and quality of life in the older population and for prevention and treatment of age-related diseases. The two lifestyle factors, physical activity and nutrition, play a major role – next to medical intervention – to conquer the above-mentioned challenge.

Hence, research at the Institute for Biomedicine of Aging (IBA) is focusing on the areas nutrition and physical activity in older persons and on the improvement of medical care for geriatric patients in a highly interdisciplinary manner.

### Clinical nutrition in older persons

PI: D. Volkert  
The section of Clinical Nutrition in Older Persons at the Institute for Biomedicine of Aging (IBA) investigates aspects of nutrition related to the maintenance of health and performance into old age and is involved in various national and international research projects with this topic. In the second funding phase of the BMBF-funded Bavarian competence cluster of nutrition research "enable", an individualized multimodal intervention study was conducted in two nursing homes in Nuremberg to improve the nutritional

situation of residents with malnutrition or risk for malnutrition. A senior-specific protein drink and a visually attractive and enriched texture-modified diet were used that had been developed in previous enable projects in collaboration with the Fraunhofer Institute for Process Engineering and Packaging (Freising) and the Weihenstephan-Triesdorf University of Applied Sciences. In addition, the comprehensive database of the enable cohorts was used for further evaluations, e.g. on protein intake and eating motives of older people.

On behalf of the German Nutrition Society (DGE), German data from the worldwide "nutritionDay" project of recent years were analyzed and a chapter on the nutritional situation in German hospitals and nursing homes based on this data was published in the 14th Nutrition Report of the DGE. Prospective international nutritionDay data were used to identify predictors of malnutrition in nursing home residents.

Furthermore, an update of the S3 guideline "Clinical Nutrition in Geriatrics" of the German Society for Nutritional Medicine (DGEM) was started in the reporting period in collaboration with leading German and Austrian experts. Based on the current European ESPEN guideline, recommendations on the prevention and treatment of dehydration are being developed and integrated for the first time.

PI: E. Kiesswetter

Within the BMBF-funded "Effective SLOPE" project, a systematic review with network meta-analysis is conducted to investigate differences in effects and risks of different lifestyle interventions among older people with obesity regarding physical function, body composition and other health-related aspects. Supplementary qualitative interviews were conducted to identify motives, barriers and support needs regarding weight reduction from the perspective of those affected.

In a validation study funded by the Karl-Düsterberg-Stiftung e.V., the suitability of the German translation of the short questionnaire Protein Screener 55+ for identifying low protein intake in community-dwelling older people was tested.

A sub-study of the EFl project "Human Body Odours: Exploring Chemical Signatures" started to analyze differences in body odour between healthy younger and older people.

In February 2020, a FAUconnect on the topic of "Nutrition - Exercise - Digital Health Innovative Intervention Pathways to Maintain Independence in an Aging Society" was organized by the IBA with participants from various FAU institutions as well as external multipliers.

### Mobility and function

PI: E. Freiburger

The area of movement and function at the IBA is concerned with the promotion of movement and the preservation of functionality and independence in older people and is involved in various national and international projects.

Internationally, we were partners in the EU project SPRINTT (Sarcopenia and Physical fRailty IN older people: multi-component Treatment strategies), an intervention study against loss of muscle mass and physical functionality in older people. The SPRINTT consortium was composed of public and private partners from more than 20 institutions and 11 countries. The 123 elderly, sarcopenic individuals recruited at the study center in Nuremberg, Germany, participated in one of two interventions with and without regular physical activity until the end of 2019. The goal was to prevent loss of mobility as measured by the ability or time required to walk 400 meters continuously.

Another international activity was the participation in the Steering Committee of the "European Network for Action on Ageing and Physical Activity" (EUNAAPA), whose aim was to improve the cross-sectoral networking of organizations from the fields of physical activity, health and social affairs in order to be able to expand and optimize the physical activity offer for older people. Through the EUNAAPA network, the IBA was also involved in the EU project "PROMISS" and acted as a cooperation partner in the dissemination work package.

On a national level, we were involved in the BMBF-funded project PRO PRICARE ("Preventing Overtreatment in Primary CARE"), which addressed medical overtreatment in older people. The IBA supported the implementation of a systematic review and an expert survey to develop a core set to describe the functional health of a person in general practice.

Also funded by the BMBF was the POWER project ("Prevention by Outdoor-Walking in the Elderly at Risk" under the direction of the General Medicine Department at the University of Marburg, Prof. Donner-Banzhoff). This investigates whether regular walking with the help of volunteers improves functionality in elderly people in nursing homes or assisted living. The IBA was involved in the study planning and supports the project with its expertise in an advisory capacity.

The ADAC Foundation funded two studies by the IBA. In SIFar ("Safe cycling in old age"), an attempt has been made to improve the competence and safety of seniors over 65 years of age when riding a bicycle or e-bike. For this purpose, a three-month training program was used that combines bicycle-specific and motor exercises. The persistence of the effects will be followed for up to 24 months.

The second project was "Young and Old", which aimed to improve physical functionality through joint projects between nursing home residents and school students in cooperation with a school in Hessen. Due to the Corona pandemic, however, this project was first paused and finally had to be discontinued.

In an internal project, mobility and various gait parameters were assessed in independently living people aged 70 years and older with different levels of physical functioning. In addition, in a cooperation with the Institute of

Psychogerontology of the FAU, the influence of aging images and place of supply on the commitment to physical activity, which is of great importance for older people to maintain independence, was investigated.

In addition, PD Dr. E. Freiburger was a member of the expert group that developed the expert standard for mobility in nursing care in 2020 (Deutsche Netzwerk für Qualitätsentwicklung in der Pflege /DNQP).

In cooperation with the Institute of Medical Physics, a study was conducted on the safety of training with whole-body electromyostimulation in both young (20-40 years) and older, frail (>75 years) subjects. Various biomarkers were measured closely during the eight-week intervention to show the adaptation to the current stimulus.

### **Clinical care for geriatric patients**

PI: C.C. Sieber

The SCOPE project (Screening for Chronic Kidney Disease among Older People across Europe) is funded by the EU Horizon 2020 program and is being carried out in eight European centers. The two-year follow-up of independently living elderly people recruited in Regensburg and Nuremberg was completed in spring 2020. The data collected will be used to estimate the incidence of chronic kidney disease in the elderly and to develop recommendations for health-economically efficient screening for renal disease in geriatric patients.

The research project TIGER ("Transsectoral Intervention Program to Improve Geriatric Care in Regensburg") investigated whether the number of hospital readmissions can be reduced by providing targeted care that is continuous for 12 months after the transition from hospital to home. The background is the current discontinuity in the transition from inpatient to outpatient treatment. At present, many geriatric patients have only limited success in finding their way back into everyday life after being discharged from hospital, so that they are often quickly readmitted to hospital. Therefore, the need for integrated and cross-sector care for older patients is being increasingly recognized. The project was funded by the Federal Joint Committee (G-BA) as part of the Innovation Fund and has been carried out together with the Barmherzige Brüder Hospital in Regensburg, the Regensburg Physicians' Network, the Bavarian AOK, the German Geriatrics Association and the Institute for Nursing Science at Bielefeld University.

### **Teaching**

The practical geriatric training (Q 7) of the Chair of Internal Medicine provides students with the requirements of medicine in old age. The compulsory elective subjects of the IBA are interdisciplinary with focuses on nutritional issues of older patients as well as physical activity and falls.

Several lectures and courses of the master degree course gerontology (Faculty of Humanities, Social Sciences, and Theology) are organized by the IBA.

IBA supervises Bachelor's and Master's theses as well as MD and PhD theses.

### **Selected publications**

Volkert D, Weber J, Kiesswetter E, Sulz I, Hiesmayr M: Ernährungssituation in Krankenhäusern und

Pflegeheimen – Auswertung der nutritionDay-Daten für Deutschland. In: Deutsche Gesellschaft für Ernährung (Hrsg): 14. DGE-Ernährungsbericht Kapitel 2. Bonn (2019) (<https://www.dge.de/14-dge-eb/vvoe/kap2>)

Ott A, Senger M, Lötzbeyer T, Gefeller O, Sieber CC, Volkert D. Effects of a texture-modified, enriched, and reshaped diet on dietary intake and body weight of nursing home residents with chewing and/or swallowing problems: An *enable* Study. *J Nutr Gerontol Geriatr.* 2019 38: 361-376. doi: 10.1080/21551197.2019.1628158.

Seemer J, Kiesswetter E, Blawert A, Fleckenstein D, Gloning M, Bader-Mittermaier S, Sieber CC, Wurm S, Volkert D. An individualised nutritional intervention concept for nursing home residents with or at risk of malnutrition: An *enable* Study. *Geriatrics (Basel).* 2020 Dec 26;6(1):2. doi: 10.3390/geriatrics6010002

Britting S, Artzi-Medvedik R, Fabbietti P, Tap L, Mattace-Raso F, Corsonello A, et al. Kidney function and other factors and their association with falls. *BMC Geriatrics.* 2020;20(1):320.

Rempe HM, Sproesser G, Gingrich A, Spiegel A, Skurk T, Brandl B, et al. Measuring eating motives in older adults with and without functional impairments with The Eating Motivation Survey (TEMS). *Appetite.* 2019;137:1-20.

Drey M, Ferrari U, Schraml M, Kemmler W, Schoene D, Franke A, et al. German Version of SARC-F: Translation, Adaption, and Validation. *J Am Med Dir Assoc.* 2020.

### **International cooperations**

Prof. Dr. Marjolein Visser, Stichting VU-VUMC, Amsterdam, The Netherlands,

Prof. Dr. Roberto Bernabei, Università Cattolica del Sacro Cuore, Rom, Italy,

Prof. Dr. Michael Hiesmayr, Medizinische Universität Wien, Wien, Austria,

Prof. Dr. Fabrizia Lattanzio, Istituto Nazionale Di Riposo E Cura Per Anziani INRCA, Ancona, Italy