

## Equity impacts of interventions to increase physical activity: A health impact assessment

Johanna Schoenbach

J-K Schoenbach<sup>1,2</sup>, G Bolte<sup>1,2</sup>, G Czwikla<sup>1,2</sup>, K Manz<sup>3</sup>, M Mensing<sup>4</sup>, S Muellmann<sup>5</sup>, C Voelcker-Rehage<sup>6,7</sup>, SK Lhachimi<sup>1,2</sup>

<sup>1</sup>Institute of Public Health and Nursing Research, University of Bremen, Bremen, Germany

<sup>2</sup>Health Sciences Bremen, University of Bremen, Bremen, Germany

<sup>3</sup>Department of Epidemiology and Health Monitoring, Robert Koch Institute, Berlin, Germany

<sup>4</sup>Key questions and international cooperations, NRW Centre for Health, Bochum, Germany

<sup>5</sup>Department of Prevention and Evaluation, Leibniz Institute for Prevention Research and Epidemiology – BIPS, Bremen, Germany

<sup>6</sup>Institute of Human Movement Science and Health, Chemnitz University of Technology, Chemnitz, Germany

<sup>7</sup>Institute of Sport and Exercise Sciences, University of Münster, Münster, Germany

Contact: schoenbach@uni-bremen.de

### Background:

Behavioural interventions may increase social inequalities in health. This study aimed to project the equity impact of physical activity interventions that have differential effectiveness across education groups on the long-term health inequalities among older adults in Germany.

### Methods:

We created six hypothetical intervention scenarios targeting adults aged 55 years and above: Scenarios #1 to #4 applied realistic intervention effects that varied by education. Under scenario #5, the lower and medium educated group adapted the physical activity pattern of the higher educated. Under scenario #6, all persons increased their physical activity level to the recommended 300 minutes weekly. The number of incident ischemic heart disease, stroke and diabetes cases as well as deaths from all causes was simulated under each of these six intervention scenarios for males and females over a 10-year projection period using the DYNAMO-HIA tool, and compared against a reference scenario with unchanged physical activity pattern.

### Results:

For males, the highest reduction of disease cases and deaths would be achieved under scenario #4 (most effective in higher educated persons), while increasing inequalities between education groups. For females, the highest reduction would be achieved under scenario #3 (most effective in lower educated persons), while decreasing inequalities between education groups. Scenarios #1 to #4 would prevent only a fraction of the disease cases and deaths that would be avoided under scenario #5 or scenario #6.

### Conclusions:

This modelling study shows how the overall population health impact varies, depending on how intervention-induced physical activity changes differ across education groups. For decision-makers, both the assessment of health impacts overall as well as within a population is relevant, as interventions with the greatest population health gain might be accompanied by an unintended increase in health inequalities.

### Key messages:

- Health impact assessments with a focus on equity are essential for decision-makers.

- In order to correctly project population health effects, and choose between options of intervention types from a public health perspective, data on subgroup-specific intervention effects are needed.