

powered by



GERMAN
CANCER RESEARCH CENTER
IN THE HELMHOLTZ ASSOCIATION

Contribution ID: 190

Type: 1 - Scientific Poster

Meeting muscle-strengthening guidelines and measures of muscle mass and strength in the German National Cohort (NAKO)

Wednesday 22 July 2026 12:25 (20 minutes)

Background: The World Health Organization (WHO) recommends adults to perform muscle-strengthening activities on two or more days per week at moderate or greater intensity. Muscle-strengthening activities and having sufficient skeletal muscle mass and strength are increasingly recognized for their role in improving health outcomes in both primary and tertiary prevention settings, including in cancer patients. However, it remains unclear whether meeting the muscle-strengthening guideline is associated with greater muscle mass and strength at the population level –important information for refining physical activity recommendations for cancer prevention and survivorship.

Methods: We used data from the baseline examination of the population-based German National Cohort (NAKO). The frequency and intensity of muscle-strengthening activities were self-reported. Skeletal muscle mass index adjusted for body mass (SMI, in %) was calculated using data from bioelectrical impedance analysis. Maximal handgrip strength (in kg) was assessed using dynamometers. Sex-stratified linear regression estimated the associations between meeting the muscle-strengthening guideline (yes/no) and SMI and handgrip strength, adjusting for potential confounders including age.

Results: The analytical sample comprised 49,467 participants (50.7% female) with a mean age of 48.3±12.6 years. Females had a mean SMI of 27.5±4.1%; males had a mean SMI of 35.4±4.0%. Furthermore, females had a mean handgrip strength of 30.7±5.7kg, while males had a mean handgrip strength of 48.8±8.7kg. Meeting vs. not meeting the muscle-strengthening guideline was positively associated with SMI in both sexes (e.g., $\beta=0.40$, $p<.001$, in females). Conversely, guideline adherence was positively associated with handgrip strength in males ($\beta=0.71$, $p<.001$), but only approached statistical significance in females ($\beta=0.28$, $p=.09$).

Conclusions: Performing muscle-strengthening activities on two or more days a week and at moderate or greater intensity was associated with a higher SMI in both sexes and with greater handgrip strength in males. Although the associations were relatively small, these findings generally support current muscle-strengthening guidelines.

Keywords

muscle-strengthening activities; prevention; muscle; handgrip strength

Conflict of Interest & Ethical Approval

yes

Abstract submitters declaration

yes

Authors: Mr BRUMMER, Julian (Division of Physical Activity, Cancer Prevention and Survivorship, German Cancer Research Center (DKFZ), Heidelberg, Germany & Medical Faculty, Heidelberg University, Heidelberg, Germany); Dr HERBOLSHEIMER, Florian (Division of Physical Activity, Cancer Prevention and Survivorship, German Cancer Research Center (DKFZ)); Dr HUEMER, Marie-Theres (Institute of Epidemiology, Helmholtz Zentrum München, German Research Center for Environmental Health (GmbH), Neuherberg, Germany); Prof. LEITZMANN, Michael (Department of Epidemiology and Preventive Medicine, University of Regensburg, Regensburg, Germany); Prof. STEINDORF, Karen (Division of Physical Activity, Cancer Prevention and Survivorship, German Cancer Research Center (DKFZ))

Presenter: Mr BRUMMER, Julian (Division of Physical Activity, Cancer Prevention and Survivorship, German Cancer Research Center (DKFZ), Heidelberg, Germany & Medical Faculty, Heidelberg University, Heidelberg, Germany)

Session Classification: Poster Session