

CORRESPONDENCE

Research Letter

Physical Activity-Related Health Competence Among Adults

Findings of the Population-Wide “German Health Update” Study (GEDA 2023)

Physical activity and playing sports/exercising are positive factors in preventing and treating a multitude of non-communicable diseases. A promising concept for promoting physical activity is physical activity-related health competence. This specific health literacy builds on competences that empower people to embark on physical activity, with positive effects on health (1, 2). In concrete terms, physical activity-related health competence comprises three subcompetences:

- Coping with motor challenges by means of physical activity-related basic competences and skills—for example, fast walking, functional gymnastics (movement competence);
- Adequate health-enhancing design of one’s own physical activity on the basis of physical and activity-related fundamental knowledge—for example, by means of one’s own physical awareness or practice (control competence);
- Personal characteristics/traits, such as motivation and physical activity related self-efficacy so as to realize physical activity-related aims—for example by finding/ utilizing appropriate physical activity options (self-regulation competence) (1, 2).

The study investigates physical activity-related health competence in adults in Germany under consideration of sociodemographic characteristics and physical activity, in order to obtain starting points for promoting physical activity and medical counseling.

Methods

Our analyses are based on data from the cross sectional “German Health Update” study (GEDA 2023). Standardized computer assisted telephone interviews from a random sample were used to survey 3986 German-speaking adults (3). Data were collected from January 2023 to May 2023 (response rate about 19%). Physical activity-related health competence was documented by using the validated short version of the measuring instrument “physical activity-related health competence” (PAHCO_12) (4). Physical activity-related health competence was determined on the basis of 12 questions, each with a 5-step Likert response scale. For each survey participant, an overall score and three subscores for the subcompetences were calculated. The calculation and validation of PAHCO_12 is explained elsewhere (4). For the purpose of clear presentation, PAHCO was represented as a categorical variable. To this end, the competence was categorized dichotomously into “rather high/high” versus “low/ rather low”. The threshold values were defined on the basis of substantive criteria and for the category “rather high/ high” scored 33 out of 48 points for the overall PAHCO-score, the movement competence subscore was 11 out of 16, the control competence subscore 12.375 out of 18, and the self-regulation competence subscore was 9.625 out of 14.

We used multiple binary logistical regression analyses to calculate the odds ratio for “rather high/high” physical activity-related health competence with regard to differences by sex, age, and educational attainment level as well as leisure time physical activity (item from EHIS-PAC) (5) (complete cases analysis). We used Stata version 17 for our analyses and applied Stata survey procedures.

Results

Table 1 describes the distribution of sociodemographic characteristics and physical activity-related health competence in the sample. About half of participants were women. The largest age group consisted of 45–64 year olds. The middle educational group was most commonly represented. About two thirds practiced physical activity for 2.5 or more hours per week in their leisure time—they had light, moderate, or vigorous levels of physical activity. 38.2% of survey participants displayed “low/rather low” physical activity-related health competence. In the subcompetences, the proportion with “low/rather low” competence was smallest for the

Table 1

Characteristics of the study population

	n*1 (%)**2
Sex	
Women	2111 (51.5)
Men	1858 (48.5)
Age groups	
18–29 years	312 (16.0)
30–44 years	598 (22.8)
45–64 years	1500 (34.6)
≥ 65 years	1576 (26.6)
Educational level (CASMIN)	
Low	644 (26.7)
Middle	1793 (54.6)
High	1542 (18.7)
Physical activity during leisure time	
≥ 2.5 hours/week	2482 (67.2)
< 2.5 hours/week	1053 (32.8)
Physical activity-related health competence	
Low/rather low	1417 (38.2)
Rather high/high	2501 (61.8)
Movement competence	
Low/rather low	1267 (32.7)
Rather high/high	2689 (67.3)
Control competence	
Low/rather low	1404 (40.0)
Rather high/high	2510 (60.0)
Self-regulation competence	
Low/rather low	1850 (49.3)
Rather high/high	2085 (50.7)

*1 Unweighted; **2 weighted

Table 2

Odds ratios for “rather high/high” physical activity-related health competence compared with “low/rather low” physical activity-related health competence

	Total scale	Subscales for subcompetences		
	Physical activity-related health competence	Movement competence	Control competence	Self-regulation competence
	OR [95% CI]	OR [95% CI]	OR [95% CI]	OR [95% CI]
Sex				
Men	1.17 [0.92; 1.48]	1.48 [1.15; 1.91]	1.15 [0.91; 1.44]	1.05 [0.85; 1.31]
Age groups				
30–44 years	0.76 [0.45; 1.28]	0.56 [0.28; 1.13]	1.28 [0.80; 2.03]	0.71 [0.46; 1.11]
45–64 years	0.43 [0.27; 0.69]	0.22 [0.12; 0.42]	0.87 [0.58; 1.31]	0.58 [0.39; 0.85]
≥ 65 years	0.22 [0.14; 0.36]	0.11 [0.06; 0.21]	0.47 [0.31; 0.71]	0.53 [0.35; 0.79]
Education level				
Middle	1.86 [1.38; 2.51]	2.29 [1.67; 3.13]	1.69 [1.26; 2.27]	1.33 [0.99; 1.79]
High	3.65 [2.67; 4.99]	5.19 [3.79; 7.10]	3.16 [2.31; 4.32]	1.68 [1.24; 2.27]
Physical activity during leisure time				
≥ 2.5 hours/week	3.95 [3.09; 5.05]	2.63 [2.02; 3.43]	3.46 [2.72; 4.40]	3.52 [2.77; 4.48]

N = 3 769; reference (ref.): sex: women; age groups: 18–29 years; educational attainment level: low; CI, confidence interval; physical activity during leisure time: < 2.5 hours/week

movement competence and most highly pronounced for the self-regulation competence.

The regression analyses in *Table 2* show significant differences in physical activity-related health competence by age and education, but not by sex. The older age groups (45–64 years, ≥ 65 years) had a notably lower chance of “high/rather high” physical activity-related health competence (OR: 0.43 and 0.22; $p < 0.001$) than 18–29 year olds. The group with middle-level educational attainment had almost twice the chance of a high physical activity-related health competence compared with the low educational attainment group (OR: 1.86; $p < 0.001$), and in the group with high-level educational attainment this rose to a factor of almost 4 (OR: 3.65; $p < 0.001$). This pattern mostly also transpired when analyzing the subcompetences. Only the movement competence was associated with sex. PAHCO was strongly associated with physical activity during leisure time (OR: 3.95; $p < 0.001$).

Discussion

Our study provides the first population-wide data on physical activity-related health competence. According to our results, a third of the population displayed rather low or low physical activity-related health competence. Older age groups were particularly affected, which is to be expected as a result of age related physiological changes especially for the subcompetence that is movement competence. The

association between low physical activity-related health competence and low educational attainment indicates that differences in later degrees of physical activity-related competence are already laid out during school education. Our study confirms the positive association between physical activity-related health competence and physical activity (2) known from earlier studies and thus underlines the importance of physical activity-related health competence for sufficient exercise/physical activity.

The subcompetences of physical activity-related health competence clearly differ in their markedness in the population and as regards socioeconomic characteristics. This suggests that all three subcompetences should be tackled in target group specific measures to promote physical activity and to provide impulses in the medical counseling.

A limitation of the study is the investigation of physical activity-related health competence by means of a self assessment instrument. This may have resulted in individual overestimates or socially desirable response behavior. Physical activity-related health competence links learning acquisition and implementation of health information by learning, practicing, and experiencing physical activity and exercise and thus adds to what is currently known about the association of physical activity-related health competence and physical activity.

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Conflict of interest statement

The authors declare that no conflict of interest exists.

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References

- Sudeck G, Pfeifer K: Physical activity-related health competence as an integrative objective in exercise therapy and health sports—conception and validation of a short questionnaire. *Sportwissenschaft* 2016; 46: 74–87.
- Sudeck G, Rosenstiel S, Carl J, Pfeifer K: Bewegungsbezogene Gesundheitskompetenz—Konzeption und Anwendung in Gesundheitsförderung, Prävention und Rehabilitation. In: Rathmann K, Dadaczynski K, Okan O, Messer M (eds.): *Gesundheitskompetenz*. Springer Reference. Berlin, Heidelberg: Springer 2023; 33–44.
- Allen J, Born S, Damerow S, et al.: Gesundheit in Deutschland aktuell (GEDA 2019/2020-EHIS)—Hintergrund und Methodik. *J Health Monit* 2021; 6: 72–87.
- Carl J, Domanska OM, Buchmann M, Jordan S, Pfeifer K, Sudeck G: Toward a representative assessment of competencies for a healthy, physically active lifestyle in the German population: development and validation of a short version of the physical activity-related health competence questionnaire (PAHCO_12). *Ger J Exerc Sport Res* 2024.
- Finger JD, Tafforeau J, Gisle L, et al.: Development of the European Health Interview Survey—Physical Activity Questionnaire (EHIS-PAQ) to monitor physical activity in the European Union. *Arch Public Health* 2015; 73:59.

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