

Supplemental tables

Supplemental table S1: Detailed information on excluded cases for missing values for outcomes, predictors and confounders

variables	missing values	
	N	%
<u>outcomes</u>	3292	13.70
BMI	224	0.9
tobacco use	55	0.2
endurance training \geq 150 min/week & strength training twice/week	1189	5.0
\geq 150 min aerobic PA/week including walking	1655	7.0
\geq 150 aerobic PA/week excluded walking	1052	4.4
days doing sports per week	330	1.4
bicycling days per week	470	2.0
min walking per day	1016	4.3
vegetable intake	69	0.3
fruit intake	77	0.3
<u>predictors</u>		
having diabetes mellitus/DSME participation	719	3.0
time since diagnosis	23	0.09
<u>confounders</u>		
sex	0	0
age	0	0
SES-score	53	0.2
living together as married couple or as unmarried couple	328	1.4
limitation due to health problems since at least 6 months	260	1.1
occupational status	341	1.4
AKSU-Index of self-efficacy	136	0.6
Attentiveness to own health	167	0.7

This table shows details of excluded cases due to missing values, specified per variable. Overall, N = 3292 cases were excluded because of missing values, further 3 cases were excluded due to recent gestational diabetes and 217 cases were excluded due to pregnancy. Of note, those cases could have more than one missing value, so that the highlighted numbers could not be counted up to 3324 if summarized. Abbreviations: DSME – structured patient education program for patients with diabetes mellitus, BMI – Body Mass Index, SES- socioeconomic status, min – minutes, N – numbers, % - percentage

Supplemental Table S2: Test for interaction models for differences of DSME effects on life style between subgroups “participants with diabetes mellitus \leq 2 years after diagnosis” vs “participants with diabetes mellitus $>$ 2 years after diagnosis” (logistic or multinomial regression model with interaction terms; N=1277)

variables and categorisation		Wald-test for interaction
fruit intake	at least once daily (ref: less than once daily)	0.408
vegetable intake	at least once daily (ref: less than once daily)	0.343
physical activity	walking \geq 30 min/day (ref: $<$ 30 min/day)	0.694
	cycling \geq 1 day/week (ref: $<$ 1 day/week)	0.246
	doing sports in general \geq 1 day/week (ref: $<$ 1 day/week)	0.144
	doing sports in general \geq 2 day/week (ref: $<$ 2 day/week)	0.220
	endurance training \geq 150 min/week & strength training twice/week (ref: no)	0.151
tobacco use	\geq 150 aerobic PA/week including walking (ref: less)	0.702
	\geq 150 aerobic PA/week without walking (ref: less)	0.947
	smoking (ref. never-smoking)	0.867
BMI	ex-smokers (ref. never-smokers)	0.595
	overweight (ref. normal)	0.934
	obesity (ref. normal)	0.148

This table shows details of test for interactions in our logistic regression models of the sensitivity analyses on DSME association with life style according to time from diagnosis (\leq 2 Y/ $>$ 2Y) specified per variable. Abbreviations: DM - diabetes mellitus, DSME – structured patient education program for patients with diabetes mellitus, BMI – Body Mass Index, min – minutes, N – numbers, % - percentage, Y - years.

Supplemental Data collection information on GEDA 2014/2015-EHIS study

The GEDA 2014/2015-EHIS questionnaires included four main modules: (i) state of health (e.g. self-perception of health, chronic diseases, mental health, limitation in activities, pain, accidents), (ii) aspects of health behavior (e.g. smoking, alcohol consumption, body weight, physical activity, fruits and vegetables consumption), (iii) health care (health care utilization, in and outpatient clinics utilization, prevention, medications, unmet needs of health care), (iv) demographic and socioeconomic variables (e.g. age, sex, education, partnership, household and income details). A two-staged stratified cluster sampling approach was used with a random selection of communities from all communities in Germany in the first stage and random selection of individuals with permanent residence in these pre-selected communities in the second stage.

Supplemental Table S3: Variable assessment and categorization

Variables	Assessment	Categorization
Outcomes		
BMI	Weight and height; body mass index calculated as weight squared to height [kg/m ²]	According to WHO categorization [1] normal (<25 kg/m ²), overweight (25- < 30 kg/m ²) and obese (≥ 30 kg/m ²)
Tobacco use	Assessed as daily, occasional, former and never smoking. For the present study, daily and occasional smoking were aggregated into current smoking.	Smoker/ex-smoker/never-smoker
≥ 150 min/week endurance & strength training	Participants information on how much time they spent in a typical week with endurance training and on how many days they perform strength training	≥ 150 min/week vs. <150 min/week endurance & strength training
≥ 150 min aerobic PA/week including walking	Participants information on how much time they spent in a typical week with aerobic physical activity	≥ 150 min/week vs. <150 min/week aerobic PA including walking
≥ 150 min aerobic PA/week excluding walking		≥ 150 min/week vs. <150 min/week aerobic PA excluding walking
Days doing sports per week	Participants were asked on how many days they perform sport at least 10 minutes without interruption in their leisure time	< 1 day/ week; 1 day/week; ≥ 2 days/week
Cycling	Participants were aske on how many days in a typical week they cycle more than 10 minutes by bicycle for transfer	< 1 day/week vs. ≥ 1 day/week
Min walking per day	Participants were asked about how long they walk at a typical day for transfer	< 30 min/day vs. ≥ 30 min/day walking
Vegetable and fruit intake	Portions of fruit corresponded were defined as a handful of fruits e.g. one apple or one banana or one glass of fruit juice (150ml). Portion of vegetables were defined as a handful of vegetables e.g. eight cauliflower florets, four heaped tablespoon cabbage or spinach, a medium tomato or a vegetable juice (150 ml). Participants were asked to count any amount of fruit or	Less than daily vs. at least once daily

Variables	Assessment	Categorization
	vegetable juices as one portion even if they drank several glasses.	
Predictors		
		yes/no
Having diabetes mellitus	“During the past 12 months, have you had any of the following diseases or conditions?” - attached a list of diseases including “diabetes (not including gestational diabetes)”.	Classification as having diabetes if “yes” was answered. Exclusion of gestational diabetes, i.e. those, who answered with “yes”, but reported a pregnancy at the time of diagnosis and time of diagnosis was less than two years before survey time, were excluded
DSME participation	Participants were asked, if they have ever participated in a DSME	yes/no Those, who answered “yes” were classified as ever DSME-participants, the others as never-DSME participants
Confounders		
Sex	Participants were asked whether they were male or female	Male/female
Age	Participants were asked to state year and month of their birth	Years, continuous variable
Socioeconomic status	Socioeconomic status score [2]	(min) 3 to 21 (max)
Living situation	Participants were asked about their living situation and marital status and whether they live together as married or unmarried couple	Living together as married or as unmarried couple vs living alone
Limitation due to health problems for at least 6 months	Participants were asked whether they were limited due to health problems in their daily life	High/moderate/none
Occupational status	Labour Force Concept [3]	Employed/unemployed/retired or unable
Self-efficacy	ASKU-Index [4]	(min) 1 to 5 (max); continuous variable
Attentiveness to own health	Participants were asked how much in general they pay attention to their own health	Continuous variable; (min) 1 to (max) 5 [corresponding from not at all to very much]

References

- 1 WHO World Health Organization. Body mass index - BMI. Available at: <http://www.euro.who.int/en/health-topics/disease-prevention/nutrition/a-healthy-lifestyle/body-mass-index-bmi>.
- 2 Lampert T, Kroll L, Mütters S, et al. Messung des sozioökonomischen Status in der Studie zur Gesundheit Erwachsener in Deutschland (DEGS1). *Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschutz* 2013;56(5-6):631–36.
- 3 International Labour Organization (ILO). Labour force 2019. Available at: https://www.ilo.org/global/statistics-and-databases/statistics-overview-and-topics/WCMS_470304/lang--en/index.htm Accessed March 22, 2019.

- 4 Beierlein C, Kemper CJ, Kovaleva A, et al. Short Scale for Measuring General Self-efficacy Beliefs (ASKU). *Methoden, Daten, Analysen* 2013;7(2):251–78.