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Associations of types of physical activity with self-rated physical and mental health in Denmark

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ABSTRACT

The purpose of this article is to analyse the association between types of physical activity and self-rated physical and mental health. The analyses are based on data from a Danish 2020 survey of adults' exercise habits. The questionnaire was answered by 163,131 adults of whom 55 pct. were women and relatively evenly distributed by age. The questionnaire included questions about participation in different types of physical activity, self-rate of physical and mental health and sociodemographic and socioeconomic background. The analysis distinguishes between 16 main types of sports and exercise activities, cycling as a mode of transport, and gardening at home. The statistical analysis consists of ordinal regression, where the association between practicing a certain form of physical activity and self-rated health takes into account the adults other physical activity habits and their socio-economic and socio-demographic background. The analyses show, firstly, that the association, for most types of physical activity, is stronger for self-rated physical health than for self-rated mental health. Secondly, there are large differences in the strength of the association between the different types of physical activity. Thirdly, the association is significantly stronger for those who practise an activity type most days of the week than for those who do it less often. Fourthly, the analyses show small gender differences in the association between types of physical activity and self-rated health. Finally, the more different types of activity a person practises during a week, the better the self-rated health, but this primarily applies to self-rated physical health.

1. Introduction

[1]In large-scale population health studies, researchers commonly employ self-rated health, an individual's subjective assessment of their well-being (Jørgensen et al., 2013). Studies have shown a strong association between poor self-rated health and a number of more objective indicators of poor health (Idler and Benyamini, 1997; DeSalvo et al., 2006; Gerber et al., 2009).

Numerous studies have shown a positive association between individuals' level of physical activity (PA) and their self-rated health (e.g., Eriksen et al., 2013; Hansen et al., 2013; Engberg et al., 2015; Marques et al., 2016).

Nevertheless, the majority of studies have focused on either the overall level of PA or specific types such as endurance training, cycling, or ball games. To the best of our knowledge, no studies have compared the association between various types of PA and self-rated health, as we do in this article. This is justified by significant variations among types of PAs in terms of their demands on endurance, strength, motor skills, and cognitive abilities, all of which previous research has shown to impact health (see, for instance Eriksen et al., 2013; Sodergren et al., 2008: 2; Hansen et al., 2013; Herzoq, 2018; Krustrup and Parnell, 2019).

Furthermore, most studies on PA and self-rated health do not differentiate between self-rated physical health (SPH) and self-rated mental health (SMH), a distinction we make in this article. The justification for this is, that studies indicate that the association between PA and mental health is not as strong as for physical health (Landers and Arent, 2007), and it does not apply to all forms of PA (Biddle and Asare, 2011).

The majority of studies examining the association between PA and self-rated health typically differentiate between activity levels or intensities (e.g., 'light,' 'moderate,' and 'vigorous'). Fewer studies have explored the significance of both frequency and the variety of PAs, aspects we investigate in this article.

In summary, it is the purpose of this article, firstly, to compare the

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[1] Acronyms: PA = Physical activity, SPH = Self-rated physical health, SMH = Self-rated mental health

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associations between various types of PA and SPH and SMH, and secondly, to analyse the association between practising multiple types of PAs on SPH and SMH.

The analysis is based on data from a nationwide, representative survey of adults' PA habits in Denmark. Compared with other countries Denmark has a high standard of living, many public welfare benefits (Greve and Jespersen, 2019), and a relatively high PA level (OECD, 2021a). Nevertheless, international comparative analyses show that the average self-rated health is lower than in a number of countries with which Denmark often compares itself (including the USA, Great Britain, Norway and Sweden) (OECD, 2021b).

2. Method

The primary data basis for the analysis is the answers of 163,131 adults to a questionnaire on PA habits, including questions about participation in different types of PA and about self-rated physical and mental health.

2.1. Data collection

On 19 October 2020, the questionnaire was sent to 404,452 adults (15 years and older) – whom Statistics Denmark had selected randomly from the total population of adults in Denmark – to participate in the survey.

The vast majority of participants received the questionnaire via the digital letter box 'e-Boks', which is a tool for safe communication between citizens and public authorities in Denmark. Just under 12,000 people received the invitation in an ordinary letter because they were not e-Boks users. Two reminders were sent via e-Boks on 30 October and 11 November, respectively, before the survey closed on 29 November 2020.

163,133 adults answered the questionnaire, which corresponds to 40 percent of those who received the questionnaire. In general, women answered the questions to a slightly higher extent than men and the elderly to a greater extent than young people. In order for the analysis of the data to be more representative of the entire population, the data has subsequently been weighted in relation to gender, age and municipality size. The questions about the assessment of the physical and mental state of health were answered by just over 147,000 adults.

The survey was conducted in October and November 2020, when Denmark was affected by the COVID-19 pandemic. However, we estimate that this situation did not have a major impact on the answers about participation in the various forms of PA and sports and the participant's assessment of their health. Primarily because responses were collected during a period in the autumn of 2020, when the infection numbers were low in Denmark and the conditions relatively normal for sports participation and PA (Høyer-Kruse and Ibsen, 2022). Studies in Denmark show that adults level of PA at this time was relatively little affected (Møller et al., 2021), and that Covid-19 had a small effect on the adults self-rated health and quality of life (Ibsen and Iversen, 2021).

To reduce the risk of response bias and increase the reliability of the survey, we opted to ask the participants about their participation in specific activity types rather than asking generally about their PA participation. This leaves less room for interpretation, which improves the consistency of our measurements. The validity of the survey was ensured through validation, including expert validation, the use of cognitive interviews and piloting before distribution.

Of the adults who had been selected for the survey, but had not answered the questionnaire, 2,100 were selected at random for a short telephone interview about their participation in the various types of PA, of which 40 per cent answered the questions. Compared with the responses from the questionnaire survey, the responses from the dropout survey show that the participants here were slightly less active in most types of activity.

2.2. The dependent variables: Self-rated health

The dependent variables of the analysis, the questions about self-rated health, were formulated as follows: 1) How would you rate your current physical state of health in general? 2) How would you rate your current state of mental health in general? The participants could answer 'very bad', 'bad', 'fair', 'good' and 'very good'. Table 1 shows the distribution of the answers to the two questions.

2.3. The independent variables: Frequency of which PA types are practised

The questionnaire included questions about how often the participant practiced different types of PA within four domains: 'Leisure time', 'active transportation', 'work or education' and 'home'.

Within the domain 'leisure time' participation in sports and exercise activities were answered in the following way. First, the participants were asked whether, within the past year prior to answering the questionnaire, they had practised 16 different types of physical activities in their free time (see Table 2). This was followed by questions about which concrete physical activities the participant had practised in the past year. If the participant answered, for example, that the person in question had practiced a 'team ball game', he or she was asked whether they had practised basketball, football, hockey/floorball, handball, volleyball/beach volleyball and/or other team ball games. Within the domain 'physical activities at home' the activity 'gardening' is included, and within the domain 'active transportation', 'transport cycling for shopping, visits etc.' is included, because the research group assumes that they are the most physically demanding in the 'home domain' and the 'active transportation domain'.

Next, for each activity the individual had participated in, they were asked how often the activity was practised the last year (5 times a week or more; 4 times a week; 3 times a week; 2 times a week; 1 time a week; 1–3 times a month; less often than 1 time a month). Based on the participants' answers a variable with the following four values has been constructed for each of the above-mentioned PA types: 'Active 4–7 days a week', 'active 1–3 days a week', 'active less than once a week' and 'not active the last year'. Table 2 shows the distribution of the participants on the values of the independent variables included in the analysis.

Since most adults practise several types of PA during the week, a variable has been constructed for how many of the types of PA included in the analysis each adult practises each week (Table 3). It is an expression of the individual's PA diversity, the association of which with SPH and SMH is also included in the statistical analysis.

2.4. Control variables

The analysis also includes control variables that previous studies have shown to be important for self-rated health in Denmark (Jensen et al., 2022): Gender (male/female), age (divided into age groups),

Table 1
Dependent variables of the analysis. The distribution of adults (15 years and older) answers to the question: How would you rate your current physical and mental state of health in general? Divided by gender (percent) (Denmark, 2020).

		Very good	Good	Fair	Poor	Very poor	N =
Self-rated physical health	Men	19,1	42,0	30,7	6,9	1,3	66,644
	Women	20,0	40,7	30,4	7,5	1,4	81,332
	All	19,6	41,3	30,5	7,2	1,4	147,976
Self-rated mental health	Men	36,4	42,8	16,5	3,5	0,7	66,643
	Women	33,4	42,3	19,4	4,0	0,8	81,332
	All	34,8	42,5	18,1	3,8	0,7	147,975

Table 2
The independent variables of the analysis. The distribution of the adults (15 years and older) answers on how often they practice types of physical activity in their leisure time, at home and during transport. Divided by gender (percent) (Denmark, 2020).

		Active 4–7 days a week	Active 1–3 days a week	Less than once a week	Not active the last year	N =
Walking and hiking	Men	28,8	40,3	18,3	12,5	71,345
	Women	38,7	40,4	13,0	7,8	86,513
	All	34,2	40,4	15,4	10,0	157,858
Running	Men	2,2	20,1	15,0	62,7	71,309
	Women	1,8	18,7	13,9	65,6	86,489
	All	2,0	19,4	14,4	64,3	157,798
Biking (not for transport)	Men	11,7	27,3	20,9	40,1	71,317
	Women	12,8	23,0	20,4	43,7	86,497
	All	12,3	24,9	20,7	42,1	157,814
Fitness	Men	8,4	30,2	11,0	50,4	71,317
	Women	5,8	36,9	13,1	44,2	86,493
	All	7,0	33,9	12,1	47,0	157,810
Mental training (e.g. weight training and cardio work)	Men	2,90	7,70	7,30	82,00	71,305
	Women	5,70	20,70	12,90	60,70	86,486
	All	4,40	14,80	10,40	70,30	157,791
Team ball games (e.g. football, volleyball, handball)	Men	0,9	9,1	8,4	81,5	71,301
	Women	0,3	3,6	4,6	91,5	86,482
	All	0,6	6,1	6,3	87,0	157,783
Other ball games (e.g. golf, badminton, tennis)	Men	1,0	12,0	12,3	74,8	71,298
	Women	0,4	5,5	8,6	85,5	86,483
	All	0,7	8,4	10,3	80,6	157,781
Gymnastics (e.g. jump gymnastics, rhythmic gymnastics)	Men	1,00	4,70	2,80	91,50	71,300
	Women	1,40	11,10	4,10	83,40	86,487
	All	1,20	8,20	3,50	87,10	157,787
Dancing (e.g. partner dance, modern dance)	Men	0,20	2,40	4,70	92,70	71,297
	Women	0,80	8,70	9,40	81,10	86,485
	All	0,50	5,90	7,30	86,30	157,782
Activities in water (e.g. swimming, diving, pool training)	Men	1,20	9,20	24,50	65,10	71,301
	Women	1,80	13,20	24,00	61,10	86,487
	All	1,50	11,40	24,20	62,90	157,788
Activities on water (e.g. canoeing, rowing, sailing)	Men	0,40	3,70	12,30	83,60	71,293
	Women	0,20	2,00	10,10	87,60	86,479
	All	0,30	2,80	11,10	85,80	157,772
Outdoor activities (e.g. outdoor life, fishing, hunting)	Men	2,7	9,9	19,3	68,1	71,299
	Women	2,1	4,7	9,8	83,3	86,478
	All	2,4	7,0	14,1	76,5	157,777
Street sports (roller skating, parkour, skateboarding)	Men	0,30	1,60	4,10	93,90	71,291
	Women	0,10	0,90	4,20	94,80	86,476
	All	0,20	1,20	4,20	94,40	157,767
Other (small) sports activities	Men	1,1	6,4	19,6	72,9	71,292
	Women	2,0	4,2	15,8	78,0	86,471
	All	1,6	5,2	17,5	75,7	157,763
Other physically demanding leisure activities	Men	20,30	25,10	11,70	42,90	71,299
	Women	34,20	16,80	8,90	40,10	86,486
	All	27,90	20,60	10,10	41,30	157,785
Gardening	Men	15,2	37,8	28,4	18,6	73,965
	Women	8,2	24,7	42,2	24,9	89,072
	All	11,4	30,7	35,9	22,0	163,037
Cycling as transport for shopping, visits, etc.	Men	20,30	17,60	23,80	38,30	73,040
	Women	22,60	16,20	23,50	37,70	88,211
	All	21,50	16,80	23,70	38,00	161,251
Physical rehabilitation	Men	2,40	6,50	4,60	86,60	71,295
	Women	2,90	7,50	4,30	85,40	86,484
	All	2,70	7,00	4,40	85,90	157,779

education (primary school, vocational education, upper secondary education, short higher education, medium higher education and long higher education), employment (enrolled in education, working, public pension, unemployed or on early retirement) and health status (has a chronic illness or a long-term health problem). All variables are based on the participants' answers to the questionnaire.

2.5. Data analysis

The statistical analysis consists of an ordinal regression analysis – for all and broken down by gender – of the association between the individual type of PA and SPH and SMH in which the independent predictor variables and control variables are included as categorical variables. Data meet all important assumptions that are required for ordinal regression to give valid results. The Variance Inflation Factor is between 1 and 1.2, indicating no multicollinearity; and the model fit is for all ordinal regression analyses lower than 0.001.

Table 3
The independent variables of the analysis. The distribution of number of types of physical activity that the adults (15 years and older) practise each week (Denmark, 2020).

	Pct.
0 type of physical activity each week	3.5
1 type of physical activity each week	8.9
2 types of physical activity each week	14.4
3 types of physical activity each week	17.6
4 types of physical activity each week	17.6
5 types of physical activity each week	14.9
6 types of physical activity each week	10.6
7 types of physical activity each week	6.3
8 types of physical activity each week	3.4
9 types of physical activity each week	1.5
10 or more types of physical activity each week	1.2
N =	157,687

2.6. Ethics approval

The study and its data management procedures were approved by the Research and Innovation Organization (RIO) of the University of Southern Denmark (review number 10.680), which is the office that approves the collection, use, disclosure, etc. of personal data in connection with research projects. RIO also gave legal advice and confirmed the legal basis of the informed consent used in the survey study. The research project was carried out in accordance with relevant guidelines and regulations in the Declaration of Helsinki.

3. Results

The ordinal regression analysis of both SPH and SMH – separately for men, women, and all – is shown in Tables 4 and 5.

3.1. Self-rated physical health

The ordinal regression analysis of SPH – shown in Table 4 – shows a statistically significant positive association between practicing 14 of the 18 types of PA and self-assessed physical health. The only exceptions are 'outdoor activities', 'street and roller activities' and 'other physical demanding leisure activities', where the association is non-significant, and 'physical rehabilitation' where there is a negative association.

The analysis also shows that for most types of PA, the strength of the association (expressed by the beta coefficient (B)) increases with the frequency with which the activity type is practised. However, this does not – or only to a small extent – apply to 'walking', 'mental training', 'dancing', 'activities in water', 'activities on water', 'outdoor activities' and 'street and 'roller activities'.

The analysis further shows differences in the the strength of the association between the different types of PA. The beta coefficient (R) for practising the type of PA more than three days a week compared to those who never practise the activity is greatest for the activity types 'running' (R = 1.40; 95 % confidence interval (CI) = 1.29–1.50), followed by 'Team ball games' (0.82; 0.66–0.98) and 'fitness' (0.80; 0.72–0.89). 'Other ball games', 'walking', 'gymnastics', 'other sports' and 'cycling for transport at home' has an beta coefficient between 0.30 and 0.50. 'Biking (as recreational or sports activity), 'dancing', 'activity in water', 'activity on water', 'outdoor activity', 'street sports' and 'mental training' has beta coefficients lower than 0.30. As mentioned, the analysis shows no positive association between self-assessed physical health and 'outdoor activities', 'street and roller activities', 'other physically demanding leisure activities' and 'physical rehabilitation.

In general, the described associations between practicing a type of PA and self-assessed physical health apply to both women and men, and there are small differences in the strength of the associations. However, women who 'walk' 4–7 days a week rate their physical health significantly higher than men who walk equally often. The same applies to 'mental training' and 'dance', although the differences are not as great. The reverse applies to cycling as a leisure activity, where men who cycle 4–7 days a week rate their self-assessed physical health significantly higher than women who cycle equally often.

Finally, Table 4 shows that the more different types of PA a person practises during a week, the greater is the probability of a good SPH.

3.2. Self-rated mental health

Table 5 also shows that for 13 of the 18 types of PA included in the analysis, there is a positive association between practising the type of PA in question and SMH. The exception to this is 'dancing', 'street and roller activities' and 'cycling for transport at home', where the association is non-significant, and 'mental training' and 'physical rehabilitation' where there is a negative association. In general, the beta coefficient for most types of PA are lower than the beta coefficient for the associations with SPH. However, this does not apply to 'cycling as a leisure activity', 'team ball games', 'other ball games', 'activities in water', 'activities on water' and 'gardening', where the differences in beta coefficient between SPH and SMH are small, and 'outdoor activities', 'other physically demanding leisure activities' and 'physical rehabilitation', where the association with SMH is more positive than for SPH.

It also applies to SMH that for most types of physical activities, the strength of the association increases with the frequency of participation.

It also applies to SMH that there are significant differences between the types of physical activities in how strong the association is between the participation in a type of activity and SMH. We find the largest beta coefficient for the association between self-rated health and practising the type of activity more than three days a week in 'team ball games' (R = 0.70; CI = 0.55–0.85) followed by 'fitness' (0.43; 0.35–0.51), 'running' (0.40; 0.32–0.51) and 'other ball games (0.40; 0.26–0.54). 'Walking', 'cycling', 'activities in water', 'outdoor activities, 'other small sports', 'other physical demanding leisure activities' and 'gardening' have lower beta coefficient. 'Mental training', 'street sports' and 'physical rehabilitation' show statistically significant negative beta coefficients for the association with SMH.

There are small and non-essential differences between women and men on the associations between activity level in the individual activity types and SMH, with the exception of 'gymnastics', where there is a relatively strong positive association for women, while this does not apply to men.

In contrast to SPH, the number of types of physical activities that the individual practise during a week seems to be of less significance for SMH than for SPH.

4. Discussion and conclusion

The analysis reaffirms the positive association between engaging in various types of PA and favorable self-rated health, aligning with previous findings. Notably, the association appears more robust for SPH than for SMH. This association may stem from the observed improvement in self-rated health resulting from PA, as indicated by a longitudinal study in Finland (Holstila et al., 2017). Alternatively, individuals who perceive both good physical and mental health might engage in a more diverse range of PA compared to those with poorer health assessments (Román et al., 2023).

The statistical analyses reveal substantial variations in the strength of the association between different types of PA and self-rated health, encompassing both physical and mental aspects. Team ball games have a stronger positive association with self-rated health than most types of PA, but this applies primarily to SMH, while the association with SPH is stronger for both 'running' and 'fitness'. Other studies have also shown a greater health effect of practicing team ball games (Herzoq, 2018; Krustrup and Parnell, 2019) and activities that include cardiorespiratory fitness training (Eriksen et al., 2013; Sodergren et al., 2008: 2) and muscle strength training (Hansen et al., 2013) compared with other

Table 4
Parameter estimates from ordinal regression analysis of the association between self-rated physical health and different types of physical activity, number of types of physical activity practiced each week and age, education, employment status and long-term health-problem – for all (15 year and older) and separately for women and men (Denmark, 2020).

	Men (N = 65.979)			Women (N = 80.835)			All (N = 146.814)		
	B	Sig.	CI	B	Sig.	CI	B	Sig.	CI
Walking: never (ref.)									
Walking: less often	0.20	0.000	0.15, 0.26	0.39	0.000	0.33, 0.45	0.28	0.000	0.24, 0.32
Walking: 1–3 days a week	−0.02	0.684	−0.12, 0.08	0.28	0.000	0.15, 0.41	0.13	0.001	0.05, 0.21
Walking: 4–7 days a week	0.14	0.009	0.03, 0.24	0.53	0.000	0.40, 0.66	0.35	0.000	0.27, 0.43
Running: never (ref.)									
Running: less often	0.34	0.000	0.29, 0.38	0.44	0.000	0.40, 0.49	0.39	0.000	0.35, 0.42
Running: 1–3 days a week	0.64	0.000	0.54, 0.74	0.79	0.000	0.66, 0.91	0.72	0.000	0.65, 0.80
Running: 4–7 days a week	1.34	0.000	1.2, 1.48	1.44	0.000	1.28, 1.60	1.40	0.000	1.29, 1.50
Cycling: never (ref.)									
Cycling: less often	0.07	0.003	0.02, 0.11	0.01	0.464	−0.02, 0.05	0.04	0.015	0.01, 0.06
Cycling: 1–3 days a week	0.05	0.316	−0.05, 0.15	−0.07	0.249	−0.20, 0.05	−0.01	0.820	−0.08, 0.07
Cycling: 4–7 days a week	0.21	0.000	0.10, 0.31	0.06	0.354	−0.07, 0.19	0.13	0.001	0.05, 0.21
Fitness: never (ref.)									
Fitness: less often	0.02	0.527	−0.04, 0.07	0.01	0.566	−0.03, 0.06	0.02	0.277	−0.01, 0.05
Fitness: 1–3 days a week	0.19	0.000	0.10, 0.29	0.24	0.000	0.12, 0.36	0.24	0.000	0.16, 0.31
Fitness 4–7 days a week	0.83	0.000	0.72, 0.94	0.75	0.000	0.61, 0.88	0.80	0.000	0.72, 0.89
Mental: never (ref.)									
Mental: less often	0.15	0.000	0.09, 0.21	0.13	0.000	0.08, 0.17	0.15	0.000	0.11, 0.18
Mental: 1–3 days a week	0.06	0.286	−0.05, 0.16	0.00	0.953	−0.13, 0.12	0.04	0.348	−0.04, 0.11
Mental: 4–7 days a week	0.11	0.101	−0.02, 0.23	0.06	0.347	−0.07, 0.20	0.09	0.033	0.01, 0.18
Team ball games: never (ref.)									
Team ball games: less often	0.01	0.673	−0.05, 0.07	0.09	0.014	0.02, 0.16	0.03	0.206	−0.02, 0.07
Team ball games: 1–3 days a week	−0.01	0.839	−0.11, 0.09	0.04	0.535	−0.09, 0.18	0.01	0.831	−0.07, 0.09
Team ball games: 4–7 days a week	0.70	0.000	0.50, 0.89	1.03	0.000	0.74, 1.31	0.82	0.000	0.66, 0.98
Other ball games: never (ref.)									
Other ball games: less often	0.05	0.078	−0.01, 0.10	0.07	0.011	0.02, 0.12	0.05	0.005	0.02, 0.09
Other ball games: 1–3 days a week	0.02	0.624	−0.07, 0.12	0.11	0.095	−0.02, 0.24	0.06	0.149	−0.02, 0.13
Other ball games: 4–7 days a week	0.44	0.000	0.26, 0.62	0.59	0.000	0.36, 0.83	0.49	0.000	0.35, 0.63
Gymnastic: never (ref.)									
Gymnastic: less often	0.22	0.000	0.12, 0.32	0.12	0.001	0.05, 0.19	0.16	0.000	0.11, 0.22
Gymnastic: 1–3 days a week	0.07	0.217	−0.04, 0.18	0.12	0.062	−0.01, 0.24	0.14	0.000	0.06, 0.22
Gymnastic: 4–7 days a week	0.23	0.011	0.05, 0.41	0.31	0.000	0.15, 0.48	0.31	0.000	0.19, 0.42
Dance: never (ref.)									
Dance: less often	0.15	0.000	0.07, 0.22	0.12	0.000	0.07, 0.17	0.14	0.000	0.10, 0.17
Dance: 1–3 days a week	0.12	0.060	−0.01, 0.25	0.04	0.529	−0.09, 0.17	0.06	0.117	−0.02, 0.15
Dance: 4–7 days a week	0.09	0.631	−0.27, 0.44	0.23	0.020	0.04, 0.42	0.20	0.013	0.04, 0.35
Activities in water: never (ref.)									
Activities in water: less often	0.13	0.000	0.09, 0.17	0.01	0.579	−0.03, 0.04	0.06	0.000	0.04, 0.09
Activities in water: 1–3 days a week	0.02	0.767	−0.09, 0.12	−0.14	0.027	−0.26, −0.02	−0.07	0.091	−0.14, 0.01
Activities in water: 4–7 days a week	0.13	0.104	−0.03, 0.29	0.10	0.199	−0.05, 0.26	0.14	0.011	0.03, 0.25
Activities on water: never (ref.)									
Activities on water: less often	0.19	0.000	0.14, 0.24	0.18	0.000	0.14, 0.23	0.19	0.000	0.15, 0.22
Activities on water: 1–3 days a week	0.14	0.017	0.03, 0.26	0.19	0.012	0.04, 0.33	0.17	0.000	0.08, 0.26
Activities on water: 4–7 days a week	0.21	0.104	−0.04. 0.45	0.14	0.388	−0.18, 0,47	0.18	0.075	−0.02, 0.37
Outdoor activities: never (ref.)									
Outdoor activities: less often	−0.03	0.202	−0.06, 0.01	0.05	0.033	0.00, 0.10	−0.01	0.710	−0.04, 0.02
Outdoor activities: 1–3 days a week	−0.14	0.005	−0.25, −0.04	−0.10	0.149	−0.23, 0.03	−0.12	0.003	−0.20, −0.04
Outdoor activities: 4–7 days a week	0.06	0.361	−0.07, 0.19	0.12	0.106	−0.03, 0.27	0.09	0.063	−0.01, 0.19
Street and roller activities: never (ref.)									
Street and roller activities: less often	0.08	0.060	0.00, 0.15	0.15	0.000	0.08, 0.23	0.12	0.000	0.07, 0.18
Street and roller activities: 1–3 days a week	−0.11	0.144	−0.25, 0.04	−0.20	0.027	−0.38, −0.02	−0.11	0.045	−0.22, 0.00
Street and roller activities: 4–7 days a week	−0.14	0.334	−0.42, 0.14	−0.08	0.742	−0.52, 0.37	−0.08	0.500	−0.32, 0.16
Other (small) sports: never (ref.)									
Other (small) sports: less often	0.12	0.000	0.08, 0.16	0.07	0.000	0.03, 0.11	0.09	0.000	0.06, 0.12
Other (small) sports: 1–3 days a week	0.02	0.693	−0.08, 0.13	0.01	0.935	−0.13, 0.14	0.02	0.623	−0.06, 0.10
Other (small) sports: 4–7 days a week	0.38	0.000	0.22, 0.55	0.27	0.000	0.12, 0.42	0.32	0.000	0.22, 0.43
Other physical demanding leisure activities: never (ref.)									
Other physical demanding leisure activities: less often	0.05	0.062	0.00, 0.10	0.00	0.987	−0.05, 0.05	0.02	0.319	−0.02, 0.05
Other physical demanding leisure activities: 1–3 days a week	−0.10	0.047	−0.19, 0.00	−0.17	0.006	−0.30, −0.05	−0.13	0.001	−0.20, −0.06
Other physical demanding leisure activities: 4–7 days a week	−0.08	0.130	−0.17, 0.02	−0.07	0.254	−0.19, 0.05	−0.05	0.194	−0.12, 0.03
Gardening: never (ref.)									
Gardening: less often	0.10	0.000	0.06, 0.15	0.07	0.000	0.03, 0.10	0.09	0.000	0.06, 0.12
Gardening: 1–3 days a week	0.04	0.473	−0.06, 0.14	0.06	0.318	−0.06, 0.19	0.06	0.143	−0.02, 0.13
Gardening: 4–7 days a week	0.22	0.000	0.12, 0.33	0.28	0.000	0.15, 0.41	0.24	0.000	0.16, 0.32
Cycling for transport at home: never (ref.)									
Cycling for transport at home: less often	0.09	0.000	0.05, 0.14	0.16	0.000	0.12, 0.20	0.13	0.000	0.10, 0.16

(*continued on next page*)

Table 4 (*continued*)

	Men (N = 65.979)			Women (N = 80.835)			All (N = 146.814)		
	B	Sig.	CI	B	Sig.	CI	B	Sig.	CI
Cycling for transport at home: 1–3 days a week	0.02	0.745	−0.08, 0.12	0.13	0.036	0.01, 0.26	0.09	0.017	0.02, 0.17
Cycling for transport at home: 4–7 days a week	0.22	0.000	0.12, 0.33	0.31	0.000	0.19, 0.44	0.29	0.000	0.21, 0.37
Physical rehabilitation: never (ref.)									
Physical rehabilitation: less often	−0.38	0.000	−0.45, −0.31	−0.50	0.000	−0.57, −0.43	−0.45	0.000	−0.50, −0.40
Physical rehabilitation: 1–3 days a week	−0.91	0.000	−1.02, −0.81	−0.92	0.000	−1.04, −0.79	−0.91	0.000	−0.99, −0.83
Physical rehabilitation: 4–7 days a week	−0.84	0.000	−0.97, −0.71	−0.75	0.000	−0.89, −0.61	−0.78	0.000	−0.87, −0.69
Number of types of physical activity practiced each week (reference: 0)									
1 type of physical activity	0.57	0.000	0.44, 0.70	0.50	0.000	0.35, 0.64	0.52	0.000	0.43, 0.62
2 types of physical activity	0.90	0.000	0.70, 1.10	0.84	0.000	0.59, 1.09	0.85	0.000	0.70, 1.01
3 types of physical activity	1.18	0.000	0.90, 1.46	1.04	0.000	0.68, 1.41	1.08	0.000	0.86, 1.29
4 types of physical activity	1.34	0.000	0.97, 1.70	1.15	0.000	0.67, 1.63	1.19	0.000	0.90, 1.48
5 types of physical activity	1.50	0.000	1.05, 1.95	1.25	0.000	0.66, 1.84	1.31	0.000	0.95, 1.66
6 types of physical activity	1.58	0.000	1.04, 2.12	1.35	0.000	0.64, 2.06	1.39	0.000	0.96, 1.81
7 types of physical activity	1.68	0.000	1.05, 2.30	1.47	0.001	0.64, 2.29	1.49	0.000	0.99, 1.98
8 types of physical activity	1.75	0.000	1.03, 2.46	1.55	0.001	0.61, 2.49	1.56	0.000	1.00, 2.12
9 types of physical activity	1.71	0.000	0.90, 2.51	1.52	0.005	0.46, 2.58	1.52	0.000	0.88, 2.15
10 or more types of physical activity	1.84	0.000	0.86, 2.82	1.49	0.020	0.23, 2.74	1.55	0.000	0.79, 2.31
Age (reference: 15–19 years)									
20–29 years	−0.09	0.071	−0.18, 0.01	0.21	0.000	0.12, 0.29	0.08	0.016	0.01, 0.14
30–39 years	−0.26	0.000	−0.37, -0.0.15	0.12	0.013	0.02, 0.21	−0.05	0.124	−0.12, 0.01
40–49 years	−0.26	0.000	−0.36, −0.15	0.16	0.001	0.07, 0.25	−0.03	0.374	−0.10, 0.04
50–59 years	0.05	0.338	−0.05, 0.16	0.42	0.000	0.33, 0,52	0.25	0.000	0.18, 0.32
60–69 years	0.40	0.000	0.29, 0.51	0.84	0.000	0.74, 0.94	0.64	0.000	0.57, 0.71
70–79 years	0.78	0.000	0.66, 0.90	1.10	0.000	0.99, 1.21	0.94	0.000	0.86, 1.02
80 years and older	0.74	0.000	0.60, 0.87	0.93	0.000	0.81, 1.06	0.84	0.000	0.75, 0.93
Highest completed education (reference: Primary school)									
Vocational education	0.04	0.088	−0.01, 0.08	0.01	0.483	−0.03, 0.05	0.02	0.185	−0.01, 0.05
Upper secondary education	−0.01	0.794	−0.07, 0.06	0.03	0.257	−0.02, 0.09	0.01	0.686	−0.03, 0.05
Short higher education	0.06	0.117	−0.01, 0.12	0.05	0.186	−0.02, 0.12	0.04	0.097	−0.01, 0.09
Medium-term higher education	0.06	0.020	0.01, 0.11	0.05	0.027	0.01, 0.09	0.06	0.000	0.03, 0.09
Long higher education	0.27	0.000	0.21, 0.32	0.22	0.000	0.17, 0.27	0.23	0.000	0.20, 0.27
Employment status (reference: Studying')									
Unemployed. early retirement etc.	−0.40	0.000	−0.48, −0,31	−0.36	0.000	−0.42, −0,29	−0.38	0.000	−0.43, −0.33
State pension	−0.03	0.511	−0.12, 0.06	0.14	0.000	0.06, 0.23	0.06	0.000	0.79, 0.12
In employment	0.13	0.000	0.05, 0.20	0.08	0.017	0.01, 0.14	0.09	0.000	0.04, 0.14
Has a long-term health-problem (reference)									
Does not have a long-term health problem	0.88	0.000	0.85, 0.91	1.13	0.000	1.10, 1.16	1.02	0.000	1.00, 1.04
Nagelkerk	0.249			0.287			0.267		

Abbreviations: (B): Parameter estimates, unstandardised beta coefficient; (Sig): Statistical significance; (CI): 95 % confidence interval.

forms of sports and exercise.

The analyses affirm findings consistent with previous studies (Engberg et al., 2015) that the frequency of PA influences self-rated health. However, in contrast to other studies, our analysis emphasizes the importance of the diversity of physical activity. The more different types of PA a person practises during a week, the greater the probability that the person rates the physical health as good. Several explanations may account for this phenomenon. Firstly, it may be because the more types of PA practiced, the more often a person will be physically active during a week. Secondly, it could also be because the experience of having good health gives more desire to be active in different ways. Thirdly, the association can also be explained by the fact that it is good for one's health to use and to train the body in a more versatile way than by practising one type of PA which aligns with findings in the literature that 'physical literacy' and health are positively associated (Cornish et al., 2020).

The analysis shows few significant gender differences in the association for most activity types. A corresponding analysis of age groups shows also small differences (not included in the article). This suggests that the found associations between practicing certain types of PA and self-assessed health are primarily determined by the characteristics of the type of PA and to a small extent determined by characteristics of the people who practice the activities in question.

The analysis suggests that the influence of physical activity on an individual's self-rated health is not solely determined by frequency and intensity but also by the manner in which physical activity is undertaken. If you practice 'running', 'fitness' or 'team ball games' several days a week, it has a greater impact on self-assessed health than if you practice 'hiking', 'cycling' or 'water activities'. The importance of PA for public health therefore depends on the traditions and culture of PA in the individual country. Denmark, where this study was carried out, is one of the countries in the world where the proportion of the population that regularly cycles is the largest (European Commission, 2013) which is attributed great importance to public health (Ibsen et al., 2022). But judged by the analyses in this article, it is of greater importance for public health in Denmark that also 'running', 'fitness' and 'club-organised sport' (where 'ball games' in particular make up a large part) are widespread and practiced by relatively more people than in most European countries (Breedveld et al., 2015: 246; Scheerder et al., 2020a: 7; Scheerder et al., 2020b: 325; European Commission, 2018: 48).

What are the practical implications of these findings? It is important to recognize that the strength of the association between physical activity and self-rated health varies depending on the type of PA engaged in. But this does not necessarily mean that 'running', 'fitness' and 'ball games' should be recommended to a greater extent than 'activities in

Table 5
Parameter estimates from ordinal regression analysis of the association between self-rated mental health and different types of physical activity, number of types of physical activity practiced each week and age, education, employment status and long-term health-problem – for all (15 year and older) and separately for women and men (Denmark, 2020).

	Men (N = 65.978)			Women (N = 80.835)			All (N = 146.813)		
	B	Sig.	CI	B	Sig.	CI	B.	Sig.	CI
Walking: never (ref.)									
Walking: less often	0.03	0.233	−0.02, 0.09	0.06	0.077	−0.01, 0.12	0.04	0.066	0.00, 0.08
Walking: 1–3 days a week	−0.01	0.905	−0.11, 0.09	0.02	0.695	−0.10, 0.15	0.01	0.853	−0.07, 0.08
Walking: 4–7 days a week	0.05	0.319	−0.05, 0.15	0.12	0.051	0.00, 0.25	0.09	0.022	0.01, 0.17
Running: never (ref.)									
Running: less often	0.02	0.414	−0.03, 0.07	0.08	0.001	0.03, 0.12	0.05	0.005	0.01, 0.08
Running: 1–3 days a week	0.14	0.003	0.05, 0.24	0.21	0.001	0.09, 0.33	0.18	0.000	0.11, 0.25
Running: 4–7 days a week	0.42	0.000	0.29, 0.56	0.39	0.000	0.24, 0.54	0.41	0.000	0.32, 0.51
Cycling: never (ref.)									
Cycling: 1–3 days a week	0.04	0.426	−0.06, 0.13	0.05	0.406	−0.07, 0.17	0.05	0.166	−0.02, 0.12
Cycling: 4–7 days a week	0.08	0.149	−0.03, 0.18	0.11	0.074	−0.01, 0.23	0.10	0.008	0.03, 0.18
Cycling: less often	0.06	0.005	0.02, 0.10	0.00	0.869	−0.04, 0.04	0.03	0.033	0.00, 0.06
Fitness: never (ref.)									
Fitness: less often	0.02	0.476	−0.03, 0.07	0.03	0.193	−0.01, 0.07	0.02	0.173	−0.01, 0.06
Fitness: 1–3 days a week	0.14	0.003	0.05, 0.23	0.17	0.004	0.05, 0.29	0.17	0.000	0.10, 0.24
Fitness 4–7 days a week	0.44	0.000	0.33, 0.54	0.38	0.000	0.26, 0.51	0.43	0.000	0.35, 0.51
Mental: never (ref.)									
Mental: less often	−0.20	0.000	−0.26, −0.14	−0.13	0.000	−0.17, −0.08	−0.17	0.000	−0.20, −0.13
Mental: 1–3 days a week	−0.27	0.000	−0.37, −0.17	−0.17	0.004	−0.29, −0.05	−0.20	0.000	−0.27, −0.13
Mental: 4–7 days a week	−0.12	0.054	−0.25, 0.00	−0.14	0.029	−0.27, −0.01	−0.14	0.001	−0.22, −0.06
Team ball games: never (ref.)									
Team ball games: less often	0.08	0.011	0.02, 0.14	0.08	0.030	0.01, 0.15	0.08	0.001	0.03, 0.12
Team ball games: 1–3 days a week	0.20	0.000	0.10, 0.30	0.17	0.012	0.04, 0.30	0.21	0.000	0.13, 0.28
Team ball games: 4–7 days a week	0.66	0.000	0.47, 0.84	0.62	0.000	0.36, 0.89	0.70	0.000	0.55, 0.85
Other ball games: never (ref.)									
Other ball games: less often	0.07	0.012	0.01, 0.12	0.05	0.048	0.00, 0.10	0.06	0.001	0.03, 0.10
Other ball games: 1–3 days a week	0.09	0.070	−0.01, 0.18	0.12	0.050	0.00, 0.25	0.11	0.004	0.04, 0.19
Other ball games: 4–7 days a week	0.34	0.000	0.16, 0.51	0.47	0.000	0.23, 0.70	0.40	0.000	0.26, 0.54
Gymnastic: never (ref.)									
Gymnastic: less often	0.05	0.306	−0.05, 0.15	0.04	0.298	−0.03, 0.11	0.04	0.137	−0.01, 0.10
Gymnastic: 1–3 days a week	−0.01	0.801	−0.12, 0.10	0.09	0.138	−0.03, 0.21	0.07	0.062	0.00, 0.15
Gymnastic: 4–7 days a week	0.03	0.775	−0.15, 0.20	0.35	0.000	0.18, 0.51	0.23	0.000	0.12, 0.35
Dance: never (ref.)									
Dance: less often	0.05	0.156	−0.02, 0.13	0.03	0.222	−0.02, 0.08	0.02	0.289	−0.02, 0.06
Dance: 1–3 days a week	0.09	0.168	−0.04, 0.21	0.03	0.607	−0.09, 0.15	0.03	0.518	−0.05, 0.10
Dance: 4–7 days a week	0.25	0.156	−0.10, 0.60	0.06	0.523	−0.12, 0.25	0.04	0.559	−0.11, 0.19
Activities in water: never (ref.)									
Activities in water: less often	0.10	0.000	0.06, 0.13	0.04	0.031	0.00, 0.07	0.07	0.000	0.04, 0.09
Activities in water: 1–3 days a week	0.12	0.023	0.02, 0.22	0.07	0.238	−0.05, 0.19	0.10	0.012	0.02, 0.17
Activities in water: 4–7 days a week	0.19	0.021	0.03, 0.35	0.15	0.054	0.00, 0.30	0.18	0.001	0.07, 0.28
Activities on water: never (ref.)									
Activities on water: less often	0.11	0.000	0.06, 0.16	0.07	0.004	0.02, 0.12	0.09	0.000	0.06, 0.12
Activities on water: 1–3 days a week	0.12	0.034	0.01, 0.24	0.12	0.109	−0.03, 0.26	0.13	0.004	0.04, 0.22
Activities on water: 4–7 days a week	0.08	0.500	−0.16, 0.33	0.21	0.202	−0.11, 0.53	0.14	0.159	−0.05, 0.33
Outdoor activities: never (ref.)									
Outdoor activities: less often	0.00	0.914	−0.04, 0.04	0.02	0.394	−0.03, 0.07	0.02	0.267	−0.01, 0.05
Outdoor activities: 1–3 days a week	0.03	0.511	−0.07, 0.13	0.09	0.170	−0.04, 0.22	0.07	0.067	0.00, 0.15
Outdoor activities: 4–7 days a week	0.13	0.038	0.01, 0.26	0.20	0.009	0.05, 0.34	0.18	0.000	0.08, 0.27
Street and roller activities: never (ref.)									
Street and roller activities: less often	−0.04	0.275	−0.12, 0.03	0.05	0.124	−0.01, 0.12	0.01	0.821	−0.05, 0.06
Street and roller activities: 1–3 days a week	−0.04	0.585	−0.18, 0.10	−0.20	0.022	−0.37, −0.03	−0.07	0.180	−0.18, 0.03
Street and roller activities: 4–7 days a week	−0.40	0.004	−0.67, −0.13	0.16	0.475	−0.28, 0.60	−0.16	0.162	−0.39, 0.07
Other (small) sports: never (ref.)									
Other (small) sports: less often	0.11	0.000	0.07, 0.15	0.09	0.000	0.05, 0.13	0.10	0.000	0.07, 0.13
Other (small) sports: 1–3 days a week	0.08	0.126	−0.02, 0.18	0.04	0.524	−0.09, 0.17	0.07	0.097	−0.01, 0.15
Other (small) sports: 4–7 days a week	0.25	0.003	0.09, 0.42	0.20	0.008	0.05, 0.34	0.21	0.000	0.10, 0.31
Other physical demanding leisure activities: never (ref.)									
Other physical demanding leisure activities: less often	0.05	0.037	0.00, 0.10	0.00	0.969	−0.05, 0.05	0.02	0.186	−0.01, 0.06
Other physical demanding leisure activities: 1–3 days a week	0.09	0.053	0.00, 0.19	−0.07	0.237	−0.19, 0.05	0.02	0.675	−0.06, 0.09
Other physical demanding leisure activities: 4–7 days a week	0.21	0.000	0.11, 0.30	0.11	0.075	−0.01, 0.22	0.16	0.000	0.08, 0.23
Gardening: never (ref.)									
Gardening: less often	0.10	0.000	0.05, 0.14	0.08	0.000	0.05, 0.12	0.10	0.000	0.08, 0.13
Gardening: 1–3 days a week	0.11	0.020	0.02, 0.21	0.09	0.145	−0.03, 0.21	0.12	0.001	0.05, 0.20
Gardening: 4–7 days a week	0.17	0.001	0.07, 0.27	0.22	0.001	0.09, 0.34	0.21	0.000	0.13, 0.28
Cycling for transport at home: never (ref.)									

(*continued on next page*)

Table 5 (*continued*)

	Men (N = 65.978)			Women (N = 80.835)			All (N = 146.813)		
	B	Sig.	CI	B	Sig.	CI	B.	Sig.	CI
Cycling for transport at home: less often	−0.06	0.005	−0.10, −0.02	−0.03	0.089	−0.07, 0.00	−0.04	0.002	−0.07, −0.02
Cycling for transport at home: 1–3 days a week	−0.10	0.041	−0.20, 0.00	−0.08	0.217	−0.20, 0.04	−0.08	0.037	−0.15, 0.00
Cycling for transport at home: 4–7 days a week	−0.05	0.297	−0.15, 0.05	−0.04	0.545	−0.16, 0.08	−0.03	0.363	−0.11, 0.04
Physical rehabilitation: never (ref.)									
Physical rehabilitation: less often	−0.18	0.000	−0.25, −0.11	−0.12	0.000	−0.19, −0.06	−0.15	0.000	−0.20, −0.10
Physical rehabilitation: 1–3 days a week	−0.34	0.000	−0.44, −0.24	−0.22	0.000	−0.34, −0.10	−0.27	0.000	−0.35, −0.19
Physical rehabilitation: 4–7 days a week	−0.24	0.000	−0.36, −0.11	−0.05	0.479	−0.18, 0.09	−0.13	0.005	−0.22, −0.04
Number of types of physical activity practiced each week (reference: 0)									
1 type of physical activity	0.28	0.000	0.16, 0.41	0.31	0.000	0.17, 0.46	0.29	0.000	0.20, 0.38
2 types of physical activity	0.34	0.001	0.15, 0.53	0.47	0.000	0.23, 0.71	0.39	0.000	0.24, 0.54
3 types of physical activity	0.40	0.004	0.13, 0.67	0.52	0.004	0.17, 0.86	0.44	0.000	0.23, 0.65
4 types of physical activity	0.48	0.008	0.12, 0.83	0.50	0.031	0.04, 0.96	0.45	0.001	0.18, 0.73
5 types of physical activity	0.50	0.024	0.07, 0.94	0.55	0.056	−0.01, 1.12	0.49	0.005	0.15, 0.83
6 types of physical activity	0.52	0.051	0.00, 1.03	0.57	0.100	−0.11, 1.24	0.50	0.017	0.09, 0.90
7 types of physical activity	0.54	0.081	−0.07, 1.14	0.57	0.155	−0.22, 1.36	0.50	0.038	0.03, 0.97
8 types of physical activity	0.53	0.133	−0.16, 1.21	0.63	0.166	−0.26, 1.53	0.53	0.055	−0.01, 1.07
9 types of physical activity	0.63	0.113	−0.15, 1.40	0.55	0.286	−0.46, 1.56	0.51	0.098	−0.10, 1.12
10 or more types of physical activity	0.62	0.202	−0.33, 1.56	0.46	0.455	−0.74, 1.65	0.45	0.231	−0.28, 1.18
Age (reference: 15–19 years)									
20–29 years	−0.16	0.001	−0.25, −0.06	0.34	0.000	0.26, 0.43	0.13	0.000	0.07, 0.19
30–39 years	−0.03	0.576	−0.13, 0.07	0.54	0.000	0.45, 0.64	0.30	0.000	0.23, 0.37
40–49 years	0.18	0.001	0.07, 0.28	0.75	0.000	0.66, 0.85	0.50	0.000	0.44, 0.57
50–59 years	0.61	0.000	0.51, 0.72	1.16	0.000	1.07, 1.25	0.93	0.000	0.86, 0.99
60–69 years	1.04	0.000	0.93, 1.14	1.63	0.000	1.53, 1.73	1.38	0.000	1.31, 1.45
70–79 years	1.33	0.000	1.21, 1.45	1.85	0.000	1.74, 1.96	1.63	0.000	1.55, 1.71
80 years and older	1.26	0.000	1.13, 1.40	1.62	0.000	1.49, 1.74	1.48	0.000	1.39, 1.57
Highest completed education (reference: Primary school)									
Vocational education	0.06	0.003	0.02, 0.10	0.13	0.000	0.09, 0.17	0.10	0.000	0.07, 0.12
Upper secondary education	0.14	0.000	0.07, 0.20	0.15	0.000	0.09, 0.20	0.13	0.000	0.09, 0.17
Short higher education	0.14	0.000	0.07, 0.21	0.24	0.000	0.17, 0.32	0.19	0.000	0.14, 0.24
Medium-term higher education	0.23	0.000	0.17, 0.28	0.25	0.000	0.21, 0.30	0.24	0.000	0.21, 0.27
Long higher education	0.49	0.000	0.43, 0.54	0.42	0.000	0.36, 0.47	0.45	0.000	0.41, 0.49
Employment status (reference: Studying')									
Unemployed. early retirement etc.	−0.40	0.000	−0.48, −0.32	−0.36	0.000	−0.42, −0.29	−0.38	0.000	−0.43, −0.33
State pension	0.11	0.021	0.02, 0.20	0.19	0.000	0.12, 0.28	0.15	0.000	0.09, 0.21
In employment	0.24	0.000	0.17, 0.32	0.22	0.000	0.16, 0,28	0.22	0.000	0.18, 0.27
Has a long-term health-problem (reference)									
Does not have a long-term health problem	0.50	0.000	0.47, 0.53	0.72	0.000	0.69, 0.75	0.62	0.000	0.60, 0.65
Nagelkerk	0.128			0.163			0.147		

Abbreviations: (B): Parameter estimates, unstandardised beta coefficient; (Sig): Statistical significance; (CI): 95 % confidence interval.

water' and 'outdoor activities' when it comes to promoting physical health. Some of the most physically demanding activities, which have the greatest effect on physical health, can be difficult to practice for people with mobility difficulties. And the choice of activity also depends on how motivated the individual is to practise different types of PA to improve their health (Doré et al., 2022). The analyses show that campaigns and recommendations for adults to be more physically active should also include PAs of everyday life and not only specific forms of sport and fitness. Among others 'cycling as transport' and 'gardening' which has a stronger association with self-rated health than several types of sport and exercise in leisure time. Finally, the analysis indicates the need for a heightened focus on engaging in physical activity in diverse ways. This can be promoted by providing children and young people with experience and skills in various forms of physical activity at school and in their free time, and by providing good physical and organizational opportunities to be physically active in various ways.

The analysis has both strengths and weaknesses. The strength is foremost that it is based on a very large number of responses. It is also a strength that we asked the participants about their participation in specific types of PA, unlike studies where the participant must assess how active they are across different types of PA during a week. The main limitation of the analysis is that it cannot demonstrate causality.

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Conflict of interests

The authors declare that they have no competing interests.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

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