

Mental Health Benefits of Exercise Variation: Evidence from the 2024 5EU National Health and Wellness Survey

Sheila Drakeley, MPH, Jacob Matta, MPH, Kathy Annunziata, MA.

Oracle Life Science, Austin, TX, USA.

Background

- More than 125 million people in the World Health Organization (WHO) European Region live with a mental health condition.¹
- The WHO European framework for action on mental health emphasizes the importance of mental health and well-being, including the role of physical activity.²

Objectives

We assessed the association between exercise frequency, type, and intensity and the influence these had on mental health outcomes in adults diagnosed with anxiety or depression compared to the general population.

Methods

- Data from the 2024 5EU National Health and Wellness Survey, a cross-sectional, nationally representative, general population survey, were used.
- Countries included: France, Germany, Italy, Spain, and UK.
- Participants are adults (aged ≥18 years), recruited using general population panels, using a quota sampling technique.

- Participants self-reported being diagnosed by a healthcare provider with anxiety or depression (AD Cohort). Patient reported outcomes included the RAND-36 mental health composite (MHC) score.³
- Descriptive and bivariate statistics were conducted separately for those with anxiety or depression and the general population. Linear regression results were controlled for age, sex, employment, annual household income, BMI, and CCI.

Results

- On average, the AD Cohort was 48.4 (SD=15.9) years old, 60% were female, and 25% had a BMI of ≥30.
- Over half (58%) reported exercising 0-5 days in the last 30 days.
- Over one third (34%) of the AD Cohort did not perform any cardio, strength training or flexibility/balance exercises in the past two weeks
- Among those in the AD Cohort that exercised in the past two weeks, 25% reported cardio only, 16% reported a mix of cardio, strength, and flexibility exercises; 43% at a low intensity and 41% at a medium intensity.
- The AD Cohort had significantly higher MHC scores when they exercised 16+ days/month ($\beta = 3.41$, 95% CI: 2.90-3.92, $p < 0.001$), exercised at high intensity ($\beta = 3.53$, 95% CI: 2.59-4.48, $p < 0.001$), or performed both cardio and strength training ($\beta = 3.57$, 95% CI: 2.84-4.31, $p < 0.001$), compared to respective reference groups.

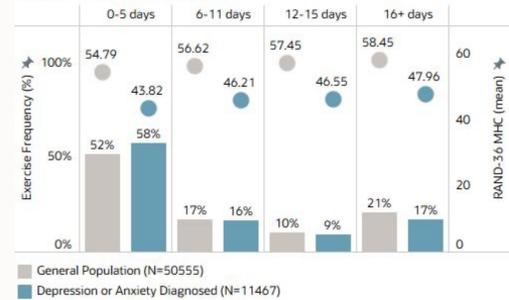
Table 1: Demographics

	General Population (N=50555)	Depression or Anxiety Diagnosed (N=11467)	P-value
Age (Mean, SD)	50.2 (17.1)	48.4 (15.9)	<0.001
Sex at Birth			<0.001
Female	47%	60%	
Employment			<0.001
Employed full time	46%	38%	
Self-employed	7%	7%	
Employed part time	8%	11%	
Homemaker	3%	4%	
Retired	25%	21%	
Other	10%	19%	
Annual Household Income			<0.001
€29,999 or less	28%	34%	
€30,000 - €74,999	33%	28%	
€75,000 or more	10%	6%	
€29,999 or less	7%	12%	
€30,000 - €74,999	9%	10%	
€75,000 or more	6%	4%	
Decline to answer	7%	5%	
BMI Categories			<0.001
Underweight (<18.5)	4%	5%	
Normal weight (18.5 to <25)	43%	36%	
Overweight (25 to <30)	30%	28%	
Obese (30 or greater)	15%	25%	
Unknown	8%	7%	
Mean BMI	25.8	27.1	
CCI Score (Mean)	0.30	0.53	<0.001

Table 2: Associations Between Exercise Characteristics and RAND MHC: Linear Regression Results for General Population and those Diagnosed with Depression or Anxiety.

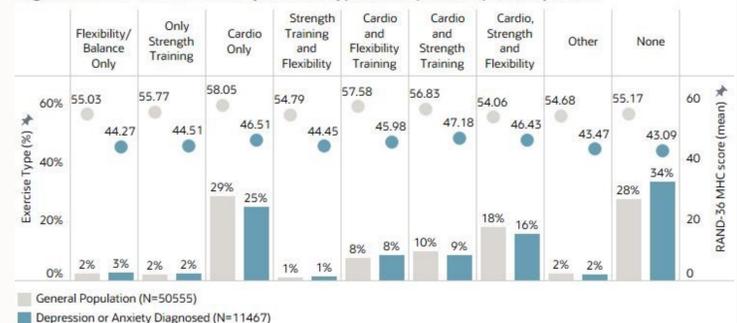
General Population						Depression or Anxiety Dx					
Sample Size	Exercise Variable Category	β	95% Confidence		P-value	Sample Size	Exercise Variable Category	β	95% Confidence		P-value
			Lower	Upper					Lower	Upper	
26116	0-5 days	ref	ref	ref	NA	6601	0-5 days	ref	ref	ref	NA
8762	6-11 days	1.50	1.26	1.74	<0.001	1884	6-11 days	1.79	1.26	2.31	<0.001
5138	12-15 days	2.32	2.03	2.62	<0.001	1017	12-15 days	2.15	1.48	2.83	<0.001
10539	16+ days	3.01	2.79	3.24	<0.001	1965	16+ days	3.41	2.90	3.92	<0.001
5095	Don't know	ref	ref	ref	NA	972	Don't know	ref	ref	ref	NA
18124	Low intensity	0.77	0.46	1.08	<0.001	4945	Low intensity	0.22	-0.48	0.92	0.537
22953	Medium intensity	2.75	2.44	3.05	<0.001	4679	Medium intensity	3.24	2.53	3.96	<0.001
4403	High intensity	3.14	2.73	3.54	<0.001	871	High intensity	3.53	2.59	4.48	<0.001
14076	None	ref	ref	ref	NA	3857	None	ref	ref	ref	NA
1199	Flexibility/Balance Only	0.20	-0.38	0.78	0.504	319	Flexibility/Balance Only	1.00	-0.16	2.16	0.090
1018	Only Strength Training	1.49	0.86	2.12	<0.001	248	Only Strength Training	1.48	0.17	2.79	0.026
14486	Cardio Only	2.14	1.91	2.37	<0.001	2891	Cardio Only	2.60	2.11	3.10	<0.001
509	Strength Training and Flexibility	0.53	-0.35	1.4	0.236	142	Strength Training and Flexibility	1.40	-0.3	3.1	0.107
3922	Cardio and Flexibility Training	2.16	1.81	2.51	<0.001	968	Cardio and Flexibility Training	2.39	1.67	3.11	<0.001
5005	Cardio and Strength Training	2.25	1.92	2.58	<0.001	984	Cardio and Strength Training	3.57	2.84	4.31	<0.001
9214	Cardio, Strength and Flexibility	0.09	-0.19	0.37	0.522	1822	Cardio, Strength and Flexibility	3.31	2.7	3.92	<0.001
1126	Other	-0.31	-0.91	0.29	0.306	236	Other	0.23	-1.1	1.55	0.735

Figure 1. RAND-36 MHC scores by exercise frequency and depression / anxiety status



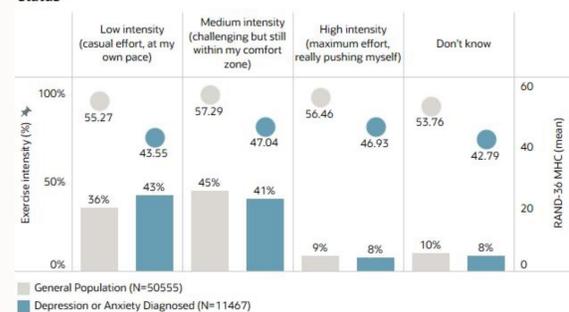
$p < 0.001$ for exercise frequency by depression/anxiety status
 $p < 0.001$ for MHC by depression/anxiety status at each exercise frequency

Figure 2. RAND-36 MHC score by exercise type and depression / anxiety status



$p < 0.001$ for exercise type by depression/anxiety status
 $p < 0.001$ for MHC by depression/anxiety status at each exercise type

Figure 3. RAND-36 MHC scores by exercise intensity and depression / anxiety status



$p < 0.001$ for exercise intensity by depression/anxiety status
 $p < 0.001$ for MHC by depression/anxiety status at each exercise intensity



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Conclusion

- Increased frequency and higher intensity exercises were associated with greater improvement in individuals with depression or anxiety.
- Participants who reported participating in cardio exercises had a larger positive effect.
- Generally, the AD Cohort exhibited a larger effect size compared to the general population, independent of frequency, intensity, or type.

References

1. World Health Organization. The Pan-European Mental Health Coalition [Internet]. WHO Regional Office for Europe; [cited 2025 Sep 12]. Available from: <https://www.who.int/europe/initiatives/the-pan-european-mental-health-coalition>
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3. Hays RD, Sherbourne CD, Mazel RM. The RAND 36-Item Health Survey 1.0. Health Econ. 1993;2(3):217-27.

