Exploring the impact of exercise variability of mental health: results from the 2024 US National Health and Wellness Survey

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Background

- One in five United States (U.S.) adults live with a mental illness, approximately 59.3 million adults.[1]
- Exercise has shown to have benefits on overall mental health.[2]
- Mental health conditions often impact individuals' daily activities, including exercise habits.[3]

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 and depression compared to the general population.

Methods

Data from the 2024 US National Health and Wellness Survey, a cross-sectional, nationally representative, general population survey, were used.

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[4].

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, race, education, employment, annual household income, insurance type, BMI, and CCI.

Results

- On average, the AD Cohort was 46.6 (SD=16.2) years old, 65.1% were female, 77.0% were White, and 38.3% had a BMI of ≥30.
- Roughly half (57.3%) reported exercising 0-5 days in the last 30 days with 26.5% a mix of cardio, strength, and flexibility exercises; 45.6% at a low intensity.
- The AD Cohort had significantly higher MHC scores when they exercised 16+ days/month (β = 3.92, 95% CI: 3.51-4.33, p < 0.001), exercised at high intensity (β = 4.43, 95%CI: 3.56-5.30, p < 0.001), or performed both cardio and strength training (β = 4.34, 95% CI: 3.74-4.94, p < 0.001), compared to respective reference groups.

Table 1: Demographics

	General Population (N=57401)	Depression or Anxiety Diagnosed (N=17612)	P-value
			P-value
Age (Mean, SD)	49.1 (18.0)	46.6 (16.2)	<0.001
Sex at Birth			<0.001
Female	48.6%	65.1%	
Race			<0.001
White	69.6%	77.0%	
Black/African American	19.4%	15.3%	
Asian	5.5%	2.7%	
Some other race or origin/ multi-race	5.5%	5.1%	
Education			<0.001
College graduate or higher	56.5%	40.9%	
Employment			<0.001
Employed full time	50.8%	40.1%	
Self-employed	6.1%	7.3%	
Employed part time	7.3%	9.2%	
Homemaker	3.2%	5.3%	
Retired	23.3%	16.9%	
Other	9.4%	21.2%	
Annual Household Income			<0.001
<$25,000	11.1%	21.9%	
$25,000 to <$50,000	15.3%	23.1%	
$50,000 to <$100,000	27.5%	27.7%	
$100,000 +	42.8%	25.1%	
Decline to answer	3.4%	2.2%	
BMI Categories			<0.001
Underweight (<18.5)	8.5%	4.2%	
Normal weight (18.5 to <25)	33.4%	28.0%	
Overweight (25 to <30)	28.3%	26.0%	
Obese (30 or greater)	23.8%	38.3%	
Unknown	6.0%	3.5%	
Mean BMI	26.5	29.2	
CCI Score (Mean)	0.4	0.7	<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 Diagnosed					
Sample Size	Exercise Variable Category	β	95% Confidence Lower	95% Confidence Upper	P-value	Sample Size	Exercise Variable Category	β	95% Confidence Lower	95% Confidence Upper	P-value
Sample Size	**Exercise Frequency**	**β**	**LCL**	**UCL**	**P-value**	**Sample Size**	**Exercise Frequency**	**β**	**LCL**	**UCL**	**P-value**
28729	0-5 days	ref	ref	ref	NA	10062	0-5 days	ref	ref	ref	NA
5939	12-15 days	1.79	1.52	2.06	**<0.001**	1711	12-15 days	3.19	2.66	3.72	**<0.001**
14505	16+ days	3.48	3.28	3.68	**<0.001**	3412	16+ days	3.92	3.51	4.33	**<0.001**
8228	6-11 days	1.29	1.05	1.53	**<0.001**	2427	6-11 days	1.85	1.39	2.31	**<0.001**
Sample Size	**Exercise Intensity**	**β**	**LCL**	**UCL**	**P-value**	**Sample Size**	**Exercise Intensity**	**β**	**LCL**	**UCL**	**P-value**
5317	Don't know	ref	ref	ref	NA	951	Don't know	ref	ref	ref	NA
20021	Low intensity	0.42	0.10	0.73	**0.009**	8035	Low intensity	0.17	-0.52	0.86	0.624
25912	Medium intensity	1.90	1.59	2.21	**<0.001**	7305	Medium intensity	3.45	2.75	4.16	**<0.001**
6151	High intensity	1.43	1.06	1.79	**<0.001**	1321	High intensity	4.43	3.56	5.30	**<0.001**
Sample Size	**Exercise Type**	**β**	**LCL**	**UCL**	**P-value**	**Sample Size**	**Exercise Type**	**β**	**LCL**	**UCL**	**P-value**
14899	None	ref	ref	ref	NA	5790	None	ref	ref	ref	NA
658	Flexibility/Balance Only	-0.24	-0.99	0.52	0.542	235	Flexibility/Balance Only	1.23	-0.09	2.56	0.068
672	Only Strength Training	1.62	0.87	2.37	**<0.001**	193	Only Strength Training	2.19	0.72	3.65	**0.003**
10711	Cardio Only	2.55	2.31	2.80	**<0.001**	3301	Cardio Only	3.05	2.61	3.49	**<0.001**
601	Strength Training and Flexibility	0.64	-0.15	1.43	0.112	209	Strength Training and Flexibility	1.83	0.42	3.23	**0.011**
3655	Cardio and Flexibility Training	2.08	1.73	2.44	**<0.001**	1411	Cardio and Flexibility Training	3.01	2.41	3.61	**<0.001**
6187	Cardio and Strength Training	2.39	2.09	2.68	**<0.001**	1472	Cardio and Strength Training	4.34	3.74	4.94	**<0.001**
18924	Cardio, Strength and Flexibility	-0.29	-0.51	-0.07	**0.010**	4675	Cardio, Strength and Flexibility	3.29	2.86	3.72	**<0.001**
1094	Other	-0.30	-0.9	0.29	0.319	326	Other	2.08	0.95	3.22	**<0.001**

Note: controlling for age, sex, race, education, employment, annual household income, insurance type, BMI, and CCI.

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

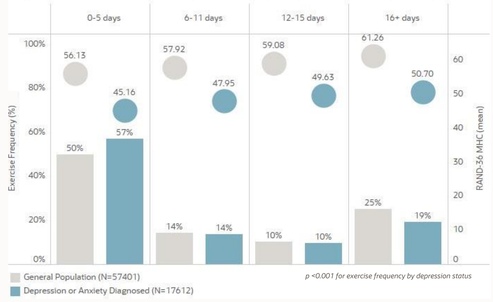


Figure 3. RAND-36 MHC Scores by exercise intensity and depression/anxiety status

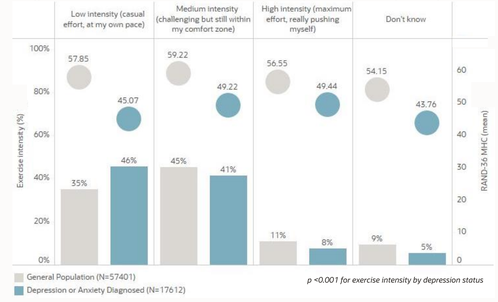
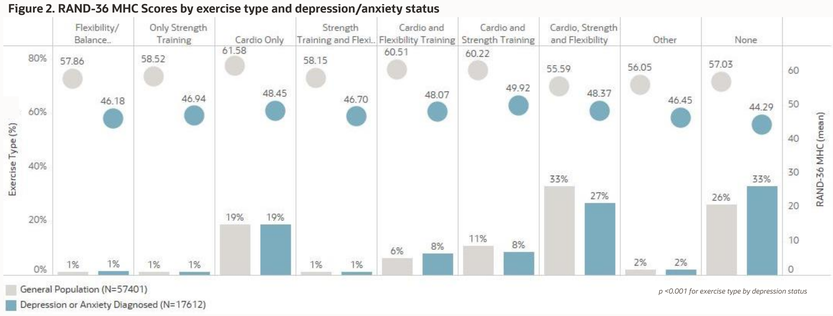


Figure 2. RAND-36 MHC Scores by exercise type and depression/anxiety status



Conclusion

An increase in exercise frequency and higher intensity exercises had a larger positive effect on individuals with depression or anxiety. Participants who reported participating in cardio exercises had a larger positive effect. Generally, the AD Cohort saw a larger effect size compared to the general population regardless of frequency, intensity, or type.

References

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