

MUSCLE STRENGTHENING ACTIVITY AND PERCEIVED GENERAL HEALTH IN WEST VIRGINIA ADULTS



Peter D. Hart
Exercise Science Program
Glennville State University

INTRODUCTION

Muscle strengthening activity (MSA) is encouraged for all adults due to its positive associations with health outcomes, including bone strength, muscular fitness, and perceived health. MSA is also associated with improved functional health and is recommended as part of a multicomponent physical activity program. West Virginia (WV) is currently the lowest-ranking U.S. state regarding the percentage of adults meeting MSA guidelines. Moreover, the extent to which health status influences MSA in this population is not understood.

PURPOSE

To examine the associations between perceived general health and MSA in WV adults.

METHODS

Data for this study came from the CDC's Behavioral Risk Factor Surveillance System (BRFSS). A total of 5,301 adult participants 18+ years of age residing in WV were extracted from the national dataset.

The primary outcome variable was meeting MSA guidelines status, where respondents reporting 2+ days per week of MSA were considered to have met guidelines. The primary predictor variable was perceived general health.

Analyses included prevalence estimates (%) of meeting MSA guidelines and multiple logistic regression modeling.

RESULTS

Overall, 26.1% (95% CI: 24.5% – 27.7%) of WV adults met MSA guidelines. Across subgroups, male, younger, other races, and more income populations met MSA guidelines at a higher prevalence than their counterparts. The prevalence of meeting MSA guidelines was also higher among those with good as compared to those with poor general health (28.9% versus 18.2%, $p < .001$) and followed a linear trend from poor to excellent health ($p \text{ trend} < .001$).

RESULTS

Additionally, adults with good general health saw an 83% increase in odds (OR = 1.83, 95% CI: 1.49 – 2.23) of having met MSA guidelines compared to those with poor health. After controlling for all covariates, these odds were reduced to an increase of 36% (OR = 1.36, 95% CI: 1.07 – 1.72). Finally, the general health and meeting MSA guidelines relationship was stronger (general health \times sex $p = .004$) in males (OR = 1.43, 95% CI: 1.23 – 1.64, $p \text{ trend} < .001$) than in females (OR = 1.21, 95% CI: 1.07 – 1.38, $p \text{ trend} = .004$) moving from poor to excellent health.

Table 1. Demographics characteristics overall and by MSA status, WV BRFSS 2019.

Variable	Overall				Met MSA Guidelines				p
	n	%	LL	UL	n	%	LL	UL	
Overall	5301				1251	26.1	24.5	27.7	<.001
Sex									
Male	2324	49.1	47.3	50.9	580	28.3	25.8	30.7	.011
Female	2977	50.9	49.1	52.7	671	24.0	21.9	26.2	

Table 2. Health characteristics overall and by MSA status, WV BRFSS 2019.

Variable	Overall				Met MSA Guidelines				p
	n	%	LL	UL	n	%	LL	UL	
General Health									
Poor	1530	26.6	25.1	28.1	268	18.2	15.6	20.8	<.001
Good	3753	73.4	71.9	74.9	977	28.9	26.9	30.9	
General Health									
Poor	517	8.6	7.7	9.6	88	17.6	13.0	22.1	<.001
Fair	1013	18.0	16.7	19.3	180	18.5	15.3	21.7	
Good	1788	35.0	33.3	36.7	396	24.3	21.6	27.0	
Very good	1442	28.0	26.4	29.7	392	30.0	26.7	33.3	
Excellent	523	10.4	9.3	11.5	189	41.1	35.2	46.9	
linear trend									<.001

Table 3. Logistic regression models examining the association between general health and MSA status, WV BRFSS 2019.

Variable	Unadjusted			Demographics Adjusted			Fully Adjusted		
	OR	LL	UL	OR	LL	UL	OR	LL	UL
General Health									
Poor	1.00	-	-	1.00	-	-	1.00	-	-
Good	1.83	1.49	2.23	1.54	1.22	1.93	1.36	1.07	1.72
General Health									
Poor-to-Excellent	1.37	1.26	1.49	1.32	1.20	1.45	1.22	1.11	1.35

Note. Unadjusted models include the single general health predictor variable. Demographics adjusted models are adjusted for age, sex, race, and income. Fully adjusted models are additionally adjusted for smoking status, alcohol status, and obese status.

RESULTS

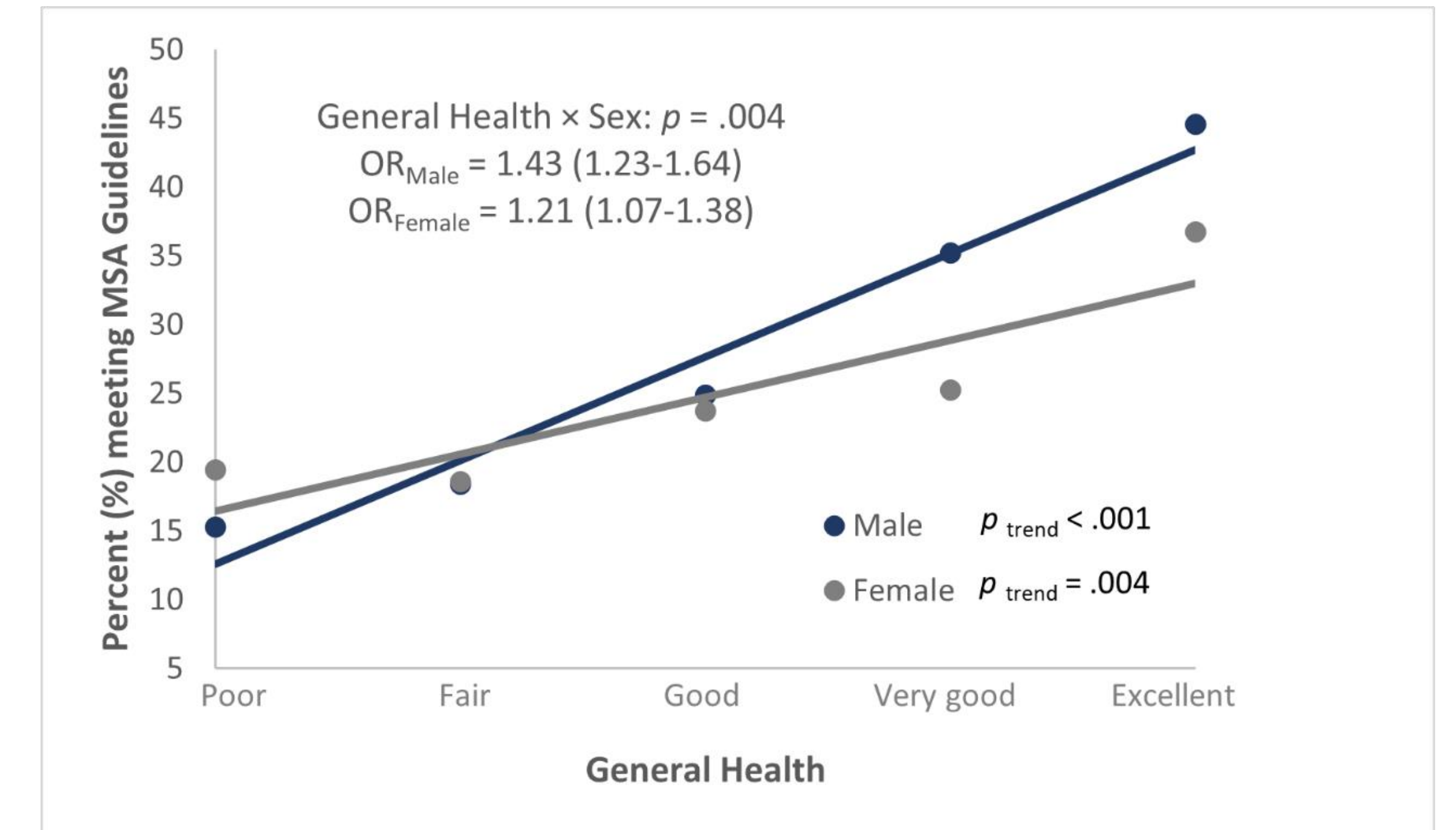


Figure 1. Weighted percent (%) of adults meeting MSA guidelines by general health, WV BRFSS 2019.

CONCLUSIONS

These findings indicate that perceived general health is predictive of and may influence MSA behavior in WV adults. Efforts to explain and address the low MSA in WV should be prioritized. This study is the first to examine the population-level link between perceived health status and MSA in WV adults.

REFERENCES

1. U.S. Department of Health and Human Services. (2018) Physical Activity Guidelines for Americans, 2nd Edition. Retrieved from https://health.gov/paguidelines/second-edition/pdf/Physical_Activity_Guidelines_2nd_edition.pdf
2. Hart PD, Benavidez G, Erickson J. Meeting Recommended Levels of Physical Activity in Relation to Preventive Health Behavior and Health Status Among Adults. *J Prev Med Public Health*. 2017;50(1):10-17. doi:10.3961/jpmph.16.080
3. Hart PD, Buck DJ. The effect of resistance training on health-related quality of life in older adults: Systematic review and meta-analysis. *Health Promot Perspect*. 2019;9(1):1-12. Published 2019 Jan 23. doi:10.15171/hpp.2019.01
4. National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. Centers for Disease Control and Prevention: BRFSS Prevalence and Trends Tool. Last Reviewed: July 19, 2023. <https://www.cdc.gov/brfss/brfssprevalence/index.html>
5. Hart PD. BriefTrends: State-Specific Prevalence of Meeting Muscle-Strengthening Activity (MSA) Guidelines in U.S. Adults, 2017-2019. *Journal of Physical Activity Research*. Vol. 8, No. 2, 2023, pp 63-64. <http://pubs.sciepub.com/jpar/8/2/1>
6. Centers for Disease Control and Prevention. Behavioral Risk Factor Surveillance System Overview: BRFSS 2019. July 26, 2019.