

utrition body.composition

Kendall G. Kanakanui, Katie R. Hirsch, Malia M.N. Blue, Alyson G. Nelson, Abbie E. Smith-Ryan

Applied Physiology Lab, Department of Exercise and Sport Science, University of North Carolina at Chapel Hill

INTRODUCTION

- Chronic stress is associated with systemic inflammation that can have negative health consequences
- Nutrition and body composition have previously been shown to modulate the effects of stress.



PURPOSE:

To evaluate differences in:

- Nutritional Intake
- Body Composition
- Perceived Quality of Health

between adults with low and moderate levels of selfreported stress. A secondary aim was to evaluate these differences in men and women.

PARTICIPANTS

- 102 healthy adults (57% Female) (22% white, 21% African American, 22% Asian, 18% Hispanic, 19% biracial) (Table 1).
- Separated into low (55% female) or moderate (57% female) stress based on PSS score

Table 1: Descriptive Characteristics (Mean ± SD [Range])

	Total (n=102)	Low (n=58)	Moderate (n=44)
Age (yrs)	26.7 ± 6.7 [18-45]	27.2 ± 7.13 [18-45]	26.1 ± 6.17 [18-39]
Height (cm)	169.5 ± 9.5 [149.1-192]	168.9 ± 9.5 [149.1-192]	170.4 ± 9.5 [151.5-189
Weight (kg)	72.4 ± 14.2 [50.7-108.0]	80.0 ± 17.4 [51.5-105.8]	69.2 ± 14.6 [50.7-108
BMI (kg/m ²)	25.1 ± 3.9 [18.7-35.1]	25.2 ± 4.0 [18.7-35.1]	25.0 ± 3.9 [18.9-34.8
PSS Score	12.87 ± 5.4 [0-26]	8.74 ± 2.5 [0-13]	18.32 ± 3.4 [14-26]

METHODS

10-question Perceived Stress Scale (PSS)

For each question choose from the following alternatives: 1 - almost never 2 - sometimes 3 - fairly often 4 - very often In the last month, how often have you been upset because of something that nappened unexpectedly? 2. In the last month, how often have you felt that you were unable to control the important things in your life? . In the last month, how often have you felt nervous and stressed? . In the last month, how often have you felt confident about your ability to handle your personal problems? 5. In the last month, how often have you felt that things were going your way? In the last month, how often have you found that you could not cope with Ill the things that you had to do? 7. In the last month, how often have you been able to control irritations in your life 8. In the last month, how often have you felt that you were on top of things? 9. In the last month, how often have you been angered because of things that happened that were outside of your control? 10. In the last month, how often have you felt difficulties were piling up so high that

Nutritional intake

- Three-day diet logs composing of two weekday and one weekend log were collected
- Intake was assessed using Food Processor SQL. Averages over weekend and weekday intakes were taken for calories, and grams of protein, carbohydrates, fat, saturated fat, sugar, and fiber.

State of New Hampshire Employee Assistance Program

you could not overcome them?

Comparison of nutrition, body composition, and perceived quality of health in adults with low or moderate perceived stress

PRACTICAL APPLICATIONS



Body Composition: Dual Energy X-Ray Absorptiometry (DXA)



Measures include: % body fat [%BF] fat mass [FM] (kg) fat free mass [FFM] (kg) visceral fat [VAT] (kg)

GE Lunar iDXA, GE Medical Systems Ultrasound & Primary Care Diagnostics, Madison, WI, USA (Kaul et al, 2012)

Self-reported Quality of Health

1=poor 2=fair 3=good 4=excellent

Statistical Analysis:

• T-test

- To evaluate whether there was significant difference between stress groups
- Pearson and Spearman Correlations • To evaluate the correlation between stress scores and nutrition, body composition and health score respectively

CONCLUSIONS Nutrition and body composition did not appear to differ between low and moderate stress groups

%BF

FM (kg)

FFM (kg)

VAT

Health Rating

- women



RESULTS

Table 2: Nutrition (Mean ± SD)					
	Low Stress	Moderate Stress			
Calories (kcal)	1994.1 ± 510.1	2029.9 ± 821.9			
PRO (g)	96.5 ± 35.0	95.1 ± 43.9			
CHO (g)	225.3 ± 65.9	227.2 ± 108.1			
Fat (g)	79.3 ± 26.4	79.3 ± 35.5			
Sat Fat (g)	24.2 ± 8.7	24.7 ± 13.1			
Sugar (g)	78.9 ± 38.3	78.5 ± 55.4			
Fiber (g)	22.2 ± 11.3	20.1 ± 10.7			

No significant differences between group (p>0.05); No correlation between PSS and nutrition variables (p>0.05; R=-0.091-0.007)

Table 3: Body Composition (Mean \pm SD)

	Low Stress	Moderate Stress
	27.1 ± 9.4	28.1 ± 7.7
	19.7 ± 8.4	20.7 ± 7.8
	52.7 ± 12.2	52.7 ± 11.5
	0.36 ± 0.43	0.35 ± 0.36
C	$1 \rightarrow 0.05$	$\mathbf{D} = \mathbf{D} \mathbf{D} \mathbf{C} \mathbf{C} = 1$

No significant differences between groups (p>0.05) No correlation between PSS and body composition variables (p>0.05; R=-0.037-0.0124)

Figure 1: Self Reported Quality of Health



Significant difference between low and moderate stress groups (p < 0.05); PSS was negatively correlated with health rating (p < 0.001; $R_s = -0.364$)

Table 4: Nutrition and body composition in males and females (Mean \pm SD)

Low Stress		Niouerale Stress		
Μ	F	Μ	F	
2157.8 ± 491.0	1861.2 ± 493.3	2463.2 ± 947.0	1700.6 ± 526.0	
116.0 + 33.6	80.7 ± 27.7	122.0 ± 45.7	74.7 ± 29.8	
235.5 ± 71.7	216.9 ± 60.6	268.0 ± 137.1	196.2 ± 67.2	
82.4 ± 25.6	76.7 ± 27.1	95.6 ± 35.6	67.0 ± 30.6	
24.5 ± 9.3	23.9 ± 8.3	30.1 ± 14.8	20.6 ± 10.1	
75.8 ± 39.8	81.4 ± 38.2	93.7 ± 72.0	67.0 ± 30.6	
23.0 ± 12.6	21.4 ± 10.4	21.1 ± 11.6	19.3 ± 10.2	
20.4 ± 6.5	32.6 ± 7.6	23.1 ± 6.1	31.9 ± 6.5	
16.5 ± 7.0	22.2 ± 8.8	19.2 ± 6.4	21.8 ± 8.6	
63.1 ± 9.3	44.2 ± 6.1	63.2 ± 7.8	44.8 ± 6.3	
0.52 ± 0.56	0.23 ± 0.20	0.50 ± 0.38	0.23 ± 0.30	
3.31 ± 0.62*	$3.38 \pm 0.61*$	$2.89 \pm 0.60*$	2.96 ± 0.61*	

No significant difference between groups for nutrition and body compositions (p>0.05); *significant difference between stress groups and quality of health (p<0.05); PSS was negatively correlated with health rating (p < 0.01; $M:R_s = -0.398 F:R_s = -0.350$)

Individuals with low stress reported greater overall quality of health. When separated by sex, the same patterns were observed in both men and

Future research could consider evaluating samples with greater stress variations or longitudinal studies for better accuracy.