WHAT IN THE HEALTH IS GOING ON IN PERIMENOPAUSE: AN EVALUATION OF BODY COMPOSITION, PHYSICAL ACTIVITY, AND SYMPTOMS

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INTRODUCTION

Perimenopause (PERI) marks a critical period for adverse body composition changes, including accelerated loss of lean mass (LM)[1], declines in muscle size and quality[2], and increased fat mass (FM) and body fat percentage (BF%)[2,3]. These changes are often compounded by physical and psychological menopause symptoms that negatively impact quality of life. Physical activity (PA) plays an important role in overall health during PERI, with early evidence suggesting a role in mitigating total menopause symptoms (TMS)[4,5].

PURPOSE

To examine relationships between body composition (weight, body mass index [BMI], LM, FM, BF%), muscle characteristics (mCSA, EI), PA frequency, and menopause symptom severity (anxiety [ANX], depressive [DEP], somatic [SOM], vasomotor [VM]) in PERI women.

PARTICIPANT CHARACTERISTICS

Table 1: Demographics of the sample (n = 21) presented as mean ± standard deviation.

Age (yrs)	BMI (kg/m²)	LM (kg)	FM (kg)	BF%
49.0 ± 4.3	31.7 ± 3.2	50.1 ± 6.6	35.3 ± 5.7	40.3 ± 3.4

Table 2: Survey data (PA frequency; total menopause symptom severity [TMS]) of the sample (n = 21) presented as median and IQR.

WALK (d/wk)	MOD (d/wk)	VIG (d/wk)	RT (d/wk)	TMS (0-63)
3 (2-6)	2 (0-3)	0 (0-2)	2 (0-3)	10 (6-14)

PRACTICAL APPLICATION

RT may support favorable BMI and body composition in perimenopausal women. However, given potential links to greater psychological symptom severity, exercise professionals should individualize RT and consider symptom monitoring during this transitional phase.

Table 3: Pearson correlation coefficients (r) between body composition variables (BMI, LM), resistance training (RT) frequency, and menopause symptom severity (PSYCH, DEP, SOM, VM). *Denotes statistically significant association (p<0.05).

Variables	r	p-value
RT & PSYCH	0.460	0.048*
RT & DEP	0.469	0.043*
BMI & VM	0.492	0.032*
LM & VM	0.443	0.058

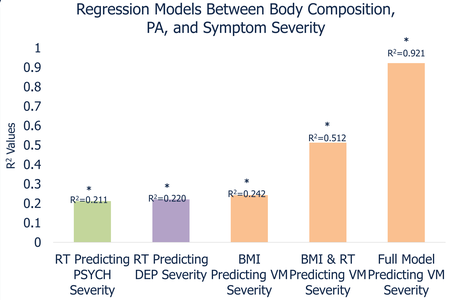


Figure 1: R^2 values from regression models predicting menopause symptom severity. Bars represent variance explained for stepwise models of psychological (PSYCH: ANX+DEP), depressive (DEP), and vasomotor (VM) severity based on resistance training (RT) and BMI. The full enter model predicting VM (including weight, BMI, LM, FM, BF%, mCSA, EI, and PA) accounted for the greatest variance (R^2=0.921, p=0.007). *Denotes statistically significant models with p<0.05.

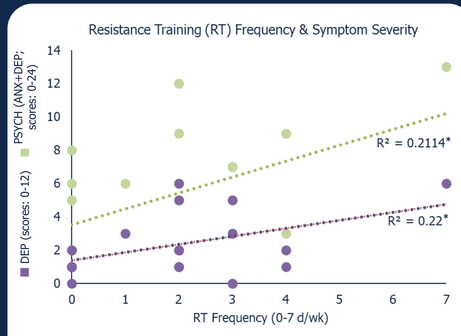


Figure 2: Scatterplot displaying the relationships between RT frequency and PSYCH (green) and DEP (purple) symptom severity. Trendlines indicate that greater RT frequency is associated with greater PSYCH and DEP symptom severity. R^2 = variance of DEP and PSYCH severity explained by the model. *Denotes statistically significant models with p<0.05.

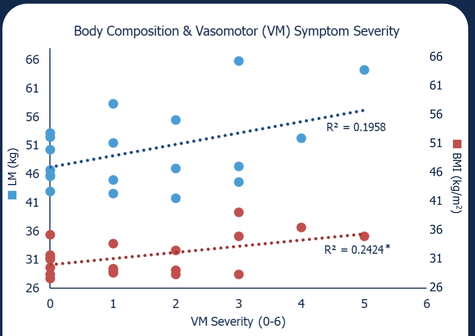
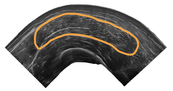


Figure 3: Scatterplot displaying the relationships between VM symptom severity and BMI (kg/m²; red) and LM (kg; blue). Trendlines indicate that greater BMI and LM are associated with greater VM severity. R^2=variance of VM severity explained by the model. *Denotes statistically significant models with p<0.05.

METHODS

Dual-Energy X-Ray Absorptiometry:
- Lean mass (LM; kg)
- Fat mass (FM; kg)
- Body fat percent (BF%)



Ultrasound:
- Muscle cross-sectional area (mCSA; cm²)
- Echo intensity (EI; a.u.)

Greene Climacteric Scale:
0-3 Likert Scale
- Total menopause symptoms (TMS)
- Anxiety (ANX)
- Depression (DEP)
- Psychological (ANX+DEP)
- Somatic (SOM)
- Vasomotor (VM)

qualtrics XM

International Physical Activity Questionnaire:
- Walking (WALK; d/wk)
- Moderate (MOD; d/wk)
- Vigorous (VIG; d/wk)
- Resistance training (RT; d/wk)

Statistical Analyses:
- Pearson's correlation—assess relationships between all body composition, PA, and symptom outcomes
- Stepwise/Enter method regression models—identify predictors of TMS severity and symptom domains

CONCLUSION

- RT frequency significantly predicted variance in PSYCH (21%) and DEP symptom severity (22%)
- Higher BMI was positively associated with greater VM symptom severity and predicted 51% of VM severity variance when combined with RT
- The full model, including all variables of body composition, muscle characteristics, and PA, explained 92% of VM severity variance
- **Limitations:** small sample size (n=21) and self-reported PA
- Future research should examine how RT influences symptom responses to guide exercise prescription for PERI women

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