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Research article

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2014**Left Ventricular Systolic Function During  
Treadmill Walking with Load Carriage in  
Adolescents**Citations in  
ScholarGoogleMoran Sagiv , Michael Sagiv, Ruthie Amir, David Ben-Sira[Author Information](#)[Publish Date](#)[How to Cite](#)[Email link to this article](#)

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[Full Text](#)[PDF](#)**ABSTRACT**

Backpack carriage occurs in day-to-day tasks and has applications in school, physical training, recreational activities and sports. Using metabolic cart and echocardiograph, this study determined and examined the effects of two different load carriages on left ventricular function during 30 min. of treadmill walking in healthy adolescent male subjects. Seventeen males ( $13.1 \pm 0.5$  yrs.) walked on a treadmill at a speed of  $4 \text{ km}\cdot\text{h}^{-1}$ , each carrying a load relative to his body mass at  $333 \text{ gr}\cdot\text{kg}^{-1}$  body weight during one session and without weight during the other session. Significant ( $p < 0.05$ ) differences were noted between the  $333 \text{ gr}\cdot\text{kg}^{-1}$  body weight and the no weights with regard to:  $\text{VO}_2$   $13.6 \pm 1.3$  and  $10.5 \pm 1.1 \text{ ml}\cdot\text{kg}^{-1}\cdot\text{min}^{-1}$ ; heart rate:  $133.2 \pm 7.1$  and  $121.4 \pm 5.6 \text{ beats}\cdot\text{min}^{-1}$ ; mean arterial blood pressure;  $95.4 \pm 4.3$  and  $87.5 \pm 3.8 \text{ mmHg}$  and systolic blood pressure  $147.7 \pm 7.0$  and  $129.8 \pm 7.1 \text{ mmHg}$  respectively. No significant differences were noted between the two exercises with regard to left ventricular function variables. This study suggests that in adolescents as in adults, the vasodilatation mechanism dominates during combined dynamic and isometric exercises. Thus, the opposing force to the left ventricular ejection is reduced which in turn does not change the left ventricular global function. In addition, the vasodilatation mechanism enables oxygen supply to the contracting muscles via aerobic energy pathways.

**Key words:** Echocardiography, oxygen uptake, systolic function, steady

state, vasodilatation

### Key Points

- This study suggests that in adolescents as in adults, the vasodilatation mechanism dominates during combined dynamic and isometric exercises.
- Thus, the opposing force to the left ventricular ejection is reduced which in turn does not change the left ventricular global function.
- In addition, the vasodilatation mechanism enables oxygen supply to the contracting muscles via aerobic energy pathways.

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