

# Prayer-Related Physical Activities for Cardiovascular Health

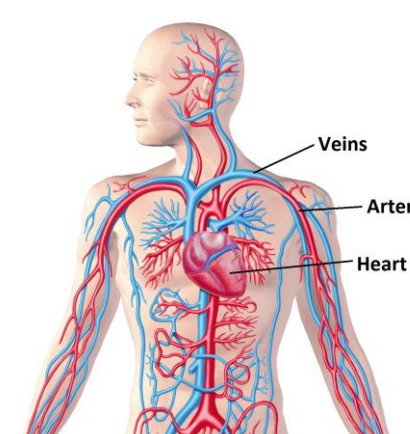
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## INTRODUCTION

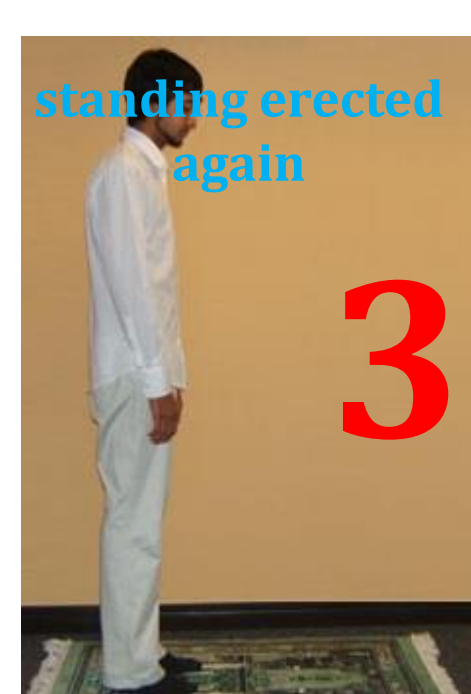
### Cardiovascular Health and Physical Activity

Cardiovascular (CV) diseases (CVD) are the leading cause of death in the globe, attributed mainly to atherosclerosis (Margetts, 04). Physical activity (PA), on the other hand, is known to modify vascular function and atherosclerosis risk profile (Bouchard, 07).



### Physical Activity during Muslim Prayer

Muslims pray five times daily, preferably in the Masjid (prayer place). Each prayer is completed in a number of "rakaa". **One rakaa: is a set of repetitive physical movements that involves standing, bowing, prostration, and setting.** The total daily "rakaa" is 17-30 prayed at dawn (2-4), noon (4-8), late afternoon (4), early evening (3-5), and late evening (4-9), which could take 15-30 mints. Obviously, these physical movements can be considered PAs, especially when walking to the neighborhood Masjid is added.



### Gaps and purpose

Most studies reported the benefits of recreational and occupational PAs with few examining religious-related PA (RRPA). Therefore, the current study examined the association of vascular function with PAs related to Muslim prayer.

## METHODS

### Design and Recruitment

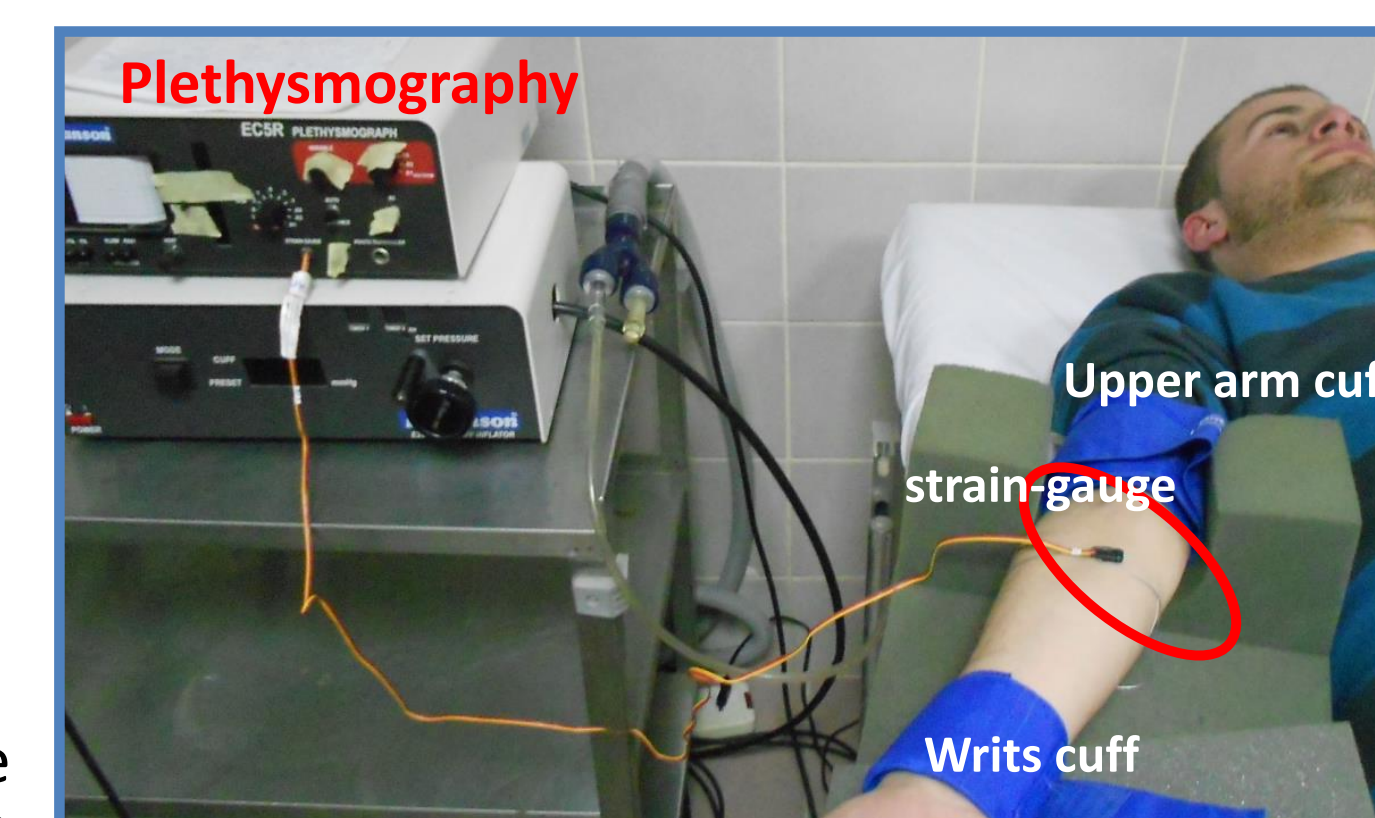
The study was cross-sectional retrospective to examine the relationship of PA with CV function in apparently healthy males and females aged 18-80 years old from the local community. Individuals with diagnoses/risk of CV, metabolic, orthopedic, pulmonary, neurological, and/or psychological diseases were not accepted in the study.

### Religious-related Physical Activity

Prayer activity data were collected in a 1-to-1 interview. The main outcomes of the prayer activity assessment were **daily prayer and rakaa number performed, daily and weekly prayers performed in the Masjid, and time and distance to the Masjid.**

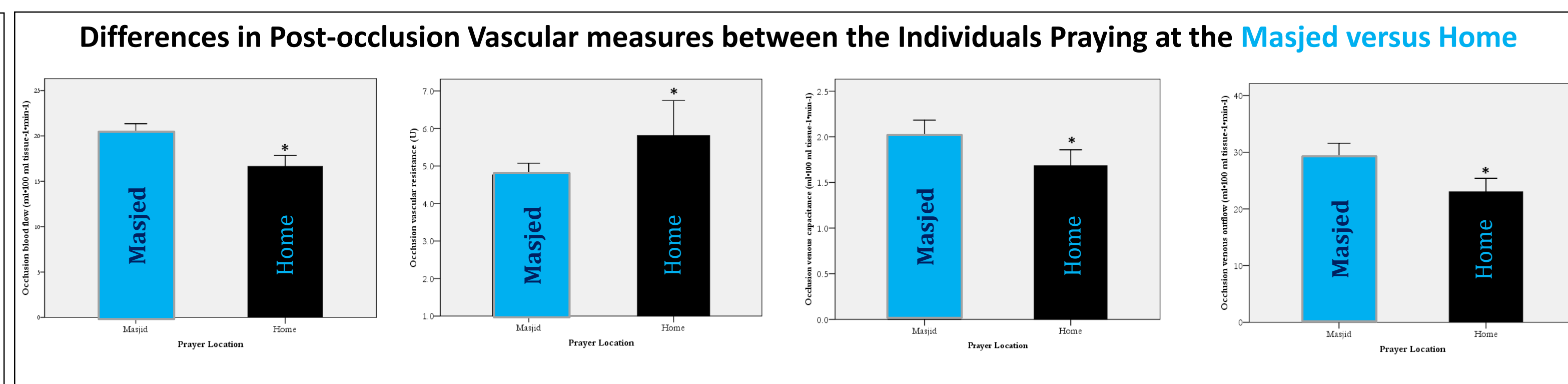
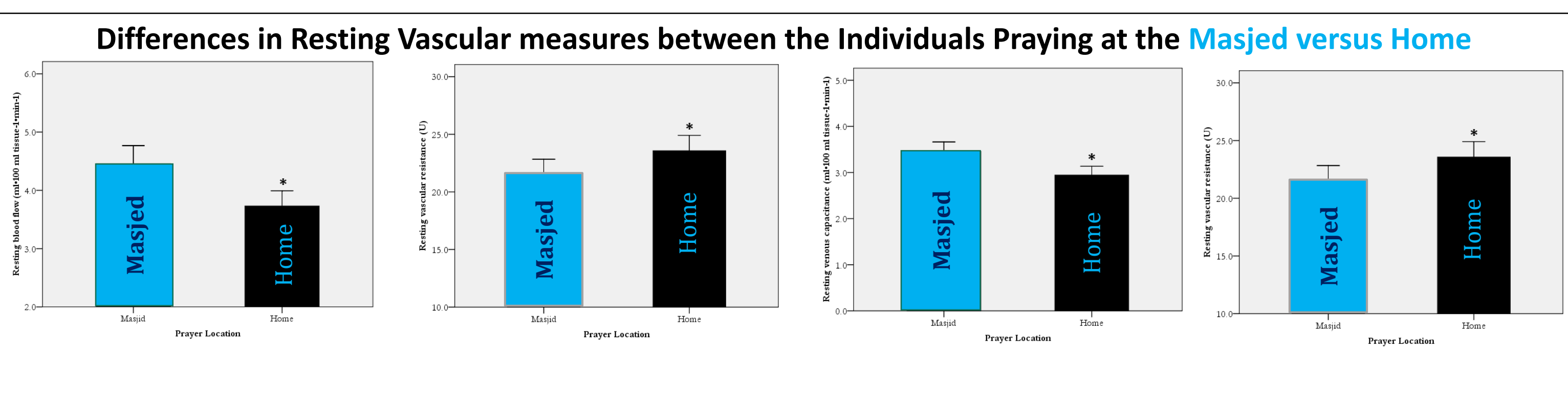
### Vascular Measurements

**Blood flow, vascular resistance, and venous capacitance and outflow at rest and after occlusion** were obtained using strain-gauge plethysmography. Immediately before assessments, 2 pneumatic cuffs were placed above the elbow and on the wrist. A strain-gauge, 2-3 cm less than the forearm circumference, was placed ~10 cm below the elbow (Alomari, 04).



## RESULTS

Participant Characteristics (n=192)	Relationship of Prayer Activities with Resting Vascular Function Measures				Relationship of Prayer Activities with Resting Vascular Function Measures				
	Mean	Blood flow	Vascular resistance	Venous capacitance	Venous outflow	Blood flow	Vascular resistance	Venous capacitance	Venous outflow
Male/Female	98/94	r=0.1; p=0.7	r=-0.1; p=0.3	r=0.05; p=0.5	r=-0.0; p=0.7	r=0.0; p=0.5	r=-0.0; p=0.8	r=0.1; p=0.4	r=0.1; p=0.2
Age (years)	42.67±19.2	r=0.1; p=0.3	r=-0.0; p=0.5	r=0.1; p=0.18	r=0.1; p=0.3	r=0.0; p=0.4	r=0.0; p=0.9	r=0.1; p=0.3	<b>r=0.1; p=0.05</b>
Height (cm)	167.32±1.8	<b>r=0.4; p=0.000</b>	<b>r=-0.2; p=0.0</b>	<b>r=0.2; p=0.03</b>	<b>r=0.2; p=0.04</b>	<b>r=0.2; p=0.01</b>	r=-0.0; p=0.3	r=0.1; p=0.3	<b>r=0.2; p=0.02</b>
Weight (kg)	75.0±16.53	<b>r=0.3; p=0.000</b>	<b>r=-0.2; p=0.05</b>	<b>r=0.2; p=0.02</b>	<b>r=0.2; p=0.03</b>	r=0.1; p=0.2	r=-0.05; p=0.5	r=0.1; p=0.2	r=0.12; p=0.1
Body mass index	26.8±5.5	<b>r=0.2; p=0.004</b>	<b>r=-0.2; p=0.007</b>	<b>r=0.2; p=0.02</b>	<b>r=0.3; p=0.001</b>	<b>r=0.2; p=0.04</b>	r=-0.11; p=0.1	r=0.07; p=0.3	<b>r=0.2; p=0.01</b>
Waist/Hip ratio	0.84±0.11	<b>r=0.2; p=0.007</b>	<b>r=-0.2; p=0.03</b>	<b>r=0.2; p=0.03</b>	<b>r=0.2; p=0.002</b>	r=0.1; p=0.2	r=-0.1; p=0.3	r=0.06; p=0.4	<b>r=0.1; p=0.05</b>
Percent body fat	26.96±8.5								



## DISCUSSION

- The study revealed relationships between **vascular function indices** and **religious-related physical activity**, particularly the **time and distance** required to walk to the Masjid
- These relationships were found in the activities involving **large muscle** groups (i.e. walking to the Masjid), but not **small muscle** groups (i.e. standing and bowing).
- Additionally, vascular function was improved in the ones frequently prayed in the **Masjid** versus the ones prayed at **home**.
- The results confirm the importance of regular PA for health, especially vascular.
- The current findings are unique, as this is the first study to reveal vascular benefits of **religious-related physical activities** among Muslims, or otherwise.
- Similar to participation in habitual exercise/PA (Alomari, 12), increased blood shear stress during muscle contraction might stimulate these adaptations (Kozakova, 07).
- Additionally, exercise/PA can also modify CV risk factors, including hypertension, obesity, and diabetes (Ahmed, 07).
- Therefore, future studies should examine the relationships of **religious-related physical activities** with other health measures, especially CVD risk factors.

