Higher levels of physical activity is associated with lower arterial stiffness in patients with resistant hypertension

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Background: Physical activity has been associated with reduced arterial stiffness in patients with hypertension. However, in resistant hypertension, a specific population with an increased risk for target organ damage, cardiovascular morbidity, and mortality, the evidence is sparse.

Purpose: The present study aimed to determine the association between daily physical activity and arterial stiffness in patients with resistant hypertension.

Methods: Fifty-seven patients with resistant hypertension were recruited. Physical activity was objectively assessed during 7 consecutive days with accelerometers. Arterial stiffness was evaluated using carotid-femoral pulse wave velocity (cf-PWV).

Results: Participants (50.9% men), aged $58.8 \pm 9.4$ years, were mainly overweight and were taking in average 4.5 antihypertensive medications. The cf-PWV showed an inverse correlation with light-intensity physical activity ($r = -0.290, p = 0.029$) and total daily physical activity ($r = -0.287, p = 0.030$). Additionally, cf-PWV tended to be inversely associated with the number of steps per day ($r = -0.242, p = 0.069$). Patients with higher risk of cardiovascular events (cf-PWV $\geq 10$ m/s) tended to spend less time in light-intensity physical activity ($324.0 \pm 129.4$ vs. $380.5 \pm 103.1$ min/day, $p=0.090$) and to perform less total daily physical activity ($351.5 \pm 141.7$ vs. $411.7 \pm 109.1$ min/day, $p=0.091$) than participants with cf-PWV below the risk threshold value.

Conclusions: Higher levels of total physical activity and daily levels of light-intensity were associated to lower arterial stiffness. These results emphasize the importance of physical activity as a nonpharmacological tool for patients with resistant hypertension.