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# Blood Pressure and Disability: First Steps in Future Studies

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# Letter to the Editor

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## Blood Pressure and Disability: First Steps in Future Studies

To the Editor:

In the December issue of *Hypertension*, Hajjar et al<sup>1</sup> report that, in stroke-free older adults, longitudinal increases in systolic blood pressure (BP) were related to higher risk of functional disability as assessed by self-report measures of motor strength, mobility, and activities of daily living. We urge investigators to also include observable indices of physical performance in future studies, because deficits in simple performance tasks may herald BP-related functional disability. The Maine-Syracuse study of BP<sup>2</sup> used 3 measures of physical performance that predict activities of daily living dependence<sup>3</sup>: (1) standing up and sitting down from a hard-backed chair 3 times with arms folded (standing); (2) walking back and forth over a 10-foot course (walking); and (3) turning full circle (turning).

Beginning in 1975, we conducted 6 waves of data collection, including BP, BP-related comorbidities, and, at wave 6, the standing, walking, and turning tasks following the Gill procedure.<sup>3</sup> Here we report BP values at wave 5 in relation to physical performance at wave 6 (mean interval: 5.1 years; SD: 0.8 years; range: 4.0 to 7.0 years), because we have the necessary data at these waves to use the models used by Hajjar et al.<sup>1</sup>

Excluding stroke, dementia, and dialysis patients, there were 814 participants (wave 6 mean age: 62.4 years; SD: 12.7 years; mean education: 14.7 years; SD: 2.7 years; 62.8% women; 57.4% hypertensive subjects; 45.3% treated hypertensive subjects). The performance measures were regressed on systolic BP (millimeters of mercury) with regression coefficients ( $\beta$ ) multiplied by 20 to express 20-mm Hg increments in systolic BP. With adjustment for age, education, and gender, increments in systolic BP at wave 5 were positively related to wave 6 performance time in seconds for each task ( $P < 0.001$ ). These associations of higher BP with poorer performance remained statistically significant when adjusted for covariates used by Hajjar et al,<sup>1</sup> ie, age, education, gender, race, body mass index, smoking, alcohol consumption, diabetes, arthritis, and cardiovascular disease: (1) standing ( $\beta = 0.26$ ; SE = 0.09); (2) walking ( $\beta = 0.12$ ; SE = 0.06); and (3) turning ( $\beta = 0.08$ ; SE = 0.04). Findings with both covariate models were replicated when analyses were repeated with BP measured concurrently with physical performance at wave 6. Consistent with Hajjar

et al,<sup>1</sup> diastolic BP was not associated with performance. Results were the same with exclusion of people  $< 45$  years of age.

We did not find that rise in systolic BP from wave 5 to wave 6 was associated with physical performance at wave 6. This may relate to the fact that these physical tasks were less complex and less difficult to perform than many of the activities of daily living measures reported by Hajjar et al.<sup>1</sup> However, we do see robust prospective and concurrent associations between systolic BP and observable performance measures predictive of disability. Thus, we encourage investigators to use basic physical performance measures in future investigations that include activities of daily living measures and the positive longitudinal design features exemplified by the work of Hajjar et al.<sup>1</sup>

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## Disclosures

The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Heart, Lung, and Blood Institute or the National Institutes of Health. This research was approved by the institutional review board of the University of Maine, and informed consent was obtained from all of the participants.

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