

Disparities in Physical Function Among Persons with Upper Limb Amputation: Influence of Race and Veteran Status

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Background

- Prior research on racial disparities in upper limb amputation (ULA) outcomes has primarily focused on Veterans.
- The US Department of Veterans Affairs (VA) offers specialized amputation care not widely available in other sectors, possibly mitigating differences in outcomes across racial groups.
- The extent of racial disparities in physical function outcomes among non-veterans and the impact of Veteran status on these disparities remain unexplored.

Objectives

- 1) Assess racial differences in physical function among those with ULA
- 2) Evaluate whether Veteran status moderates the relationship between race and these outcomes

Methods

- Cross-sectional telephone survey collected data on physical function, demographics, amputation history, prosthesis use, training, and other domains.
- 3 validated functional measures were administered:
 - 1) The Patient-Reported Outcomes Measurement Information System Upper Extremity Amputation-specific (PROMIS 13-UE AMP).
 - 2) The Upper Extremity Functional Scale for Prosthesis Users (UEFS-P), One-handed Tasks scale.
 - 3) The UEFS-P Two-handed Tasks scale.
- Higher scores indicate a greater function for all measures.
- Multivariable linear regression models adjusted for covariates significant at $p \leq 0.2$ in bivariate analyses.
- Interaction terms between race and Veteran status were included in separate models to assess for potential moderation by Veteran status.

Results

- Among the 713 participants included in the study (Figure 1), the mean age was 61.3 years (SD, 14.6 years), 20.9% were female, and 79.1% were male.
- There were 541 (75.9%) Veterans and 172 (24.9%) non-veterans in the study.

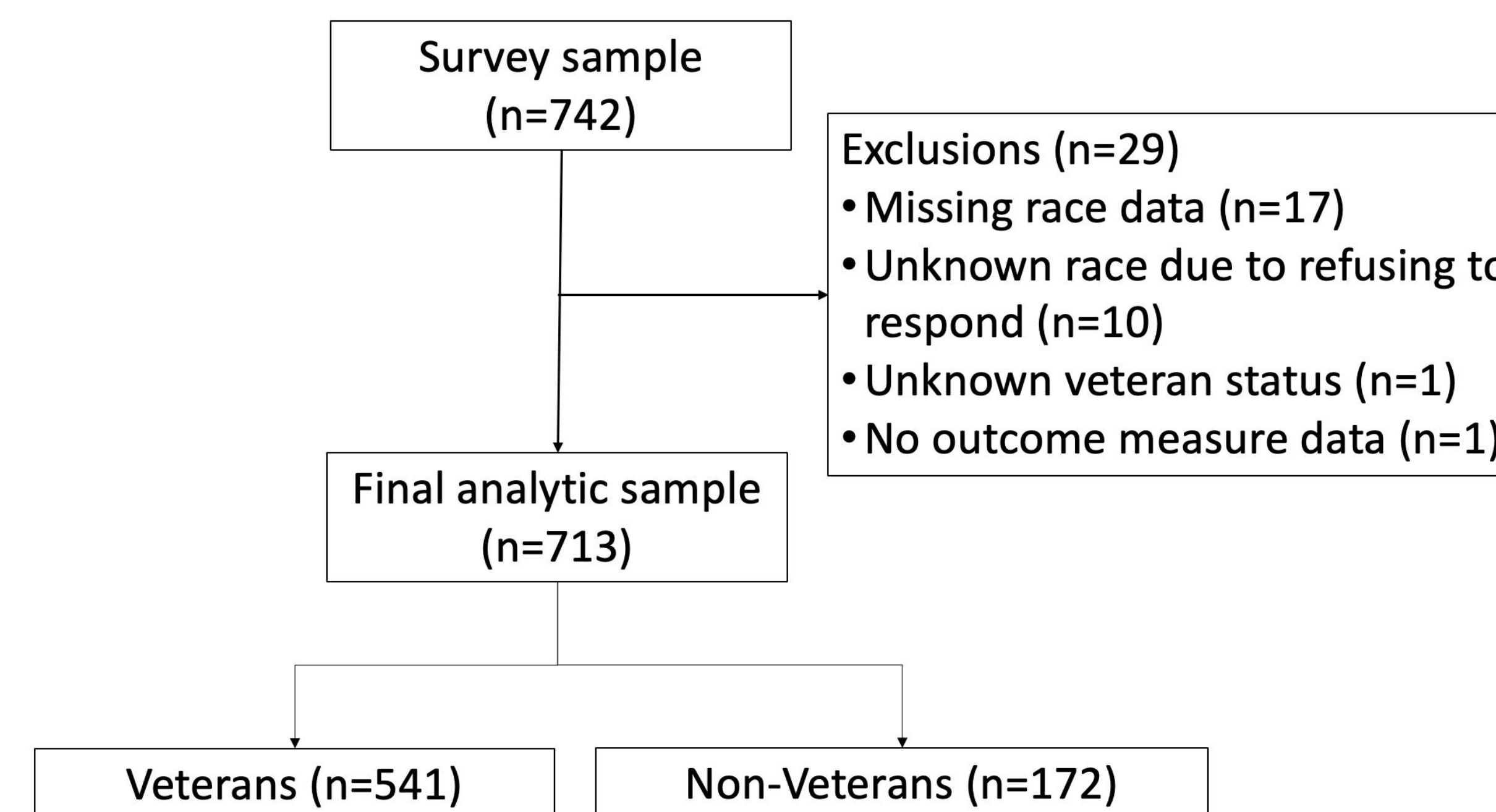


Figure 1. Participant selection flowchart

- 596 (83.6%) identified as White, 65 (9.1%) were Black, and 52 (7.3%) were categorized as Other.
- Descriptive statistics for satisfaction measures by racial category are shown in Table 1.



Figure 2. Individuals performing tasks with prosthetic arms

Measure	White (N=596)	Black (N=65)	Other (N=52)
	Mn (SD)	Mn (SD)	Mn (SD)
PROMIS 13-UE AMP	50.8 (9.6)	43.7 (10.9)	49.1 (10.7)
Missing (n)	39	2	2
UEFS-P One-handed	50.5 (10.2)	46.8 (8.2)	48.3 (10.2)
Missing (n)	248	31	22
UEFS-P Two-handed	50.8 (9.9)	45.2 (9.9)	47.4 (10)
Missing (n)	248	31	22

Table 1. Summary statistics of outcomes by race

Measure	Unadjusted Models	Adjusted models
	Beta (95% CL)	Beta (95% CL)
PROMIS 13-UE AMP	-7.1 (-9.6, -4.5)	-5.1 (-7.7, -2.5)
UEFS-P One-handed	-3.7 (-7.2, -0.1)	-2.4 (-5.6, 0.7)
UEFS-P Two-handed	-5.6 (-9.1, -2.1)	-4.0 (-7.3, -0.8)

Table 2. Coefficients for race in unadjusted and adjusted linear regression

- There is limited evidence of a moderating effect of Veteran status. Black Veterans scored 5.6 points higher than Black non-veterans in the UEFS-P Two-handed task scale when accounting for interaction effects ($p=0.059$).

Conclusion

- This large cross-sectional survey of individuals with ULA revealed that self-reported physical function was worse among Black persons compared to their White counterparts.
- The study did not find strong evidence that being a Veteran lessened disparities in physical function despite access to VA care and its comprehensive amputation system of care.
- Further research is needed to understand the reasons for these disparities and to inform targeted interventions to improve outcomes of amputation care for all persons with ULA.