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# Postamputation Cognitive Impairment Is Related to Worse Perceived Physical Function Among Middle-Aged and Older Prosthesis Users

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## Abstract

**Objective:** To compare characteristics between middle-aged and older prosthesis users with and without cognitive impairment and determine whether cognitive impairment contributes to variability in perceived physical function.

**Design:** Cross-sectional, observational study

**Setting:** General community.

**Participants:** Adults 45 years or older, at least 1-year post lower limb amputation (LLA) who were walking independently with a prosthesis (N=119).

**Intervention:** Not applicable.

**Main Outcome Measures:** We identified cognitive impairment using an education-adjusted Telephone Interview for Cognitive Status-modified score. Perceived physical function was measured using the Prosthesis Mobility Questionnaire.

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Disclosures: none

**Results:** Of 119 participants (mean age, 62.6±8.2 years; male: 89.1%; vascular etiology: 82.4%; years since amputation: 4.9±4.7 years), 28 (23.5%) had cognitive impairment. Compared with participants without cognitive impairment, those with cognitive impairment were more likely to use an assistive device (60.7% vs 25.3%, $P$=.002); were older (66.3±7.3 vs 61.5±8.1 years, $P$=.006) and had more chronic conditions (7.1±3.4 vs 5.4±2.5, $P$=.004), more depressive symptoms (6.6±5.1 vs 4.2±3.8, $P$=.008), and worse perceived physical function (2.0±0.6 vs 2.6±0.7, $P$<.001). Using backward stepwise linear regression, we found that participants with cognitive impairment had worse perceived physical function (standardized parameter estimate [$\beta$]=−0.15, $P$=.02), even after adjusting for depressive symptoms ($\beta$=−0.31, $P$<.001), prosthesis satisfaction ($\beta$=034, $P$<.001), number of chronic conditions ($\beta$=−0.9, $P$=.006), and assistive device use $\beta_{cane}$=0.01, $P$=.93; $\beta_{other}$=−0.20, $P$=.003). Together, these variables explained 59% of perceived physical function variability.

**Conclusions:** Cognitive impairment is common and associated with worse perceived physical function post LLA, even after controlling for physical and mental health differences. Tailored rehabilitation interventions may be needed to improve perceived physical function in prosthesis users with cognitive impairment.

### Keywords

Aging; Amputation; Cognitive dysfunction; Prostheses and implants prosthesis; Rehabilitation

Limb loss is a health condition that affects the quality of life for an estimated 2.2 million Americans.[1] Of those living with lower limb amputation (LLA), about 80% are 45 years or older.[1] Older age is commonly associated with greater incidence of cognitive impairment, comorbid health conditions, anxiety, and depression, all of which are associated with worse rehabilitation and health outcomes.[2,3,4,5,6] Knowledge about the relationships between these aging-related factors and long-term outcomes is needed to inform the development of novel rehabilitation interventions.

Cognitive impairment is a particularly relevant aging-related factor because it is prevalent among people with LLA and has direct implications for rehabilitation intervention delivery for people with LLA,[5] especially for those who are older.[7] Prosthetic rehabilitation post LLA is cognitively demanding, requiring the capacity to learn new skills and adapt them to the dynamic surrounding environment.[8,9] Thus, cognitive impairment during the period immediately after LLA confers greater risk of prosthesis prescription and/or fitting denial,[8,10-12] shorter daily prosthesis wear time,[13] worse mobility outcome,[9,14] and higher risk of needing in-home assistance post LLA.[13]

However, there is limited to no knowledge of the effect of cognitive impairment on physical function among prosthesis users beyond the prosthetic training phase of rehabilitation. Therefore, the first aim of our study was to compare sociodemographic, physical health, mental health, amputation characteristics, and prosthesis-related characteristics between cognitively impaired and nonimpaired prosthesis users in middle age or later who were at least 1 year post LLA.

Additionally, a better understanding of relationships among cognition and other aging-related factors with physical function is needed to guide rehabilitation innovation. In particular, perceived physical function contributes to self-reported disability and represents a meaningful rehabilitation outcome after LLA.[15,16] Although objective measures of functional performance generally improve with rehabilitation intervention,[17,18] these improvements are not consistently associated with improved perceived physical function.[17] For example, objective measures of functional performance (eg, gait speed) improved in a sample of 21 people with LLA who were 4 months post discharge from prosthesis rehabilitation, but perceptions of mobility remained unchanged in the same time period.[17] Further, participants' objective and perceived physical function measures were not correlated.[17] The absence of correlation suggests that perceived physical function represents a unique rehabilitation outcome for which predictors and potential targets of intervention need to be identified.

Evidence suggests associations between perceived physical function and psychosocial characteristics,[15] but there is limited knowledge of whether cognitive impairment, among other factors, is associated with perceived physical function beyond 1 year post LLA. Therefore, our second aim was to identify if cognitive impairment contributes to explaining variability in perceived physical function among prosthetic users who are in middle age or later after accounting for sociodemographic, physical and mental health, amputation characteristics, and prosthesis-related variables. We hypothesized that cognitive impairment would significantly contribute to explaining the variability in perceived physical function when controlling for other rehabilitation covariates.

## Methods

### Study design

This cross-sectional study is a secondary analysis of a larger mixed-methods investigation that examined psychosocial factors that influence physical activity and disability after LLA in middle age or later.[2,19-21]

### Participants

We recruited participants through local hospitals, amputation specialty clinics, support groups, and the Amputation Coalition of America. Potential participants with LLA were included if their most recent LLA was at least 1 year prior, they had dysvascular (ie, diagnosis of diabetes mellitus and/or peripheral artery disease) or traumatic etiology, they were between 45 and 88 years old, and they self-reported independence with walking for at least household distances with or without an assistive device while using a prosthesis. There was no minimum duration of prosthesis use for study inclusion. To minimize the risk of bias by including participants with longer time since LLA of traumatic etiology, potential participants with traumatic LLA etiology were included if there was a participant in the data set with dysvascular etiology and a similar time since LLA (±18 months). We excluded participants if they had a cancer-related amputation, had a stroke within the prior 2 years, or were not independently using a prosthesis for walking. Potential participants with cancerous etiology were excluded because this etiology accounts for <1% of LLA among middle-aged and older adults.[1] Based on our prior work, we did not anticipate enrolling an adequate sample of participants with cancer-related etiology to make meaningful inferences within our cross-sectional study. Participants who met the inclusion criteria were contacted by phone to obtain informed consent and complete data collection (January 2018 to August 2019). The larger mixed-methods study protocol was approved by the Colorado Multiple Institutional Review Board and Veterans Affairs Office of Research and Development.

## Data collection

Data collection was conducted via telephone to minimize participants' travel and time burden while optimizing recruitment over a larger geographic region and because research suggests patient-reported outcome data collected through various modes (eg, face-to-face, telephone interview) are likely to be equivalent.[22,23] To minimize potential measurement bias, 1 trained physical therapist collected questionnaire data for all study participants by reading questionnaire items and responses verbatim and recording responses on a paper form. Questionnaire responses were then manually entered into a Research Electronic Data Capture database and confirmed through a double data entry approach.[24] Our selection of candidate explanatory variables was guided by prior research on factors associated with perceived physical function (the primary outcome for this secondary analysis).[6] The primary explanatory variable was cognitive impairment, and secondary candidate explanatory variables included sociodemographic, physical health, mental health, amputation characteristics, and prosthesis-related variables.

## Primary outcome

We measured perceived physical function with the Prosthesis Mobility Questionnaire (PMQ). The PMQ is a reliable (person-separation reliability=0.87) and internally consistent (Cronbach $\alpha$=0.88) 12-item questionnaire specifically designed to measure perceived physical function after LLA.[25] Participants were asked to rate the amount of difficulty (0: "Hardly able/cannot do," 1: "High difficulty," 2: "Moderate difficulty," 3: "Little difficulty," or 4: "No difficulty") completing locomotion and mobility tasks over the past month while wearing a prosthesis. An average score was used for this analysis, where higher scores indicated better perceived physical function (possible score range, 0-4).

## Primary explanatory variable

We identified cognitive impairment using the education-adjusted score from the 12-question Telephone Interview for Cognitive Status-modified (TICS-m).[26,27] The TICS-m has been used in epidemiologic studies to screen and identify cognitive impairment by asking participants to answer questions about orientation to time and place, receptive and expressive language function, calculation, and immediate and delayed recall.[26] Participant-reported highest level of education (eg, some high school, high school graduate, some college, bachelor's degree or higher) was used to calculate education-adjusted TICS-m score. Participant TICS-m scores (range, 0-50) in this sample were adjusted for education by subtracting 2 points for participants who had a bachelor's degree or higher.[27] We used an education-adjusted TICS-m cut point score of ≤31 points to identify likely cognitive impairment (eg, mild cognitive impairment, dementia) because of optimal sensitivity (83%) and specificity (78%) performance.[27]

### Secondary candidate explanatory variables

Sociodemographic variables included in this analysis were age, sex, and self-reported race and ethnicity. Veteran status was also included as a candidate explanatory variable because Veterans, compared to non-Veterans, tend to have characteristics (eg, poorer health status, socioeconomic status, and/or health behaviors) that are potentially associated with worse rehabilitation and health outcomes after LLA.[28,29]

Physical health variables included body mass index (BMI), the Functional Comorbidity Index (FCI), and pain. Self-reported height and weight were used to calculate BMI. The FCI is a self-reported count of chronic health conditions that are known to influence rehabilitation outcomes.[30,31] Pain was measured by asking participants, "How would you rate your pain on average?" and responses ranged from 0 (no pain) to 10 (worst imaginable pain).[32]

Mental health variables included anxiety and depression. The Hospital Anxiety and Depression Scale (HADS) is a valid and reliable measure for anxiety and depression for a range of populations, including people with LLA.[33,34,35] The HADS is a 14-item questionnaire (7 anxiety-related items, 7 depression-related items), and participants rated how they have been feeling over the past week using a 4-point scale (0: absence of symptoms to 3: maximal symptoms). Higher scores for the anxiety subscale (possible range, 0-21) and depression subscale (possible range, 0-21) indicate greater anxiety or depressive symptoms.

Amputation characteristics included in this analysis were etiology of LLA (dysvascular or traumatic), level of LLA (unilateral transtibial LLA, unilateral transfemoral LLA or other, or bilateral transtibial LLA), and years since LLA. There were too few participants with unilateral knee disarticulation (n=3) and hip disarticulation (n=1) to make clinically meaningful inferences; therefore participants with levels of amputation through or above the knee were grouped with those who had unilateral transfemoral LLA.

Prosthesis-related variables included prosthesis wear time, satisfaction, and assistive device use. Prosthesis wear time was measured using a single question from the Houghton Scale.[36] Participants indicated if they wear their prosthesis "Less than 25% of waking hours (1-3 hours)," "Between 25% and 50% of waking hours (4-8 hours)," "More than 50% of waking hours (>8 hours)," or "All waking hours (12-16 hours)." Prosthesis satisfaction was measured using a single item from the Trinity Amputation and Prosthesis Experience Scales.[37] Participants indicated how satisfied they were with their prosthesis on a scale of 0 ("Not at all satisfied") to 10 ("Very satisfied"). Finally, participants reported the assistive device currently used for ambulation while using a prosthesis (none, cane, other [eg, front-wheel walker, 4-wheel walker]).

### Analysis

We conducted our data analyses using SAS statistical software.[a] The primary and secondary candidate explanatory variables met assumptions of linear regression except for years since amputation, which was log transformed because of nonnormality. Descriptive statistics (n [%], mean ± SD) of candidate explanatory variables were calculated for the study sample.

We compared characteristics of participants with and without cognitive impairment using Pearson chi-square for categorical variables and independent *t* tests for continuous variables.

We tested our hypothesis that cognitive impairment contributes to perceived physical function, independent of other factors, in 2 steps. In our first step, we used simple linear regression to identify potential confounders by examining bivariate associations between candidate explanatory variables and the PMQ. Cognitive impairment, sex, Veteran status, race and ethnicity, and etiology were dichotomous variables in regression models; age, BMI, years since LLA, prosthesis satisfaction, pain rating, HADS-A, HADS-D, and FCI were modeled as continuous variables; and level of LLA, prosthesis wear time, and current assistive device were modeled as categorical variables. We conducted this step to limit the number of variables that would be considered in the backward elimination multiple linear regression step of our analysis. Variables in simple regression models with a $P$ value <.2 were moved to the next step.

We used a backward elimination approach in our second step to identify the most parsimonious model of candidate variables that contributed to explaining the variability in perceived physical function. We selected a backward elimination approach to limit the potential for bias and model overfitting with a large number of candidate explanatory variables relative to the study sample size. Our iterative backward elimination approach began with a full model containing all candidate explanatory variables associated with PMQ in bivariate analyses ($P$<.2). In each iterative cycle, the candidate explanatory variable that contributed the least to explaining the variability in PMQ score was removed. This process continued until the final model was identified and variables remaining had a $P$ value <.2.

## Results

There were 126 participants in the larger mixed-methods study.[2] We were unable to recontact 4 participants to complete data collection, and 3 participants were eliminated from the data set because they did not complete the TICS-m, leaving 119 participants for this cross-sectional, secondary data analysis.

A description of the study sample is presented in table 1. Briefly, participants had a mean age of 62.6±8.2 years, 98 (82%) had dysvascular etiology of LLA, 106 (89%) were male, and 79 (66%) reported no current assistive device use for ambulation.

Cognitive impairment was identified in 28 participants (23.5%). Compared with participants without cognitive impairment, participants with cognitive impairment were more likely to use an assistive device for ambulation (60.7% vs 25.3%, $P$=.002); were older (66.3±7.3 vs 61.5±8.1 years, $P$=.006); and had a higher number of chronic health conditions (7.1±3.4 vs 5.4±2.5, $P$=.004), more depressive symptoms (6.6±5.1 vs 4.2± 3.8, $P$=.008), and worse perceived physical function (2.0±0.6 vs 2.6±0.7, $P$<.001).

Cognitive impairment and 9 other candidate explanatory variables in simple linear regression models had a $P$ value <.2 and were included in the backward elimination model (table 2). After backward elimination, the final model included 5 explanatory variables (table 3), explaining 59% of perceived physical function variability (${}_{Adj}R^2$=0.59, $P$<.001).

In addition to cognitive impairment, variables in the final model that explained worse PMQ score were higher HADS-Depression score, lower prosthesis satisfaction, higher count of chronic health conditions, and assistive device use.

## Discussion

Our results suggest that cognitive impairment contributes significantly and independently to perceived physical function for those who are in middle age or later and are at least 1 year after LLA. Participants with cognitive impairment were significantly older and had more comorbid health conditions, more depressive symptoms, and worse perceived physical function than those without cognitive impairment. In addition, study findings supported our hypothesis that cognitive impairment is independently associated with worse perceived physical function, even after adjusting for other rehabilitation covariates.

Our study of middle-aged and older prosthesis users contributes to evidence suggesting cognitive impairment is a prevalent problem among people with LLA. Large epidemiologic studies of cognitive impairment indicate that dementia and mild cognitive impairment prevalence increases with older age, especially beyond 65 years of age.[38] For example, the estimated prevalence of mild cognitive impairment increased from 6.7% to 8.4%, and 10.1% for older adults aged 60-64, 65-69, and 70-74 years, respectively.[39] Nearly 1 in 4 participants in the present study were identified as having cognitive impairment, a substantially higher prevalence than community-dwelling older adults without LLA. While our results are consistent with prior research focused on post LLA through the prosthetic training phase,[5] our study extends our understanding of the prevalence of cognitive impairment in the long-term follow-up phase after LLA.

We identified differences among prosthesis users who were about 5 years post LLA with and without cognitive impairment and found that cognitive impairment was associated with worse perceived physical function. More specifically, prosthesis users with cognitive impairment had an average PMQ score of 2.0, and those without cognitive impairment had an average score of 2.6, where a score of 2 indicates “moderate difficulty” and 3 indicates “little difficulty.” In a systematic review of 30 studies, cognitive impairment during the preoperative, preprosthetic, and prosthetic phases of rehabilitation was found to be associated with higher risk of mortality, prosthesis prescription denial, and a variety of other unfavorable rehabilitation outcomes for people with LLA.[5] Our study findings are novel because none of the studies included in the prior systematic review assessed the relationship between cognitive impairment and physical function among people with LLA who are current prosthesis users beyond the prosthetic training phase. In addition to guiding transdisciplinary rehabilitative planning, goal setting, and intervention tailoring, rehabilitation clinicians can use ongoing screening to facilitate early detection of cognitive impairment, as well as to inform primary and specialty care provision as prosthesis users age.[6,38]

Beyond our exploration of cognitive impairment among prosthesis users in middle age or later, we identified other characteristics that are associated with perceived physical function during the years after amputation.[17] In addition to cognitive impairment, we found that lower prosthesis satisfaction, more depressive symptoms, more chronic health conditions, and assistive device use were associated with worse perceived physical function, explaining nearly 60% of score variability in total. Prosthesis satisfaction was most associated with perceived physical function and is a long-standing characteristic that influences prosthesis use.[6,37] Further, chronic disease and depression have also been associated with rehabilitation outcomes after LLA.[4,6] Our study findings reinforce prior evidence and highlight the need for transdisciplinary approaches by physicians, rehabilitation therapists, prosthetists, mental, behavioral, and other health providers to optimize rehabilitation outcomes for prosthesis users who are in middle age or older.[6]

Our study is also clinically important in the setting of telehealth because all data were collected remotely. Telehealth use has rapidly accelerated during the COVID-19 pandemic[40] and has the potential to complement all phases of rehabilitation after LLA [41,42] We found that remotely collected data can be used to identify important patient characteristics that are related to perceived physical function and therefore may be clinically useful in efficiently identifying patient-centered needs for rehabilitative referrals. For example, telehealth-reported difficulties with prosthesis satisfaction, depressive symptoms, or physical function may suggest a need for referrals to clinicians who can use targeted intervention to address these difficulties. Further cognitive screening, whether conducted via telehealth or face-to-face, may guide rehabilitation intervention tailoring toward patients' cognitive strengths and increasing the odds for prosthesis and rehabilitation success. For example, assistive technology to accommodate for cognitive function can improve the sequence of donning a prosthesis safely.[43] Cognitive screening could also indicate a need for referral for in-depth cognitive testing and more specialized services to manage potential cognitive decline with advancing age. Further research is needed to understand how to best use telehealth technology within lifelong phase of transdisciplinary rehabilitation post LLA.

## Study limitations

First, although we used a validated telephone-based measure to assess cognitive impairment, some other measures, including our primary outcome of perceived physical function, were designed for in-person administration and may have some degree of measurement bias. We used methods to minimize potential bias (eg, 1 trained therapist, standardized script, reading items verbatim). If measurement bias was similar in those with and without cognitive impairment, bias would tend to be toward the null. Second, there may be other factors that are associated with perceived functional mobility that were not examined in this secondary data analysis (eg, number of prescription medications, history of falls, physical activity). However, we selected factors based on theory and prior research, and the factors examined explained a large percentage of variability, suggesting that we likely captured most of the most important factors. Third, prosthesis satisfaction and wear time may not have been associated with perceived physical function because we extracted single items from larger questionnaires (eg, Trinity Amputation and Prosthesis Experience Scales, Houghton). Fourth, although the telephone-based screening tool we used is validated to detect cognitive impairment, it does not differentiate between mild cognitive impairment, dementia, or potentially reversible causes of cognitive impairment (eg, depression). Finally, this cross-sectional study was composed largely of non-Hispanic White men with unilateral transtibial LLA, and findings may not generalize to more diverse populations with more complex amputation characteristics.

## Conclusions

Cognitive impairment is common in middle-aged and older adults during the years after LLA and contributes to worse perceived physical function, even after accounting for other factors such as physical and mental health. Clinicians should consider periodic screening for cognitive impairment and developing novel interventions to improve perceived physical function for prosthesis users with cognitive impairment in middle age and older.

## Supplier

a SAS statistical software; SAS Institute Inc, Cary, NC.

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## List of abbreviations:

| | |
|---|---|
| **BMI** | body mass index |
| **FCI** | Functional Comorbidity Index |
| **HADS** | Hospital Anxiety and Depression Scale |
| **LLA** | lower limb amputation |
| **PMQ** | Prosthesis Mobility Questionnaire |
| **TICS-m** | Telephone Interview for Cognitive Status-modified |

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## Table 1

Partiripant characteristics for the full study sample and by cognitive impairment status

| Characteristic | Full Sample(N=119) | Cognitive Impairment* (n=28) | No Cognitive Impairment(n=91) | *P* Value |
|---|---|---|---|---|
| | **n (%)** | | | |
| Etiology | | | | .59 |
| Dysvascular | 98 (82.4) | 24 (85.7) | 74 (81.3) | |
| Trauma | 21 (17.7) | 4 (14.3) | 17 (18.7) | |
| Level of LLA | | | | .99 |
| Unilateral transtibial | 81 (68.1) | 19 (67.9) | 62 (68.1) | |
| Unilateral transfemoral or other | 25 (21.0) | 6 (21.4) | 19 (20.9) | |
| Bilateral transtibial LLA | 13 (10.9) | 3 (10.7) | 10 (11.0) | |
| Male | 106 (89.1) | 26 (92.9) | 80 (87.9) | .46 |
| Non-Hispanic, White | 91 (76.5) | 19 (67.9) | 72 (79.1) | .22 |
| Veteran | 52 (43.7) | 14 (50.0) | 38 (41.8) | .44 |
| Prosthesis wear time | | | | .74 |
| All waking hours | 80 (67.2) | 19 (67.9) | 61 (67.0) | |
| >50% of waking hours | 27 (22.7) | 5 (17.9) | 22 (24.2) | |
| 25%-50% of waking hours | 8 (6.7) | 3 (10.7) | 5 (5.5) | |
| <25% of waking hours | 4 (3.4) | 1 (3.6) | 3 (3.3) | |
| Current Assistive Device | | | | .002† |
| None | 79 (66.4) | 11 (39.3) | 68 (74.7) | |
| Cane | 18 (15.1) | 8 (28.6) | 10 (11.0) | |
| Other | 22 (18.5) | 9 (32.1) | 13 (14.3) | |
| | **Mean ± SD** | | | |
| Age (y) | 62.6±8.2 | 66.3±7.3 | 61.5±8.1 | .006† |
| BMI | 29.5±6.0 | 27.3±4.0 | 30.2±6.4 | .03† |
| Years since LLA‡ | 4.9±4.7 | 4.6±3.3 | 5.0±5.1 | .62 |
| Prosthesis satisfaction score | 8.2±1.8 | 7.7±2.0 | 8.3±1.7 | .10 |
| Pain rating score | 3.4±2.6 | 3.8±2.6 | 3.3±2.6 | .42 |
| HADS-Anxiety score | 5.1±3.7 | 5.9±3.5 | 4.9±3.8 | .22 |

| Characteristic | Full Sample(N=119) | Cognitive Impairment* (n=28) | No Cognitive Impairment(n=91) | *P* Value |
|---|---|---|---|---|
| | **n (%)** | | | |
| HADS-Depression score | 4.8±4.3 | 6.6±5.1 | 4.2±3.8 | .008† |
| FCI score | 5.8±2.9 | 7.1±3.4 | 5.4±2.5 | .004† |
| TICS-m score | 34.0±3.9 | 28.9±2.3 | 35.6±2.8 | <.001† |
| PMQ average score | 2.5±0.8 | 2.0±0.6 | 2.6±0.7 | <.001† |

NOTE. BMI calculated as weight in kilograms divided by height in meters squared.

*Education adjusted score of ≤31 on TICS-m indicated cognitive impairment.

†Significant differences: $P<.05$.

‡Data presented as mean ± SD for interpretability, between-group comparison conducted using log transformed data.

## Table 2

Simple linear regression of candidate explanatory variables and Prosthesis Mobility Questionnaire score

| Variable | Parameter Estimate | *P* Value |
|---|---|---|
| Cognitive impairment* | −0.64 | <.001†,‡ |
| Male | 0.13 | .57 |
| Non-Veteran | −0.01 | .97 |
| Non-Hispanic White | −0.01 | .93 |
| Dysvascular etiology | −0.20 | .29 |
| Age (y) | −0.02 | .07‡ |
| BMI | −0.01 | .55 |
| Years since LLA§ | 0.12 | .18‡ |
| Prosthesis satisfaction score | 0.26 | <.001†,‡ |
| Pain rating score | −0.12 | <.001†,‡ |
| HADS-Anxiety score | −0.09 | <.001†,‡ |
| HADS-Depression score | −0.12 | <.001†,‡ |
| FCI score | −0.13 | <.001†,‡ |
| Level of LLA | | .29 |
| Unilateral transtibial | Reference | |
| Unilateral transfemoral or other | −0.28 | |
| Bilateral transtibial LLA | −0.04 | |
| Prosthesis wear time | | .02†,‡ |
| All waking hours | Reference | |
| >50% of waking hours | −0.28 | |
| 25%-50% of waking hours | −0.65 | |
| <25% of waking hours | −0.75 | |
| Current assistive device | | <.001†,‡ |
| None | Reference | |
| Cane | −0.67 | |
| Other | −0.74 | |

NOTE. BMI calculated as weight in kilograms divided by height in meters squared.

*Education adjusted score of ≤31 on TICS-m indicated cognitive impairment.

†$P<.05$.

‡$P<.2$ and included in backward elimination model.

§Log transformed because of nonnormality.

## Table 3

Final backward elimination results using multiple linear regression

| | | Model Statistics | | Explanatory Variable Statistics | |
|---|---|---|---|---|---|
| | **Variable** | $R^2$ | Adj $R^2$ | $\beta$ | *P* Value |
| Final Model | | 0.61* | 0.59 | | |
| | Cognitive impairment† | | | −0.15 | .02 |
| | Prosthesis satisfaction score | | | 0.34 | <.001 |
| | HADS-Depression score | | | −0.31 | <.001 |
| | FCI score | | | −0.19 | .006 |
| | Current assistive device: none | | | Reference | … |
| | Current assistive device: cane | | | 0.01 | .93 |
| | Current assistive device: other | | | −0.20 | .003 |

NOTE. $\beta$: standardized beta coefficient.

* indicates a *P*-value <.001

† Education adjusted score of ≤31 on TICS-m indicated cognitive impairment.