Barthel Index (BI)

Assessment Overview

Assessment Area

ICF Domain:

Activity

Subcategory:

Self-Care

You Will Need

Length:

10 items – less than 15 minutes

Scoring:

Item scores are summed to give a total score ranging from 0 to 100 (0=fully dependent; 100= fully independent)

Summary

The Barthel Index is one of the oldest developed measures of basic activities for daily living. The index was originally developed to assess the severity of disability in personal care and mobility in stroke patients. It consists of 10 domains which include: bathing, grooming, feeding, dressing, toilet use, ascending/descending stairs, bowel management, bladder management, bed/wheelchair transfer, and surface level mobility.

The Barthel Index was later modified by Shah et al. in 1989, who developed a five-step scoring system.

Availability

Worksheet: Can be found here.

Assessment Interpretability

Minimal Clinically Important Difference

Not established in SCI

Statistical Error

Not established in SCI

Typical Values

Mean Barthel Index scores at admission/discharge (±SD):

	Admission BI	Discharge BI
CSCI	24.70 (29.05)	52.76 (31.84)
TSCI	19.35 (14.01)	56.30 (13.92)
LSCI	18.13 (21.81)	67.08 (22.31)

(Zhang et al. 2015, N=95 (77M, 18F); Average age (SD): 36.76 (14.65); 50.49% CSCI, 24.22% TSCI, 25.29% LSCI)

Measurement Properties

Validity – **Low** to **High**

Barthel Index:

Moderate correlation with Care Dependency Scale:

r = 0.76

(Plantinga et al. 2006, n=154; 72 males, 82 females; n=17 with SCI; mean 54 years (males), 61 years (females))

Low correlation between Discharge Barthel Index and operation intervention, rehabilitation intervention time and average length of hospital stay:

$p > 0.05$

(Zhang et al. 2015, N=95 (77M, 18F); Average age (SD): 36.76 (14.65); 50.49% CSCI, 24.22% TSCI, 25.29% LSCI)

High correlation with Chinese version of SCIM III:

r = 0.88 ($p < 0.05$)

(Xing et al. 2021; n=102; mean (SD) age: 48.8 (15.6) years; 64 males, 38 females; injury level: 50 tetraplegia, 52 paraplegia; ASIA A-D; median time since injury: 2 months; SCIM III Chinese version)

Modified Barthel Index:

High correlation with the Katz Index score:

r = 0.87

High correlation with the SF-36 physical functioning subscale:

r = 0.57

(Ferfeli et al. 2023; n=100; n=50 with SCI; 41 males, 9 females; ASIA A-D; MBI Greek version)

High correlation with the SCIM-III:

r = 0.95

(Cho et al. 2020; n=40; 32 males, 8 females; mean (SD) age: 47.32 (14.27) years; injury level: 15 paraplegia, 25 tetraplegia; ASIA A-D; new Korean version of the SCIM III)

Low correlation with the SCI-SCS:

r = -0.20

(Conti et al. 2019; n=156; 126 males, 30 females; ASIA B-D; Italian version of the SCI-SCS)

Number of studies reporting validity data: 8

Reliability – **High**

Barthel Index:

Not established in SCI

Modified Barthel Index:

High Interval Consistency:

α = 0.91

(Ferfeli et al. 2023; n=100; n=50 with SCI; 41 males, 9 females; ASIA A-D; MBI Greek version)

High Test-retest Reliability:

ICC = 0.99

(Ferfeli et al. 2023; n=100; n=50 with SCI; 41 males, 9 females; ASIA A-D; MBI Greek version)

Number of studies reporting reliability data: 1

Floor/Ceiling Effect:

Items	Floor (%) / Ceiling (%)	
	Admission	Discharge
Bowels	17.7 / 64.6	7.6 / 85.7
Bladder	35.0 / 48.1	10.1 / 70.5
Grooming	23.6 / 76.4	5.9 / 94.1
Toileting	27.4 / 38.4	8.4 / 77.2
Feeding	5.9 / 71.3	1.7 / 89.5
Transfer	12.2 / 39.2	1.7 / 79.7
Mobility	18.6 / 23.2	1.3 / 61.6
Dressing	27.0 / 29.5	5.1 / 70.9
Stairs	73.4 / 9.7	31.2 / 38.4
Bathing	81.4 / 18.6	36.7 / 62.9
Total score	2.5 / 5.5	0.0 / 24.1

(O'Connor et al. 2004; n=237; 135 males; mean age: 52 years)

Effect Size:

Items	ES
Bowels	0.40
Bladder	0.52
Grooming	0.42
Toileting	0.72
Feeding	0.38
Transfer	0.70
Mobility	0.89
Dressing	0.84
Stairs	1.08
Bathing	1.16
Total score	0.98

(O'Connor et al. 2004; n=237; 135 males; mean age: 52 years)

Number of studies reporting responsiveness data: 0