

Outcome Measure	Traumatic Brain Injury Quality of Life (TBI-QOL)
Sensitivity to Change	Not yet known
Population	Adult
Domain	Health-Related Quality of Life
Type of Measure	Self-report
ICF-Code/s	B2, b7, d
Description	<p>The Traumatic Brain Injury Quality-of-Life (TBI-QOL; Tulskey et al., 2016) is a recently developed QOL measure specifically designed for the population with TBI. It has been designed to integrate with PROMIS and Neuro-QOL (Patient Reported Outcomes and Neurological QOL measures) but also has TBI-specific item banks. TBI-QOL was developed using qualitative methods (consumer-led focus groups, interviews, consultations, and feedback) to develop and refine items appropriate for those with TBI and then calibrated using quantitative item response theory methods, specifically the Graded Response Model.</p> <p>TBI-QOL consists of 20 item banks in 4 domains (Physical Health, Emotional Health, Cognition, Social Participation):</p> <p>Physical Health: Mobility, Upper Extremity, Fatigue, Pain Interference, Headache Pain*</p> <p>Emotional Health: Positive Affect and Well-being, Depression, Anxiety, Stigma, Resilience*, Grief/Loss*, Self-esteem*, Anger, Emotional and Behavioural Dyscontrol</p> <p>Cognition: Executive Function, Cognition-General Concerns, Communication/Comprehension*</p> <p>Social Participation: Ability to Participate in Social Roles and Activities, Satisfaction with Social Roles and Activities, Independence*</p> <p>* = item banks with TBI-specific reference group</p> <p>The respondent answers each item on a 5-point scale ranging from 1 to 5 (never/not at all/none to always/very much/cannot do).</p> <p>It is available free of charge from the Assessment Center website (www.assessmentcenter.net) although it doesn't look like it's on there yet. Administration is via computer but the short-forms can be downloaded for pen-and-paper administration. The administrator has flexibility in whether to present the TBI-QOL as 1) the full item bank, 2) a computerized adaptive test (where questions are selected based on the respondent's previous answers using item response theory to minimize the number of items that need to be administered), or 3) short-forms.</p> <p>A total raw score is calculated by summing responses to all items within an item bank. Scores are then transformed into T scores (mean = 50, SD = 10). This can be done automatically or converted using conversion tables. Reference group for item banks placed on PROMIS or Neuro-QOL metric = general population. Reference group for item banks that are TBI-specific = TBI normed group.</p>
Properties	<u>Unidimensionality:</u> CFA modelling has shown that all item banks have an acceptable goodness-of-fit using Bentler Comparative Fit Index (all > .91),

	<p>Tucker-Lewis Index (all > .94), and the root mean square error of approximation (most item banks < .08) (Tulsky et al., 2016) including those on the deployment-related short forms (Toyinbo et al., 2016).</p> <p><u>Internal consistency:</u> The TBI-QOL has high internal consistency, with Cronbach's α for each item bank > .9 in a large sample with TBI (Tulsky et al., 2016) and in veterans with mild TBI (Lange et al., 2016).</p> <p><u>Convergent and discriminant validity:</u> Lange et al. (2016) showed generally high intercorrelations within domains and lower intercorrelations between domains. They also showed relevant item banks within the TBI-QOL (8 were examined) correlated with theoretically overlapping measures (e.g. NSI and PCL-C, most $r > .80$). The TBI-QOL was also able to discriminate between veterans with mild TBI and controls on 10 of the 14 of TBI-QOL item banks administered (did not administer Mobility, Upper Extremity, Stigma, Communication/Comprehension, Satisfaction with Social Role, or Independence).</p>
Advantages	<ul style="list-style-type: none"> • First comprehensive QOL tool developed specifically for those with TBI using strong psychometric techniques. • Normed in a large sample with TBI. • Developed so that item banks common with PROMIS or Neuro-QOL can be compared with other populations.
Disadvantages	<ul style="list-style-type: none"> • Only recently developed and so not yet used in other samples and settings. • Sensitivity to change not yet been evaluated. • Reference groups differ between item banks so difficult to compare like-for-like across all domains.
Additional Information	<p>Supplemental: Toyinbo et al. (2016) have additionally developed three item banks using the same principles and techniques particularly relevant for those with TBI following military deployment: Guilt, Military-related Loss and Grief, and PTSD/Trauma symptoms.</p>
Reviewers	<p>Robyn Tate</p>

References

- Lange, R.T., Brickell, T.A., Bailie, J.M., Tulsky, D.S. & French, L.M. (2016). Clinical utility and psychometric properties of the Traumatic Brain Injury Quality of Life Scale (TBI-QOL) in US military service members. *Journal of Head Trauma Rehabilitation, 31*(1), 62-78.
- Toyinbo, P.A., Vanderploeg, R.D., Donnell, A.J., Mutolo, S.A., Cook, K.F., Kisala, P.A. & Tulsky, D.S. (2016). *Journal of Head Trauma Rehabilitation, 31*(1), 52-61.
- Tulsky, D.S., Kisala, P.A., Victorson, D., Carlozzi, N., Bushnik, T., Sherer, M. ... & Cella, D. (2016). TBI-QOL: Development and calibration of item banks to measure patient reported outcomes following traumatic brain injury. *Journal of Head Trauma Rehabilitation, 31*(1), 40-51.