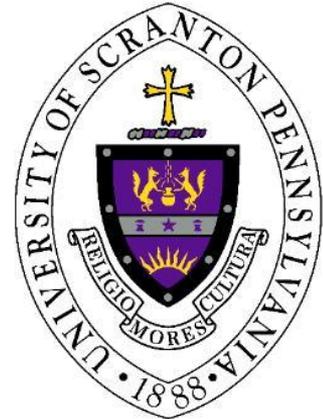


# The Impact of Community-Based Rehabilitation on Individuals Who Have Experienced a Traumatic Brain Injury

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# Definitions

- **Community based rehabilitation (CBR)**- rehabilitation, equalization of opportunities, and social inclusion of all people with disabilities...implemented through the combined efforts of people with disabilities themselves, their families and communities, and the appropriate health, education, vocational, and social services<sup>1</sup>
- **Traumatic brain injury (TBI)**- disruption in the normal function of the brain that can be caused by a bump, blow, or jolt to the head, or penetrating head injury <sup>2</sup>

# Incidence of TBI

- In 2013, a reported 2.8 million TBI-related emergency room visits, hospitalizations, and deaths occurred in the United States<sup>3</sup>
- The leading cause is falls, which accounted for 47% of all of the reported TBI-related injuries<sup>3</sup>
  - Disproportionately affects the youngest and oldest age groups<sup>3</sup>
    - The second leading cause is being struck by an object which accounts for 15% of all reported TBI-related injuries<sup>3</sup>
- The rates of TBI-related deaths and hospitalizations in 2013 were highest among adults over 75 years old<sup>3</sup>

# CBR

- The focus of CBR is to encourage the patient to reintegrate into society<sup>4</sup>
- CBR programs can be implemented to reinforce the physical and psychomotor improvements made in inpatient facilities and further benefit the patient as he/she reintegrates into society<sup>4</sup>

# Purpose

- The purpose of this systematic review was to determine the effectiveness of community-based rehabilitation (CBR) methods on adults following traumatic brain injury (TBI).

# Methods

- Four search engines used:
  - CINAHL, PubMed/Medline, Science Direct, and Google Scholar
- Search Terms:
  - (community based\*) AND (traumatic brain injury) AND (rehabilitation)
- Limits:
  - English language, Human subject, 2007-2017

# Eligibility Criteria

## Inclusion Criteria

- Subjects older than 18 years old
- Diagnosis of a TBI
- Intervention consisting of community based rehabilitation with a health professional

## Exclusion Criteria

- Studies published before 2007
- Younger than 18
- Non-community based interventions

# PRISMA

## Identification

Records Identified through database searching  
(n=332)

Additional Records Identified through other records  
(n=1)

## Screening

Total records considered  
(n=333)

Duplicates removed  
(n= 136)

Records Screened for inclusion  
(n=197)

Record Excluded  
Based on title,  
duplicates (n= 186)

## Eligibility

Articles assessed by  
eligibility  
(n=11)

Articles Excluded, with  
reasons  
Inclusion criteria not met  
(n=4)  
Date Published (n=1)

## Included

Studies included in  
qualitative synthesis  
(n=6)

### MINORS SCALE

<u>Authors:</u>	Cicerone et al.	Winter et. al	Ownsworth et. al	Blake et. al	Wheeler et. al	Curran et. al
A clearly stated aim	2	2	2	2	2	2
Inclusion of consecutive patients	2	2	2	2	2	2
Prospective collection of data	2	2	2	2	2	2
Endpoints appropriate to the aim of the study	2	2	2	2	2	2
Unbiased assessment of the study endpoint	2	2	1	2	2	0
Follow-up period appropriate to the aim of the study	2	1	2	2	1	2
Loss to follow up less than 5%	2	1	2	2	2	1
Prospective calculation of the study side	2	0	2	1	0	2
<b>Additional Criteria:</b>						
An adequate control group	1	2	2	1	0	0
Contemporary groups	0	2	2	2	0	0
Baseline equivalence of groups	1	2	2	2	0	0
Adequate statistical analyses	2	2	2	2	0	0
Total:	20	20	23	22	13	13

# Minors Quality

- 4/6 studies included were Randomized Control Trials
  - Average Minors Score: 21.5/24
  - Range: 20-23
- 2/6 studies included were Non-Randomized Control Trials
  - Wheeler et al., was a retrospective study
  - Curran et al., was a retrospective-longitudinal study
  - Average Minors Score: 13/16

# Results

- CBR programs consisted of the following:
  - Tai Chi
  - Cognitive rehabilitation
  - Group-based psychoeducation/metacognitive skills
  - In-home psychosocial and functional training
  - Life skills/ cognitive retraining
  - Goal setting
  - Individualized programs
    - Physical fitness, accessibility, and psychosocial adjustment

# Results

- Sample sizes ranged from 20 to 81 participants (total= 293)
  - Mild to severe TBI
  - Ages ranging from 18-65 (avg. 40.5)
- Health care providers included:
  - Cognitive Therapist
  - Neuropsychologist
  - Psychologist
  - Interdisciplinary Team
- Treatment parameters widely varied:
  - 1-3x/week for 1- 3 hours/session
  - Durations ranging from 8 weeks to 2 years

## Summary of Interventions

Study	Frequency	Outcome Measures	Time	Type of Therapy
<b>Cicerone et. al</b>	3x/week 16 weeks	Community Integration Questionnaire (CIQ) Quality of Life, Self-efficacy, Higher cognitive functioning	11hrs/week- group 3hrs/week- individual	Intensive Cognitive Rehabilitation
<b>Winter et. al</b>	Up to 8x 4 months	Community Re-integration for Service Members (CRIS), Patient Competency Rating Scale (PCRS), Patient Competency in Functioning	1-2 hrs/session	Home based program focused on environmental changes and compensatory strategies for veteran and family
<b>Owensworth et.al</b>	1x/week 8 weeks	Canadian Occupational Performance Measure (COMP), PCRS, Brain Injury Community Rehabilitation Outcome-39	3 hrs/ week	Group therapy focused on metacognitive skills, goal setting, and feedback
<b>Blake et. al</b>	1x/week 8 weeks	General Health Questionnaire-12, Physical Self-Description Questionnaire, Social Support for Exercise Habits Scale	1 hr/week	Tai Chi
<b>Wheeler et. al</b>	10 weeks-1 year	CIQ, Satisfaction with Life Scale	N/A	Intensive 1:1 life skills training, participation in a therapeutic community, daily process-oriented cognitive re-training group, weekly group-setting sessions
<b>Curran et. al</b>	2 years	Mayo-Portland Adaptability Inventory (MPAI-4), Depression, Anxiety, and Stress Scales (DASS-21), Service Obstacle Scale (SOS)	N/A	Comprehensive physical program extending into home, gym, and community environments

# Results

- Two studies reported statistically significant improvements in community reintegration and participation among subjects of varying TBI severity levels in comparison to typical rehabilitative care <sup>5,6</sup>
- There were trends toward improvement utilizing all treatment options that did not reach statistical significance including: patient competency, mood, perceived self-efficacy, emotional adjustment/functional ability, quality/satisfaction with life <sup>5-10</sup>

# Limitations

- Widely varied outcome measures and treatment parameters
- Heterogeneous patient groups
- Small sample size
- Databases utilized

# Clinical Relevance

- The diagnosis of TBI is commonly characterized by persisting psychosocial dysfunction, including loss of independent living skills, relationship breakdown, and social isolation.
- Clinicians should consider referring patients with TBI to participate in CBR.
- CBR programs offer a variety of treatment options for both individual and group-centered development.
- CBR may be more beneficial for individuals with TBI suffering from decreased psychosocial functioning secondary to socialization and focus on reintegration.

# Conclusion

- There is moderate evidence supporting CBR programs to improve community reintegration and participation for individuals with TBI.
- A variety of rehabilitative programs can be used to achieve positive results for individuals with TBI.
- The utilization of an interdisciplinary team leads to a standardized treatment approach that leads to better results for the patients.

# Future Research

- Most optimal training parameters based on the severity level of the TBI
- Standardized outcome measures used to assess the effectiveness of CBR
- Mode of delivery for CBR

# Resources

- Brain Injury Association of Pennsylvania (BIAPA)
  - [www.biapa.org](http://www.biapa.org)
- Brain Injury Support Groups
  - John Heinz Institute of Rehabilitation
    - Contact: Donna Kopicki 570-826-3888
  - Good Shepherd Rehabilitation Hospital
    - Contact: Bill DeCray 610-432-1619 (adults)
    - Contact: Jodie Moutlon 610-778-9207 (teens)

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Questions?