IMPACT OF PHYSICAL ACTIVITY ON POST-TBI DEPRESSION IN ADULTS: A SYSTEMATIC REVIEW

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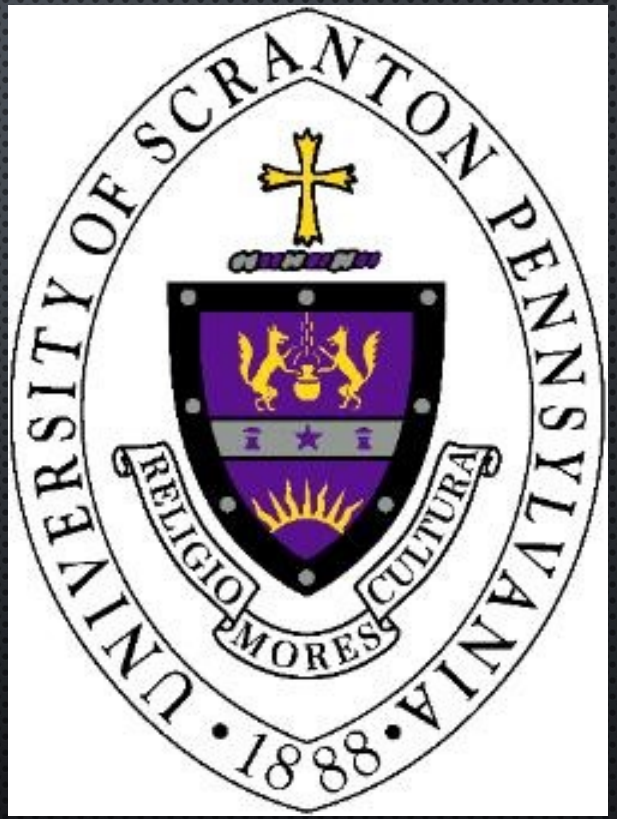


OBJECTIVES

- BY THE END OF THIS PRESENTATION, THE AUDIENCE WILL COMPREHEND THE BENEFITS THAT PHYSICAL THERAPY AND ACTIVITY CAN HAVE ON DEPRESSIVE SYMPTOMS IN PATIENTS WHO SUSTAIN A MODERATE-SEVERE TBI.

- BY THE END OF THIS PRESENTATION, THE AUDIENCE WILL GAIN AWARENESS OF THE PREVALENCE OF DEPRESSION IN TBI PATIENTS FOR POTENTIAL FUTURE RESEARCH.

TRAUMATIC BRAIN INJURY

- A VERY PREVALENT CONDITION THAT CAN MOST COMMONLY OCCUR FROM FALLS AND MOTOR VEHICLE ACCIDENTS[1]
- CATEGORIZED INTO MILD, MODERATE AND SEVERE BRAIN INJURY[1]
- AFTER A TBI, INDIVIDUALS MAY EXPERIENCE SEVERAL PHYSICAL AND COGNITIVE IMPAIRMENTS WHICH NEGATIVELY IMPACTS MOOD[1]
- MOOD CHANGES MAY ALSO BE A DIRECT RESULT OF THE NEUROLOGICAL INSULT- (DAMAGE TO PREFRONTAL CORTEX, LIMBIC SYSTEM)[1]

DEPRESSION

- A serious medical illness that negatively impacts the way one feels, thinks and acts[2]
- the persistent feeling of sadness or loss of interest in daily life activities[2]
- Depression Post brain injury results in poorer outcomes, low psychosocial functioning and decline in recovery[3]
- Most common psychiatric condition to occur Post-TBI[4]

DEPRESSION AND TBI

Share many common somatic symptoms[4]

- Increased Fatigue[4]
- Poor concentration[4]
- Sleep disruption[4]
- Worse subjective and objective cognitive functioning[5]
- Increased aggressive behavior and anxiety[5]
- Greater functional disability[5]

BACKGROUND

VERY COMMON FOR ADULTS 18 YEARS OF AGE AND OLDER TO SUSTAIN A MODERATE-SEVERE LEVEL TBI[1]

FREQUENTLY RESULTS IN COGNITIVE IMPAIRMENTS INCLUDING DEPRESSION[1]

LIMITED EVIDENCE ON HOW PHYSICAL THERAPISTS CAN HELP DECREASE DEPRESSION POST-TBI.[1]

PURPOSE

The purpose of this systematic review is to determine the impact of physical activity on depressive symptoms for individuals who sustain a moderate to severe TBI.

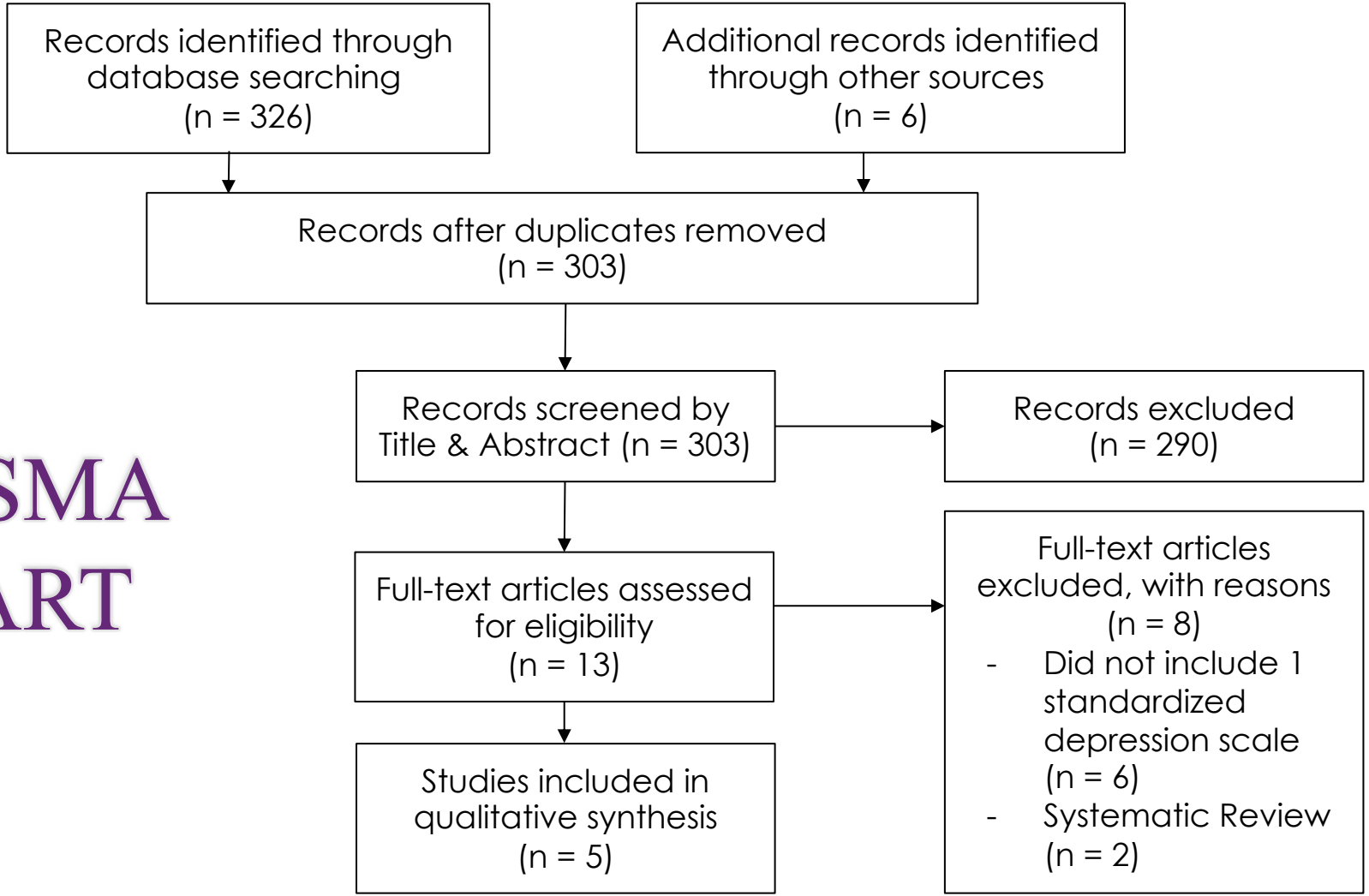
METHODS

- **Databases:** PubMed, CINAHL, SpringerLink, ProQuest
- **Search terms:** ("TBI" OR "traumatic brain injury") AND ("depression" OR "post-head injury depression") AND ("physical activity" OR "therapy" OR "physical therapy" OR "interventions")
- **Search limits:** English, peer-reviewed, and human subjects

METHODS

- **SELECTION CRITERIA:**
  - ADULTS AGE 18 AND OLDER
  - SUSTAINED A MODERATE TO SEVERE TRAUMATIC BRAIN INJURY (TBI)
  - RECEIVED ANY TYPE OF PHYSICAL ACTIVITY INTERVENTION WITH AT LEAST ONE STANDARDIZED OUTCOME MEASURE OF DEPRESSION

PRISMA CHART



OXFORD CENTER FOR EVIDENCE BASED MEDICINE LEVELS OF EVIDENCE

Article Authors	Research Method	Oxford Level
Hoffman et al [5]	RCT	2
Wise et al [6]	RCT	2
Driver et al [1]	RCT	2
Gordon et al [7]	Retrospective Cohort Study	3
Schwandt et al [8]	Single Group Study	4

RESULTS

- A total of 326 articles were screened, 5 articles met selection criteria
- Sample sizes ranged from 4-240 participants who sustained a moderate to severe TBI (368 total)
- Activity Parameters: 30-60 minutes aerobic activity for 3-5x/week at 50-70% APMHR (220 – AGE)
- Durations varied:
    - 8-12 weeks (4)
    - 24 weeks (1)

RESULTS

- Outcome measures used:
  - Beck's Depression Inventory (BDI)
  - Profile of Mood States (POMS)
  - Hamilton Depression Scale (HAM-D)

Section	Test
Emotional	Sadness
	Crying spells
	Agitation
	Loss of Interest
	Irritability
Cognitive	Pessimism
	Sense of Past Failure
	Guilt
	Punishment feelings
	Self-Dislikes
	Self-Criticalness
	Indecisiveness
	Worthlessness
	Concentration Difficulty
Motivational	Change in sleep-pattern
	Changes in Appetite
	Fatigue
	Loss of interest in sex
Physical	Loss of Pleasure
	Loss of Energy
Delusional	Suicidal Thoughts

RESULTS

- Aerobic activity showed **statistically significant improvements** in depression in 4 of 5 studies.
- A **statistically significant** within group difference (6 points) was seen in 2 of 3 studies using the BDI.
- A **statistically significant** between group difference was seen in depression score (0.92-0.25 points) using the POMS.
- A **statistically Significant** group decrease in depression scores was seen (34.6-69.6% change) using the HAM-D.

CONCLUSIONS

- Low- high evidence in support of physical activity to decrease depressive symptoms in adults post-TBI

- Moderate-intensity aerobic exercise (both land-based and aquatic) appears to have the most benefit in lowering depressive symptoms in adults

CLINICAL RELEVANCE

- Moderate-intensity aerobic exercise improved depression in patients who sustained a moderate- severe TBI.

- Clinically meaningful changes:
  - BDI mean scores exceeded the MCID value of 5 points[9]
  - HAM-D improvements exceeded the MCID of ≥27.1%[9]

CLINICAL RELEVANCE

- Benefits of general aerobic activity utilizing programs 3-5x/week for > 30 minutes at 50-70% APMHR should be taught to patients by clinicians

- Physical activity is a feasible intervention that is important to the wellness of patients post-TBI.

LIMITATIONS

- Small sample sizes
- Different depression scales
- Varied designs
- Population generalizability

FUTURE RESEARCH

- Further high-level research with larger sample sizes should be conducted to determine optimal protocols/parameters for physical activity to decrease depression in adults post-TBI.

THANK YOU

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QUESTIONS?