

IMPACT OF COMMUNITY-BASED BOXING ON NON-MOTOR OUTCOMES FOR INDIVIDUALS WITH PARKINSON'S DISEASE: A SYSTEMATIC REVIEW

ILEANA ARMENDI, P

CHRISTIAN HICKFELD, P, C C

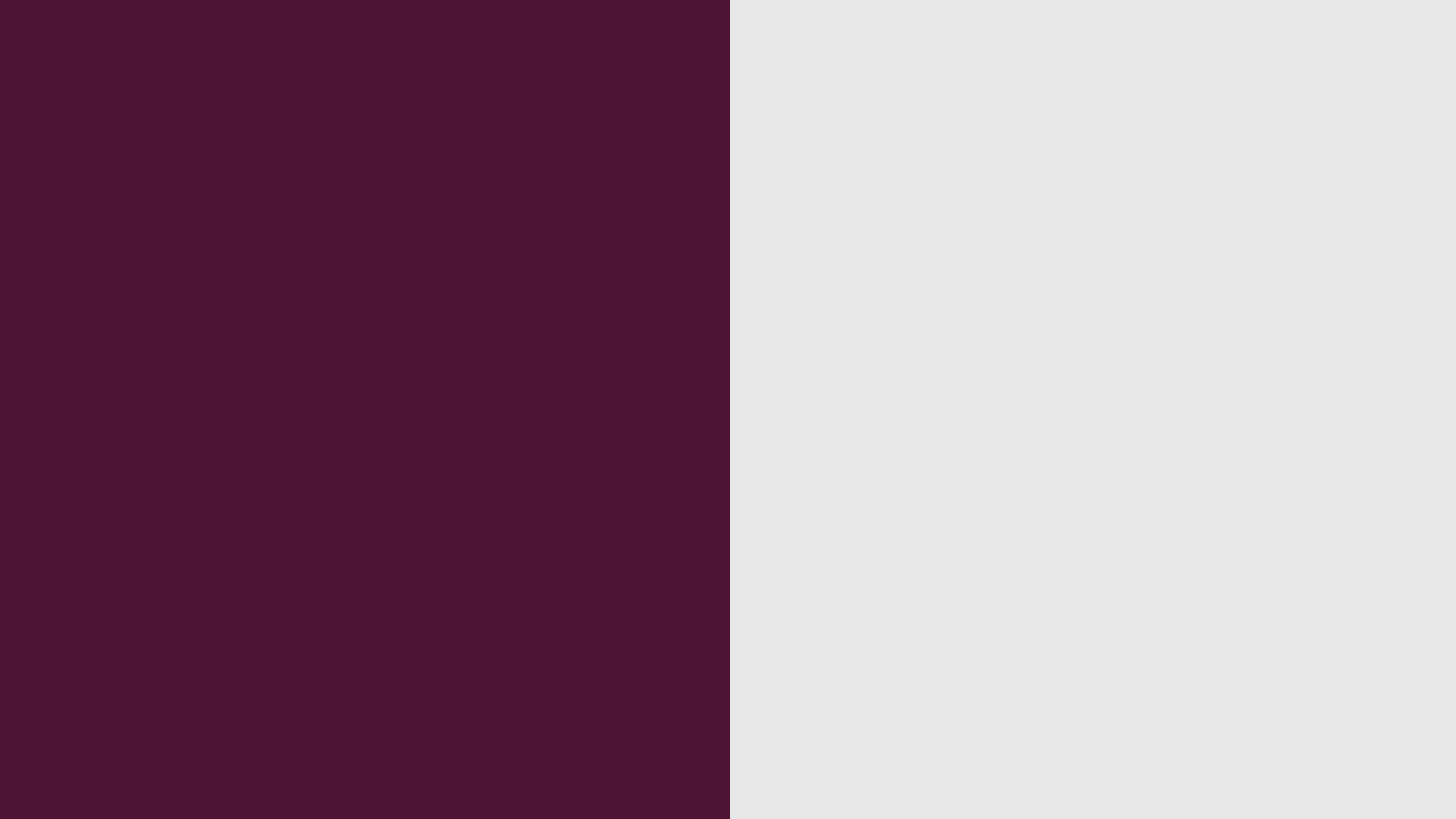
DILANKANE, P, C C

DANIELA PAGNOLI, P

DANA MAIDA, P, DP, BOARD CLINICAL SPECIALIST IN GERIATRIC PHYSICAL THERAPY

JENNIFER CHARLES, P, DP, BOARD CLINICAL SPECIALIST IN NEUROLOGIC PHYSICAL THERAPY





OBJECTIVES

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PARKINSON'S DISEASE (PD)

- ! Neurodegenerative disease of the basal ganglia which results in the loss of dopaminergic neurons in the substantia nigra compacta (SNc).¹
- ! PD can elicit both motor and non-motor impairments.

IMPACT OF BOXING ON IMPAIRMENTS



CBB has been shown to improve motor impairments for individuals with PD.

Although CBB programs have substantially increased in popularity, the precise impact on non-motor outcomes for individuals with PD remains unclear.



PURPOSE

METHODS

- **Search Engine :**



METHODS

- **Search Terms**

(Boxing **OR** "Boxing Training")

AND

("Parkinson* di

METHODS

Study Designs: All study designs were accepted.

Inclusion Criteria:

- Adults aged 18+ with a diagnosis of PD

- Participation in CBB

- Report of at least 1 non-motor outcome

Evidence Appraisal: Two reviewers independently assessed each study utilizing the OCEBM Levels of Evidence (2011) and the Joanna Briggs Institute Checklist for Qualitative Research (JBI).

CRITICAL APPRAISAL TOOLS

! OCEBM Levels of Evidence⁶

! Utilized for quantitative studies

Oxford Centre for Evidence-Based Medicine 2011 Levels of Evidence

Question	Step 1 (Level 1*)	Step 2 (Level 2*)	Step 3 (Level 3*)	Step 4 (Level 4*)	Step 5 (Level 5*)
How common is the problem?	Local and current random sample survey	Systematic review of surveys	Local non-systematic survey	Case series or case-control study	Case report
Is this diagnostic or prognostic or monitoring test accurate? (Diagnosis)	Systematic review of consistently applied reference standard and blinding	Individual cross-sectional or cohort study	Non-consensually applied reference standard and blinding	Reference standard and blinding	Case report
What will happen if we do not add a therapy? (Prognosis)	Systematic review of inception cohort studies	Inception cohort studies	Cohort study or control arm of a randomized trial*	Case series or case-control study	Case report
Does the intervention help? (Treatment, Benefits)	Systematic review of randomized trials	Randomized trial	Non-randomized controlled trial	Controlled study**	Case series
What are the harms? (Treatment Harms)	Systematic review of randomized trials	Randomized trial	Non-randomized controlled trial	Controlled study**	Case series
What are the RARE harms? (Treatment Harms)	Systematic review of randomized trials	Randomized trial	Non-randomized controlled trial	Controlled study**	Case series
Is this an early detection test? (Screening)	Systematic review of randomized trials	Randomized trial	Non-randomized controlled trial	Controlled study**	Case series

* Level 1 may be graded down on the basis of study quality, imprecision, indirectness, inconsistency, or publication bias. A very small effect size is very small.

** As always, a systematic review is preferred to a single study.

CRITICAL APPRAISAL TOOLS

! JBI⁷

! Utilized for qualitative studies

JBI Critical Appraisal

Reviewer _____ Date _____

Author _____ Year _____

Yes No Unclear Not applicable

1. Has the author stated a philosophy of science and a methodology?
 Yes No Unclear Not applicable

2. Is there congruity between the stated philosophy of science and the research methodology?
 Yes No Unclear Not applicable

3. Is there congruity between the research methodology and the methods used to collect data?
 Yes No Unclear Not applicable

4. Is there congruity between the research methodology and the representation of the data?
 Yes No Unclear Not applicable

5. Is there congruity between the research methodology and the interpretation of results?
 Yes No Unclear Not applicable

6. Is there a statement of theoretical or philosophical underpinnings?
 Yes No Unclear Not applicable

7. Is the influence of the researcher on the data, vice-versa, addressed?
 Yes No Unclear Not applicable

8. Are the participants adequately represented?
 Yes No Unclear Not applicable

9. Is there an ethical approval statement, and is there evidence of ethical approval by an appropriate body?
 Yes No Unclear Not applicable

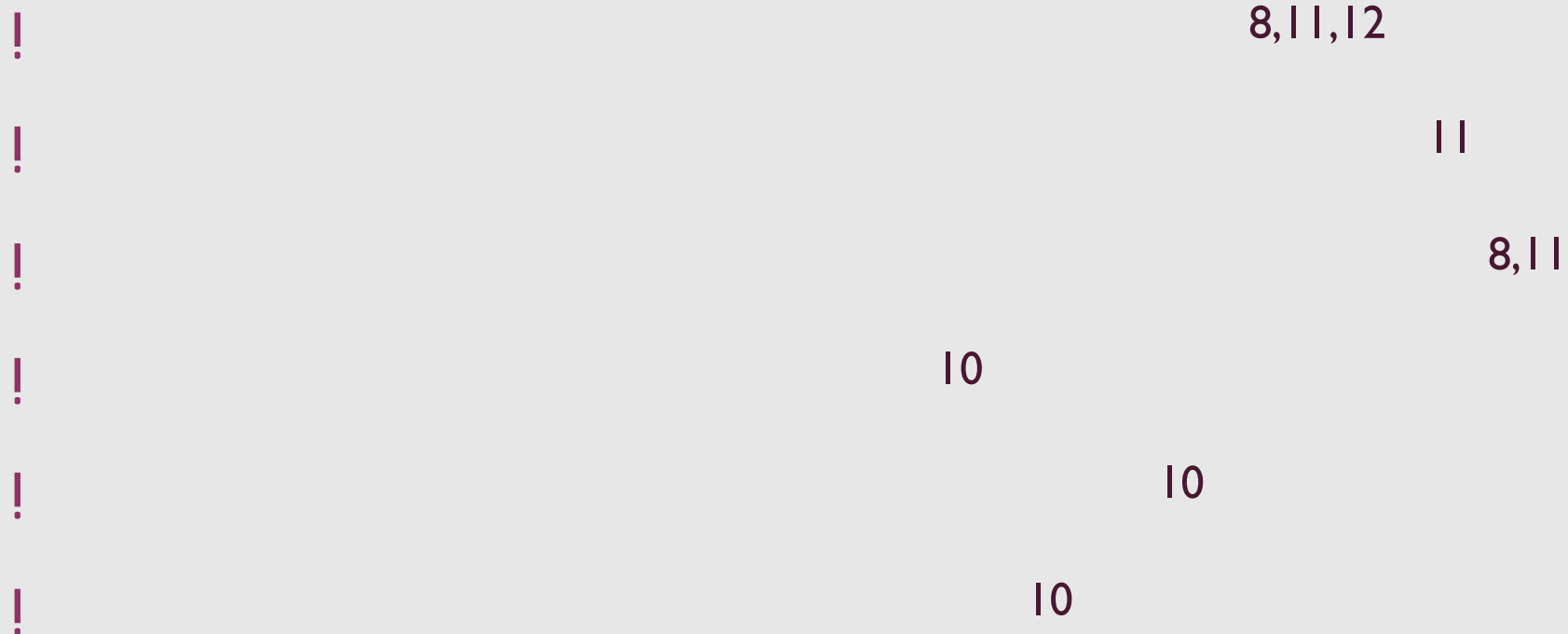
10. Do the conclusions drawn in the research report flow from the analysis, or interpretation of the data?
 Yes No Unclear Not applicable

Overall appraisal: Include Exclude Unclear



RESULTS

OUTCOME MEASURES



RESULTS

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8-14

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RESULTS

At least 1 non-motor outcome improved in all 7 studies.

D **I** :

D : 1 study (level IV) showed most individuals improved UPDRS ADL sub-scores (average change=

RESULTS

- Improved Balance Confidence:

- 2 III/I , ABC (2.5%) ^{8,11}

- | 13

- Better Sleep:

CONCLUSIONS

Varied, limited evidence exists to support the utilization of CBB to improve or maintain non-motor outcomes.

LIMITATIONS

- Small sample sizes
-

FUTURE RESEARCH

- Definitive and consistent outcome measures and training paradigms to determine both motor and non-motor benefits of this type of programming.
- Determine the dose-response relationship of CBB interventions for persons diagnosed with PD.

CLINICAL RELEVANCE

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ADDITIONAL RESOURCES

- CBB can be found in a variety of locations (YMCA, boxing gyms, local fitness centers, and RSB)
- Local RSB Contact Information:
 - Kathy Reap (owner and coach of Rock Steady Boxing Northeast PA)
 - Email: rsboxingnepa@gmail.com
 - Phone: 570-817-4307
- Local RSB gym locations:
 - RSB Northeast PA Gym Headquarters: 1 Maxson Drive, Old Forge, PA 18518
 - RSB Northeast PA Tunkhannock: 112B River St., Tunkhannock, PA 18657
- To learn more and find a RSB gym near you:
 - Visit <https://www.rocksteadyboxing.org/find-a-class/>

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ACKNOWLEDGEMENTS

! Thank You!

! Dana Maida, P r(a) -O() -C l pe l,eN tNr, l TT1eN0(p)2yoS

