Inhale, Exhale: The Therapeutic Effect of Yoga on Physiological and Psychological Symptoms in Patients with Parkinson’s Disease

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ABSTRACT

Background: Parkinson’s disease (PD) has a high prevalence in Canada, thus research on the neuroprotective effects of yoga is essential. After our knowledge of the neuroprotective effects of this practice is confirmed, we can recommend yoga to individuals diagnosed with PD. This recommendation is important because individuals diagnosed with PD experience motor, cognitive, and psychological symptoms associated with the disease. Therefore, individuals diagnosed with PD should be referred to a physiotherapist to learn the therapeutic effect of yoga. Furthermore, research suggests that yoga can improve balance, motor function, and quality of life in older persons with moderate to mild PD. Despite these findings, research that shows the therapeutic effect of yoga on PD is not comprehensive. However, the therapeutic effect of yoga on PD has not been thoroughly examined. Therefore, the objectives of this review were to determine whether yoga has a therapeutic potential in the management and treatment of PD. We performed a comprehensive search in the PubMed and Web of Science electronic databases and searched the references from the articles found to review relevant articles in English. Our findings show that yoga and power training (PWT) as interventions for addressing motor symptoms, balance, mobility, and muscle performance suffer from a ceiling effect with mild to moderate PD. To discern if physiological and QOL-related benefits of yoga and PWT can be improved further, future research is necessary.

INTRODUCTION

What is Parkinson’s disease?

• Progressive neurodegenerative disease that affects 0.5-1.0% of adults aged 65-69 years old and increases with age
• The symptoms arise due to a loss of dopamine in the brain and symptoms include tremors, stiffness, and rigidity
• The majority of the negative effects are related to motor function

What is yoga?

• Philosophy and a practical science that includes a variety of mind-body-practice-related activities including: breathing, physical postures, movement, and meditation
• It can improve endurance, flexibility, strength and balance
• This practice of yoga affects the central and peripheral nervous system

Why is it important?

• Second most common age-related neurodegenerative disorder after Alzheimer’s disease
• Postural instability and cognitive impairment in patients with PD
• Traditional Parkinson’s disease treatments do not address the psychological symptoms
• Yoga can reduce the risk of falling and improve the overall quality of life in healthy individuals

OBJECTIVE

This structured literature review investigated the association between yoga and the physical and psychological symptoms with Parkinson’s disease (PD). These findings may be used to help with management of symptoms during PD. This examination can lead to the development of alternative treatments to conventional pharmaceutical interventions.

RESEARCH QUESTION

Does a therapeutic yoga intervention help alleviate physiological and psychological symptoms in patients with Parkinson’s disease?

METHODS

In this study, we performed a comprehensive search in the PubMed and Web of Science electronic databases and searched the references from the articles found to review relevant articles in English. The search strategy and criteria are as follows:

• Search strategy: Canada and Parkinson disease and yoga
• Inclusion criteria:
  - Keywords: yoga, Parkinsonian, Quality of Life, Full-text Articles
  - Types of yoga: Hatha, Vinyasa, Power, Vinyasa or Hatha
  - Peer-reviewed English, French or Portuguese publication date: 2000-2017
• Exclusion criteria:
  - Single case study
  - Meditation, Tai Chi, Dance
  - Yoga age
  - Conference posters

Records identified through database screening (n=38)
Records after duplicates removed (n=35)
Records screened (n=35)
Records excluded (n=24)
Full-text articles assessed for eligibility (n=19)
Full-text articles included (n=7)

Inclusion criteria

- Keywords: Yoga, Parkinson, Quality of Life
- Full-text Articles
- Types of yoga: Hatha, Vinyasa, Power, Vinyasa or Hatha
- Peer-reviewed English, French or Portuguese
- Publication date: 2000-2017

Exclusion criteria

- Single case study
- Meditation, Tai Chi, Dance
- Yoga age
- Conference posters

- Articles that repeat principal findings of earlier studies
- Study protocols

Records identified through database screening (n=39)
Records after duplicates removed (n=33)
Records screened (n=33)
Records excluded (n=26)

RESULTS

Table 1. Summary of purpose, results and limitations of selected articles

<table>
<thead>
<tr>
<th>Study Name</th>
<th>Study Type</th>
<th>Sample Size</th>
<th>Purpose</th>
<th>Results</th>
<th>Limitations</th>
<th>Association</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bregu et al. (2016)</td>
<td>RCT (Pilot Study)</td>
<td>17</td>
<td>To assess the feasibility and safety of a gentle yoga intervention compared to traditional resistance training in patients with mild to moderate PD.</td>
<td>Improvement in Unified Parkinson’s Disease Rating Scale (UPDRS) motor function and quality of life.</td>
<td>Small sample size - Control group comprised of elderly individuals and not individuals diagnosed with PD</td>
<td>Small sample size - Not tested blind - Short training duration</td>
</tr>
<tr>
<td>Ni et al. (2016)</td>
<td>Secondary Analysis</td>
<td>27</td>
<td>Examine the effects of a high-speed Vinyasa yoga program in people with Parkinson disease (PWT) as an intervention for addressing motor symptoms, balance, mobility, and muscle performance.</td>
<td>Reduced limb bradykinesia and rigidity score.</td>
<td>Small sample size - Not tested blind - Short training duration</td>
<td></td>
</tr>
<tr>
<td>Ni et al. (2016)</td>
<td>RCT</td>
<td>41</td>
<td>To compare the effectiveness of high-speed Vinyasa yoga and power training (PWT) as interventions for addressing motor symptoms, balance, mobility, and muscle performance.</td>
<td>Significant improvements in motor examination and functional gait.</td>
<td>Small sample size - Not tested blind - Anti-Parkinsonian medication may have had an impact on the results</td>
<td></td>
</tr>
<tr>
<td>N. M. (2015)</td>
<td>RCT</td>
<td>41</td>
<td>Comparison of power training (PWT) and Vinyasa yoga as separate exercise interventions for older adults with PD.</td>
<td>Significant improvements in motor examination and balance but explains it could be due to a ceiling effect.</td>
<td>Small sample size - Not tested blind</td>
<td>Yes</td>
</tr>
<tr>
<td>Sharma et al. (2015)</td>
<td>RCT (Pilot Study)</td>
<td>13</td>
<td>To discern if physiological and QOL-related benefits of Hatha-based yoga exist in individuals with PD.</td>
<td>Motor symptom scores were significantly improved compared to control and non-motor factors.</td>
<td>Small sample size - No control for confounding variables like comorbidities</td>
<td></td>
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<tr>
<td>Bouzergui et al. (2015)</td>
<td>Repeated measures</td>
<td>10</td>
<td>Determine which nine outcome variables that measure efficient, flexibility, balance, and anxiety and depression would be most responsive to an eight-week adaptive Hatha yoga program for individuals with PD.</td>
<td>Significant improvement in both extremity flexibility.</td>
<td>Small sample size - No control for confounding variables like comorbidities</td>
<td></td>
</tr>
<tr>
<td>Colpo et al. (2012)</td>
<td>RCT</td>
<td>13</td>
<td>To assess the feasibility for the use of Hatha-based yoga in people with PD, and to gather preliminary data on the effect of yoga on functional motor performance.</td>
<td>Significant improvements in balance and overall motor function.</td>
<td>Small sample size - No control for confounding variables like comorbidities</td>
<td></td>
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</tbody>
</table>

DISCUSSION

- Studies with statistically significant results

<table>
<thead>
<tr>
<th>Key findings</th>
<th>Limitations</th>
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</thead>
<tbody>
<tr>
<td>All studies found an evaluated therapeutic benefit of yoga in helping with the management of physiological and psychological symptoms in patients with PD.</td>
<td>Small sample size</td>
</tr>
<tr>
<td>All studies found an improvement in the Motor Examination Scale in UPDRS.</td>
<td>Small sample size</td>
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<tr>
<td>5 studies established an improvement in balance.</td>
<td>Small sample size</td>
</tr>
<tr>
<td>4 studies found a positive association in physiological symptoms, such as decreasing depression and inclusion anxiety following the yoga intervention</td>
<td>Small sample size</td>
</tr>
<tr>
<td>2 articles found an improvement in Single Leg Stance (SLS) but was not statistically significant</td>
<td>Small sample size</td>
</tr>
</tbody>
</table>

- Longer observational period

- Conducted at the same time of day and in community centres

CONCLUSION

This structured literature review examined the effect of a yoga intervention program on the psychological and physical symptoms in individuals diagnosed with PD. As shown in this study, there is strong consensus between articles that yoga can contribute to an improvement in motor skills, balance and quality of life. These findings, yoga could be used as a complimentary treatment method. Nevertheless, further research is necessary to validate and generalize the results of using yoga as a therapy for Parkinson’s disease.

REFERENCES

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Funding sources

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Conflict of interest

None declared.

Ethical approval

The study was conducted in accordance with a protocol approved by the University of Ottawa’s Research Ethics Board.

Communication

This study was presented at the Canadian Geriatric Society’s 2017 Congress and at the 2017 Canadian Society of Epidemiology and Biostatistics Annual Meeting.

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