

A Scoping Review: Associations Between Assistive Device (AD) Use And Fall Risk in People with Parkinson's (PwP)

Peter Choi, SPT,¹ Alexandra Ruelo, SPT,¹ Elisabeth Schneider, SPT,¹ J. Lucas McKay, P.h.D., M.S.C.R.^{2,3,4}

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Background and Purpose

Prospective studies have shown that over 50% of people with Parkinson's (PwP) fall at least once per year, with over half of these individuals falling more than once¹. Research has shown assistive devices (AD) to be beneficial for preventing falls in the older population². Anecdotally, PwP often express hesitancy to use AD's because of a common misperception that AD use may increase, rather than decrease, fall risk.

Objective

To investigate the availability of literature describing the association between AD use and falls in PwP.

Methods

- A scoping review was performed in accordance with the Arksey and O'Malley framework.
- 3 independent PubMed searches were performed
- The studies were then organized in REDCap and analyzed by one researcher
- The studies were summarized by participants/population, concept, and context
- 3 criteria used to determine study eligibility (Table 1)

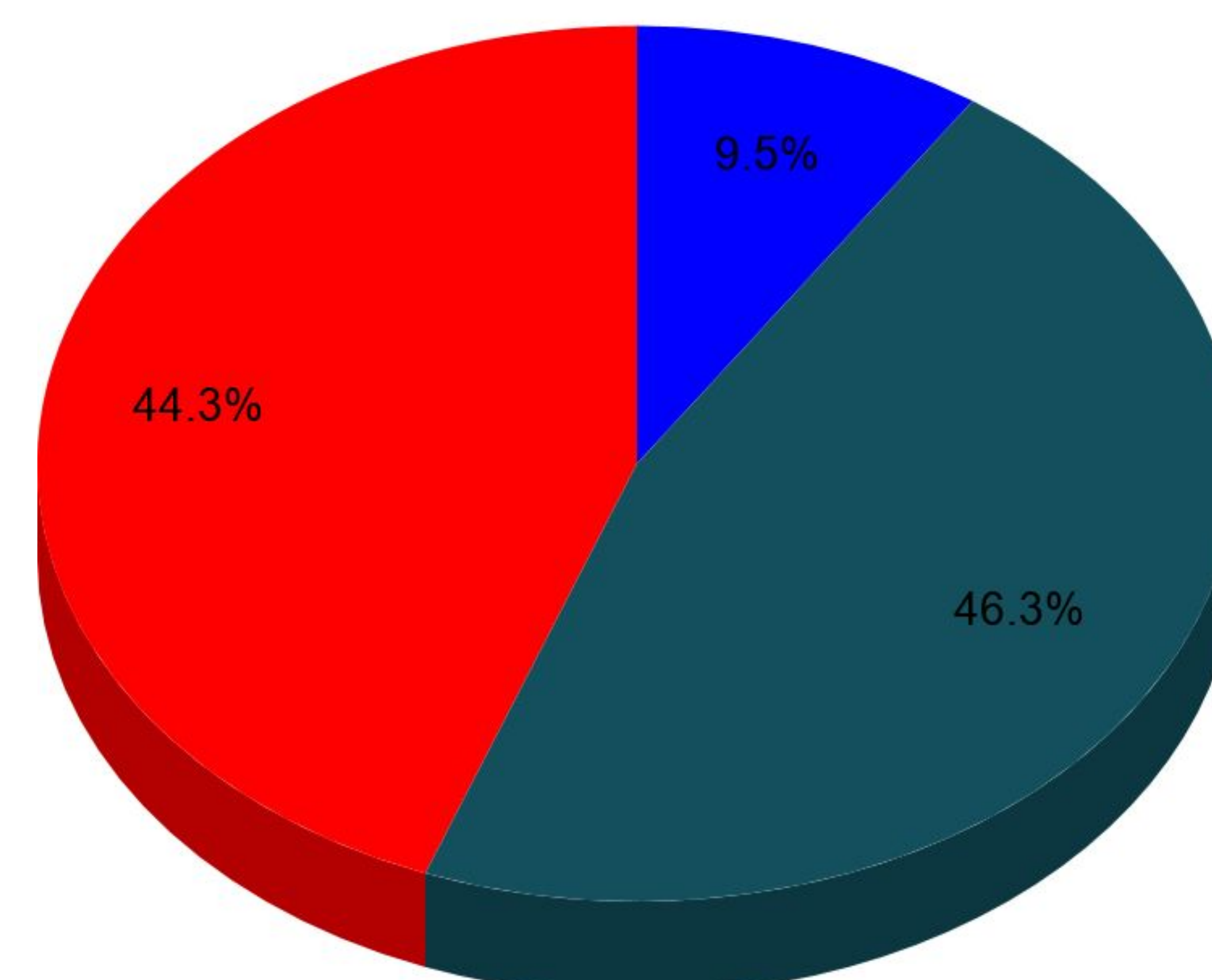
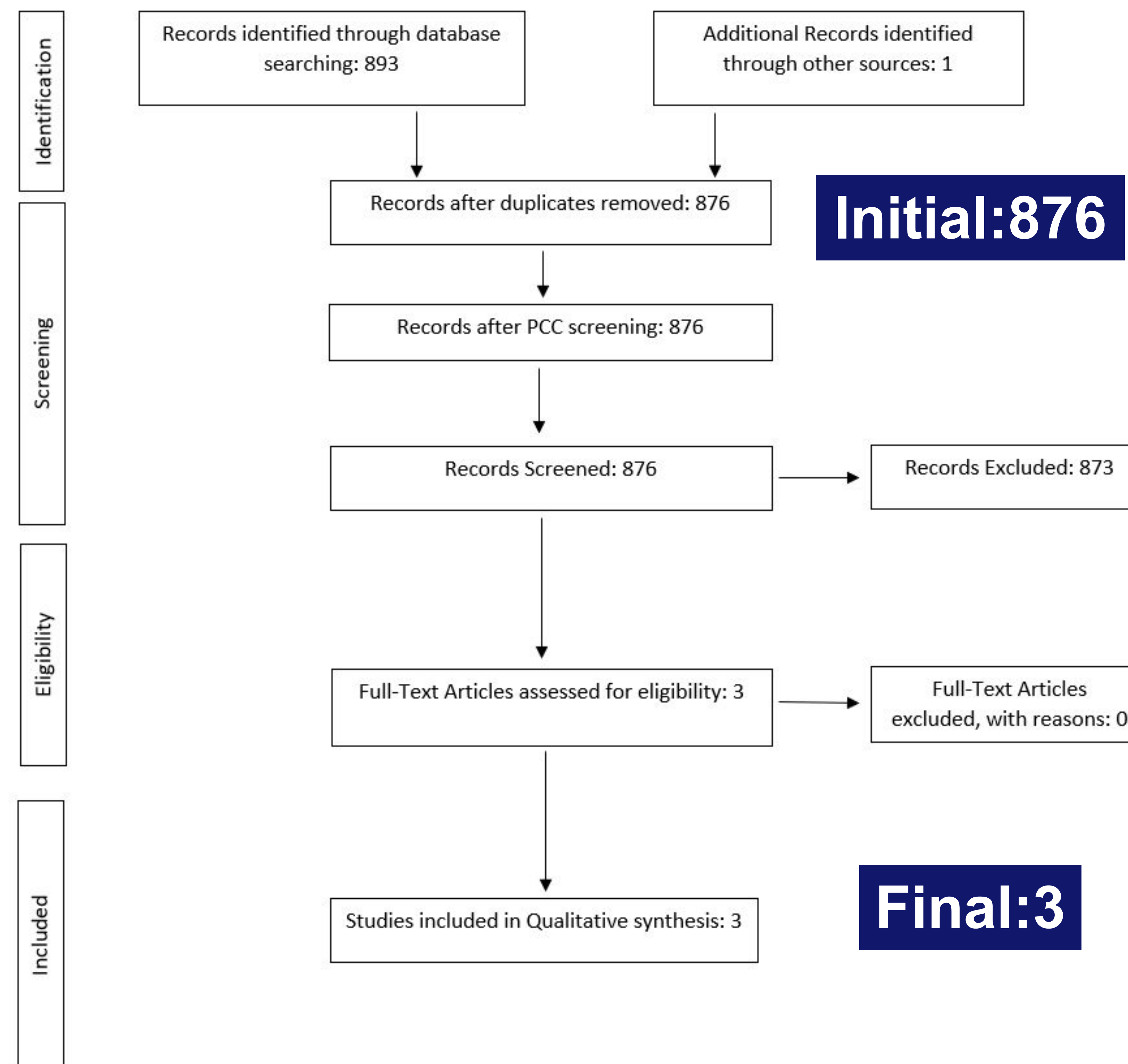
Table 1. Inclusion Criteria

- The population must include Parkinson's (PwP)
- Falls are included as an outcome
- The study involves a physical assistive device, rather than a device which solely provides cueing or other assistive cues, serves to immobilize a joint, such as an AFO, or other (neuro) prosthetic

- Studies that met all 3 inclusion criteria were read and analyzed by each researcher

Results

Of 876 articles screened, 3 articles met the inclusion criteria



- PwP not included
- No AD Used
- Falls not an Outcome Measure

Most studies did not include either falls or AD's

Articles that Met Inclusion Criteria

Study	Participants/Population	Concept	Context	Summary
Kegelmeyer et. al, Gait Posture, 2012 ³	PwP	The study examined the impact of a broad range of assistive devices on gait measures during walking in both a straight path and around obstacles	Randomized Controlled Trial	<ul style="list-style-type: none"> • FWW can provide safe and smooth gait for PwP • Standard walkers, two-wheeled walkers, U-step walker, and 4WW may be safer than canes or no AD for PwP
Boonsinsukh et. al, Physical Therap, 2012 ⁴	14 PD patients and 11 Without PD	Evaluate effects of cane use on postural recovery from a slip	Randomized Controlled Trial	<ul style="list-style-type: none"> • PwP have poorer postural stability • PwP benefit from cane use
Manis et. al, BMC Geriatrics, 2020 ⁵	Home-care geriatric clients, including PwP	Analysis of RF in homecare that contribute to falls	Population based, Cross Sectional study	<ul style="list-style-type: none"> • Found associations between personal factors and falls in home health patients • PwP were more likely to fall when using a cane compared to without

Qualitative Synthesis

1. No evidence that shows AD use increases falls in PwP
2. The 3 relevant studies provided conflicting results about assistive devices and falls in PwP
3. A common theme found in previous studies was lack of formal education for patients using an AD⁶
4. Prior studies associate AD use and falls in elderly people, but the association is not necessarily causal^{6, 7, 8}
5. Certain studies have perpetuated the notion that using an AD could cause falls^{6, 7, 8}
6. There is a gap in the existing research relating to the association between assistive devices and falls in PwP

References

1. Pelicioni PHS et. al, Int J Environ Res Public Health, 2019
2. Cruz AO et. al, Disabil Rehabil Assist Technol, 2020
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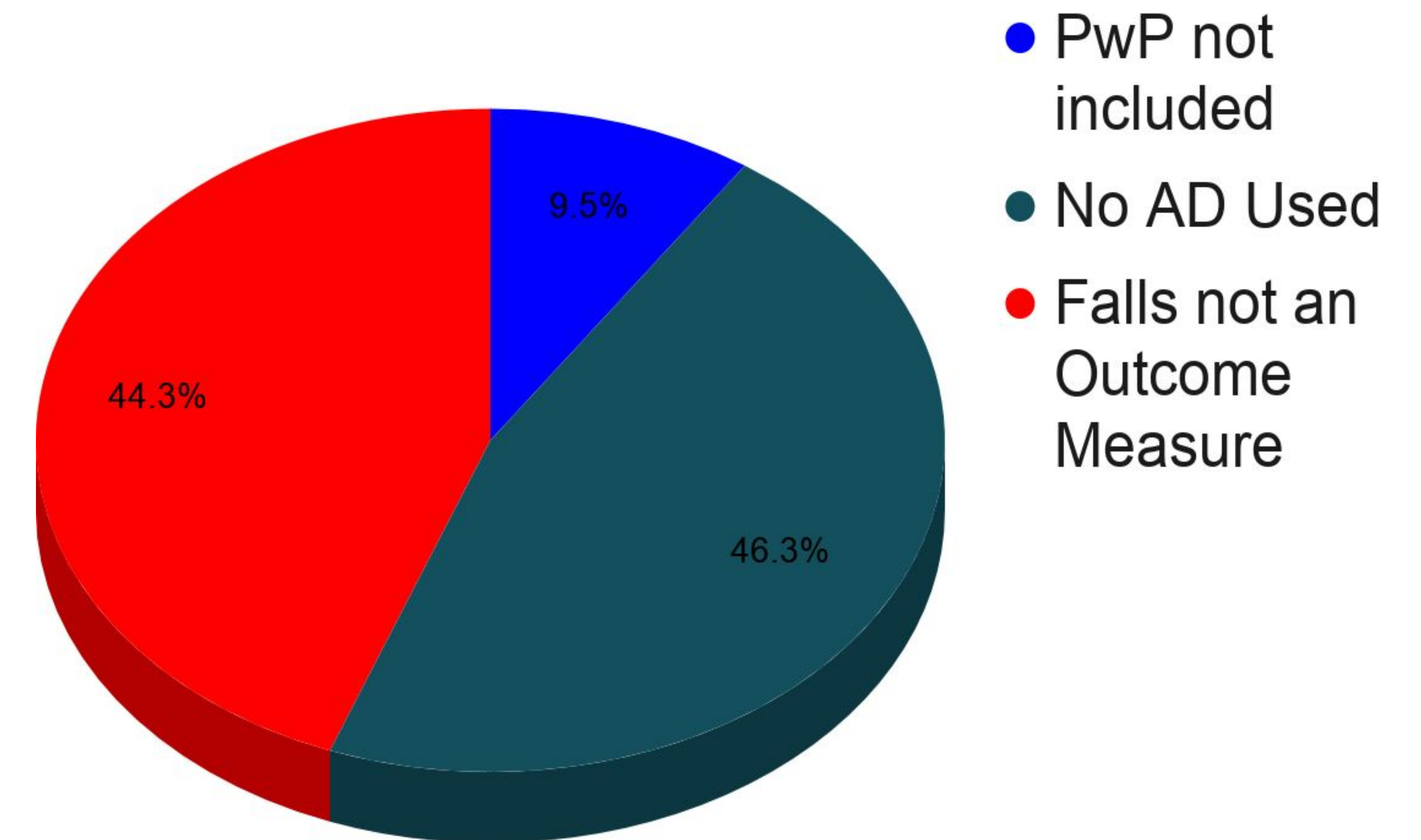
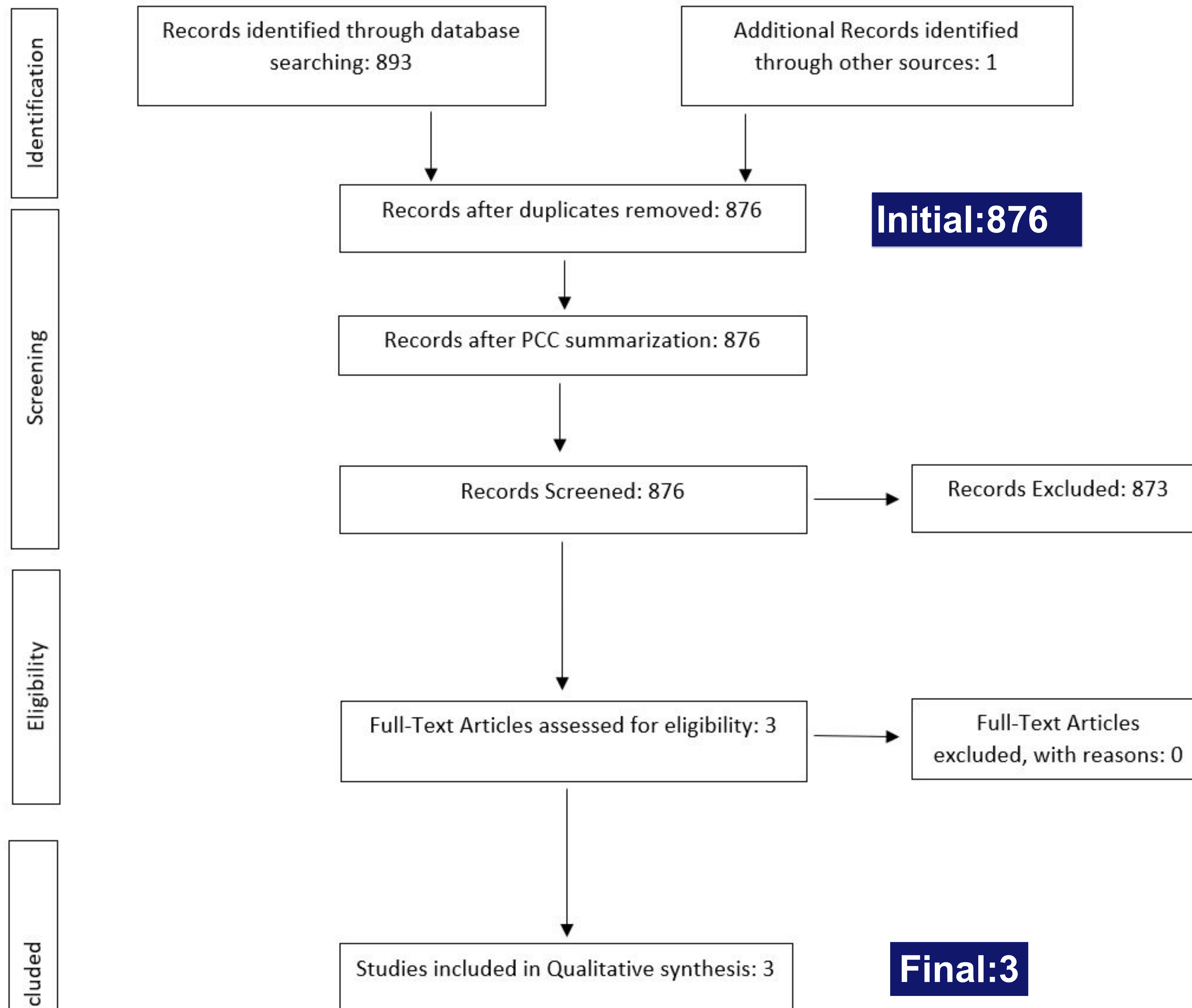
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- The team utilized 3 criteria to determine study eligibility

Table 1. Inclusion Criteria

- The population must include Parkinson's (PwP)
 - Falls are included as an outcome
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- If the studies answered yes to all three of the inclusion criteria, they were then read and analyzed by each researcher

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6. There is a gap in the existing research relating to the association between assistive devices and falls in PwP

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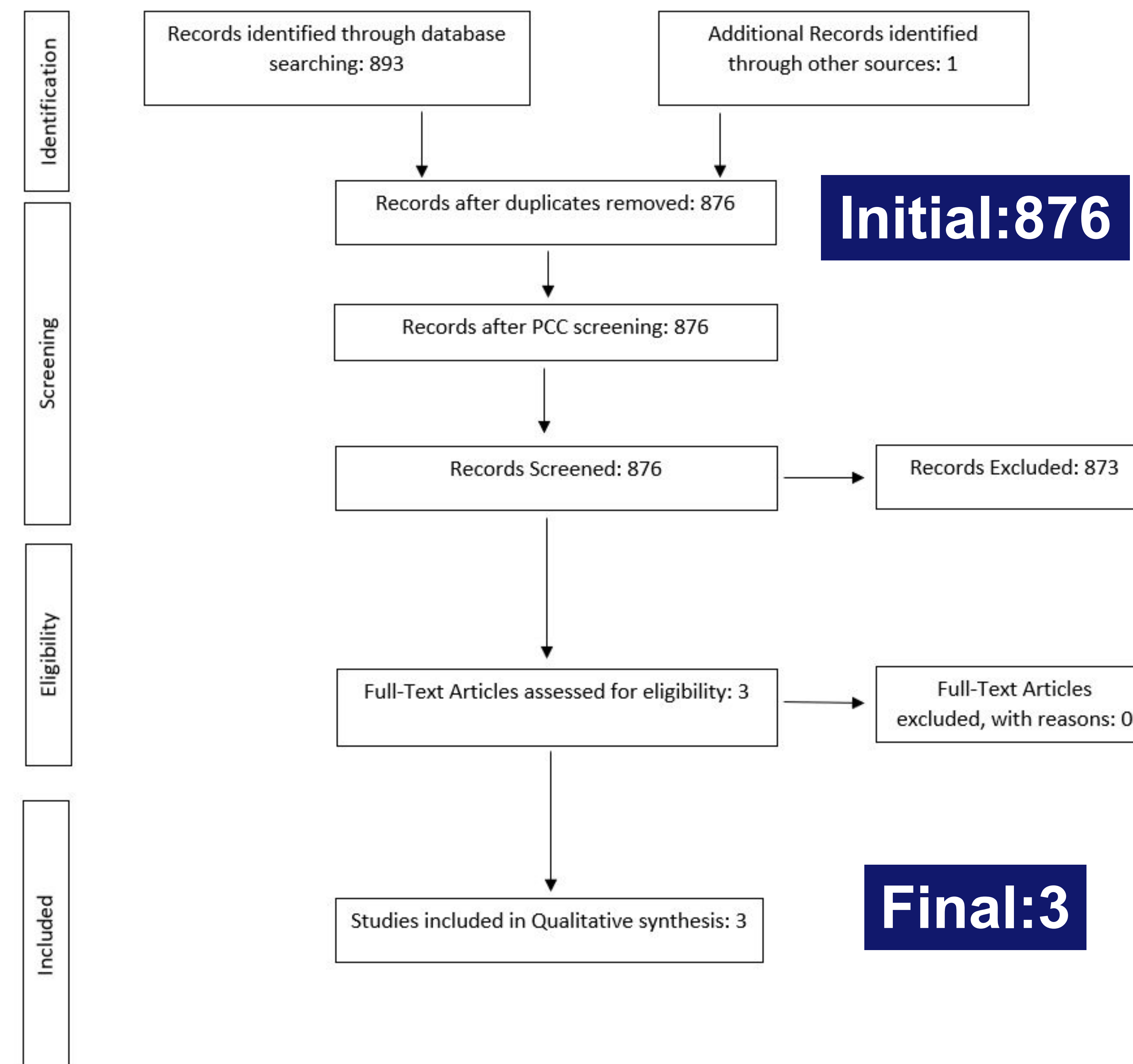
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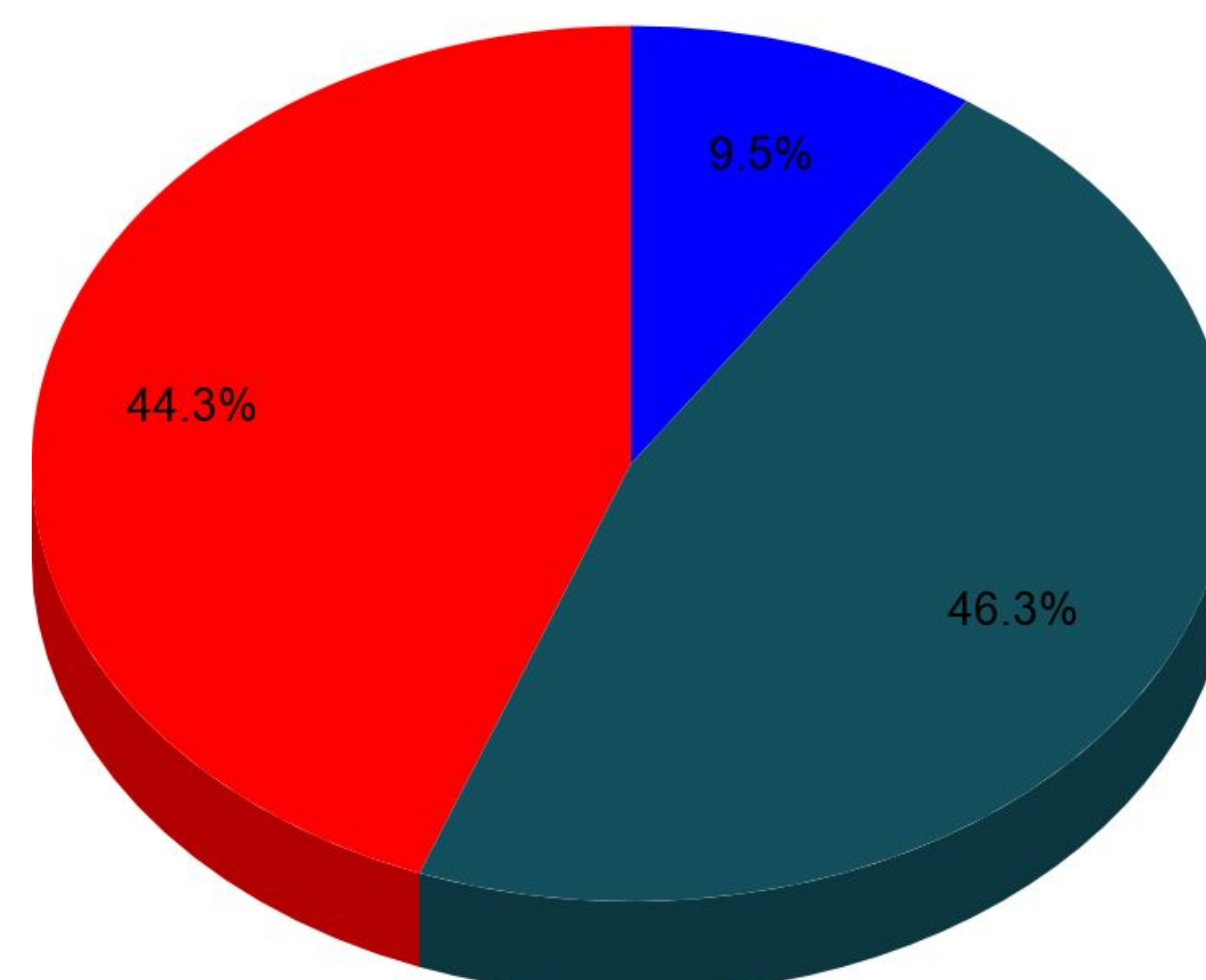
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Initial:876

Final:3



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