International Centre for Allied Health Evidence

University of South Australia

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iCAHE

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*i*CAHE JC Critical Appraisal Summary

Journal Club Details

Journal Club location	ECH – Greenacres
JC Facilitator	Ruth Dignam
JC Discipline	Multi-D
CAT completed by:	Matt Ransom

Question

How effective are square stepping exercises on balance and agility in the older adult

Review Question/PICO/PACO

P Older adults

I Square stepping exercises

C N/A

O Balance, agility, cognition and falls outcomes

Article/Paper

Miorelli, G. and Nelson, M., 2016. The Effects of Square-Stepping Exercise on Risk of Falling and Balance in Senior Adults.

Please note: due to copyright regulations CAHE is unable to supply a copy of the critically appraised paper/article. If you are an employee of the South Australian government you can obtain a copy of articles from the DOHSA librarian.

Article Methodology: Pre-post

Click here to access critical appraisal tool

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Ques No.	Yes	Can't Tell	No	Comments
1	✓			**Was the purpose stated clearly?** The purpose of the study was to evaluate the effect of a 10-week Square-Stepping Exercise (SSE) program in older adults using the Biodex balance system.
2	✓			**Was relevant background literature reviewed?** Articles reviewed background literature on types of balance training and square stepping exercise. Pages 2-10.
3			✓	**Describe the study design. Was the design appropriate for the study question?** Pre-post test design with no control group. Low on hierarchy of evidence – could have been done with better methodology.
4	✓ ✓		✓	**Was the sample described in detail?** Older adults over the age of 60 and specifically recruited from the Senior Jackets exercise program at Cedarville University. Eleven older adults participated in the study (0 males, 11 females). - Unsure why they wouldn't mention older women then in title and throughout analysis. No more info on demographics or comorbidities etc. **Describe ethics procedures. Was informed consent obtained?** All study participants gave informed consent prior to beginning the study.
5		✓		**Specify the frequency of outcome measurement (i.e., pre, post, follow-up)** Pre-post – 10 weeks **Were the outcome measures reliable? Were the outcome measures valid?** A highly effective instrument for measuring balance abilities is the Biodex Balance System, which is able to analyze balance through assessing neuromuscular control by quantifying the ability to maintain dynamic bilateral and unilateral postural stability on a static or unstable surface (Biodex Medical Systems, 2012). This system is extremely versatile and is the only system to provide a fall-risk screening for older adults. - Would like to see more info on reliability and validity Some more information provided under outcome measures section

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6	✓			**Intervention was described in detail?** The program was held twice a week (Tuesdays and Thursdays) for one-hour sessions, and took place in the aerobic room in the fitness center at Cedarville University. Each session included a five minute dynamic warm up, a 35 to 40 minute square-stepping workout, and a five minute cool-down involving static stretches for the lower extremities. The Square-Stepping Exercise (SSE) program involved a series of forward, backward, lateral, and diagonal steps on a mat with 40 squares; each square was 10 inches by 10 inches. Participants were asked to complete each pattern at a comfortable pace, and to walk on the balls of their feet with their heels off the mat. There were six different levels of square-stepping used; junior, basic, semi-regular, regular, senior, and master or challenge. Over 35 different patterns were used. The patterns were adapted from Dr. Shigematsu, creator of SSE (2008). The complexity of the patterns increased progressively as the weeks went on. Each participant had to successfully complete each pattern three to five times before moving on to the next pattern. Each week, two to three new, more complex patterns were introduced.
7	✓			**Results were reported in terms of statistical significance?** Yes **Were the analysis method(s) appropriate?** Yes – see statistical analysis section **What was the clinical importance of the results?** Journal Club to Answer.
8	✓			**Did any participants drop out from the study?** One participant withdrew from the study due to medical problems. - No intention to treat analysis conducted

9	Journal Club to discuss	**Can the results be applied to the local population? Choose relevant context issues. The following are only suggestions to prompt discussion.** **CONTEXT ASSESSMENT** – *Infrastructure* – *Available workforce (? Need for substitute workforce?)* – *Patient characteristics* – *Training and upskilling, accreditation, recognition* – *Ready access to information sources* – *Legislative, financial & systems support* – *Health service system, referral processes and decision-makers* – *Communication* – *Best ways of presenting information to different end-users* – *Availability of relevant equipment* – *Cultural acceptability of recommendations* – *Others*
10		**Were all important outcomes considered?**
11		**Are the benefits worth the harms and costs?**
12		**What do the study findings mean to practice (i.e. clinical practice, systems or processes)?**
13		**What are your next steps?** ***ADOPT, CONTEXTUALISE, ADAPT*** **And then (e.g. evaluate clinical practice against evidence-based recommendations; organise the next four journal club meetings around this topic to build the evidence base; organize training for staff, etc.)**
14		**What is required to implement these next steps?**

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