TEAM BALL SPORT FOR OLDER ADULTS – A SPECIFIC APPROACH TO HEALTHY AGEING
A systematic literature review by Hanna Wagner

INTRODUCTION
Life expectancy of the elderly population is rising, which increases mortality rates and chronic diseases (1). One of the main risk factors of developing chronic diseases is physical inactivity (2).

Currently, strategies to counter physical inactivity in older adults are limited. Therefore, a specific intervention within a strategic approach is needed.

Healthy ageing is a strategic approach, which supports the development and maintenance of four domains. These are: optimal mental, social, and physical well-being and physical functioning (3).

In children, team ball games are proven to be effective (4,5). Generally, group-based interventions have positive effects in children, as well as in older adults (6–8). Hence, this type of intervention could positively influence healthy ageing in older adults.

Therefore, it is worthwhile researching specific approaches of team ball games in older adults, which aim to decrease physical inactivity and support the approach of healthy ageing.

THE RESEARCH QUESTION IS:
What is the influence of specifically designed team ball games on the domains of healthy ageing in older adults?

METHODS
- Databases: PubMed and Embase.
- Keywords: “elderly”, “older adults”, “ball sports”, “team sports”
- Data selection: Studies were screened on title, abstract and full-text. Duplicates were excluded. References tracking of included articles was done.
- Quality Assessment: Done with the adjusted Downs and Blacks Checklist.
- Data Extraction and Synthesis: All adverse or positive outcomes influencing the healthy ageing domains are included.
- Best Evidence Synthesis: Done per domain of healthy ageing with the adapted version of the Agency for Healthcare Research and Quality.

RESULTS
Search in PubMed and Embase yielded 191 potential relevant articles. After screening title, abstract, and full text 6 studies with 5 different ball games were included. Authors, ball games, methodological quality, and Downs and Blacks appraisal scores are presented below (Table 1).

<table>
<thead>
<tr>
<th>AUTHOR</th>
<th>GAME</th>
<th>QUALITY</th>
<th>SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vorup et al.</td>
<td>Lifeball</td>
<td>Fair</td>
<td>15/27</td>
</tr>
<tr>
<td>Pederson et al.</td>
<td>Small-sided Floorball, Cone ball</td>
<td>Good</td>
<td>22/27</td>
</tr>
<tr>
<td>Reddick et al.</td>
<td>Small-sided Floorball, Cone ball, hula-goal</td>
<td>Fair</td>
<td>16/27</td>
</tr>
<tr>
<td>Green et al.</td>
<td>Lifeball</td>
<td>Fair</td>
<td>16/27</td>
</tr>
<tr>
<td>Holt et al.</td>
<td>Lifeball</td>
<td>Fair</td>
<td>15/27</td>
</tr>
<tr>
<td>Arnold et al.</td>
<td>Walking Football</td>
<td>Fair</td>
<td>16/27</td>
</tr>
<tr>
<td>Teddy et al.</td>
<td>Walking Football</td>
<td>Fair</td>
<td>15/27</td>
</tr>
</tbody>
</table>

The main effects of ball games on older adults are presented below.

The result of the best evidence synthesis (BES) is stated with each domain. All results displayed are significant with p<0.05.

1. Optimal mental well-being (10,11,14):
   - Increase of self perceived health
   - Increase of quality of Life
   - BES: weak overall evidence

2. Optimal social well-being (10–12):
   - Improvement of social life
   - Decrease of social isolation & loneliness
   - BES: weak overall evidence

3. Optimal physical well-being (9–12):
   - Decrease of sitting time during the day of the intervention
   - Unvarying physical activity level
   - BES: limited overall evidence

4. Optimal physical functioning (9,10,13,14):
   - Decrease of total fat mass
   - Decrease of mean arterial pressure
   - Decrease in HR at rest
   - Improvement in functional performance tests
   - Increase in time-to-exhaustion
   - BES: limited overall evidence

DISCUSSION & LIMITATIONS
The investigated team ball games could have a significant influence on all four domains of healthy ageing. This is due to increased intrinsic motivation and socialization with other players (6).

Additionally, physiological parameters are adequately challenged (15–18) due to individualised ball games that balance the intense activity of a group sport while maintaining safety through adjusted rules.

These effects could positively influence: risk factors for cardiovascular diseases, daily physical functioning, physical activity level, long-term participation, health and quality of life. Their main strengths and weaknesses of the review are presented in the table below (Table 2).

<table>
<thead>
<tr>
<th>STRENGTHS</th>
<th>WEAKNESSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methodological approach</td>
<td>Categorization bias</td>
</tr>
<tr>
<td>Multiple study designs</td>
<td>Multiple study designs</td>
</tr>
<tr>
<td>Variety in age and ball games</td>
<td>Variety of outcome measures</td>
</tr>
</tbody>
</table>

RECOMMENDATIONS
- Care givers or sport clubs could offer team ball games to increase the applicability of enjoyable physical activity and promote healthy ageing of older adults.
- Each ball game should be researched with high quality study designs.
- Playing intensity has to be investigated in each sport to equally challenge the capacity of older adults. Thus, comparability of the ball games can be ensured.
- Sample population should focus on participants with lower baseline physical activity level.
- A consistent use of the definition of healthy ageing should be applied.

CONCLUSION
Specifically designed team ball games manage to positively influencing all four domains of healthy ageing in older adults.

All in all, team ball games are an activity that have a vast potential for generalisability. Therefore, making it accessible to the wide population will stimulate healthy ageing, and hence decrease the incidence of chronic conditions in the older population.

CONTACT DETAILS
Author: email: hanna-wagner@web.de; mobile: 0031620059737;
Client: Ballschule Heidelberg, S. Feißt
ACKNOWLEDGEMENTS
Supervisor: T. Koppenaal, Msc.
REFERENCES
Can be seen on the reference sheet.
POSTER REFERENCES


4. Ballschule P. "Ballschule - leicht gemacht". 2010;


