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Effectiveness of Gait Training on Gait Speed of Elderly: A Meta-Analysis of RCTs

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Background: In recent years, increased physical activity or regular exercise training has been proposed as preventive strategies for disability. Especially, gait speed in itself is considered a simple indicator of health status and of survival in elderly. The process of normal aging leads to a gradual degeneration of physical mobility and mental cognition, thereby increasing elders' risk of developing gait-related diseases. In addition, gait- and motor-related diseases are positively correlated with elders' mortality; thus, gait training for elderly is extremely important. However, no meta-analyses have been conducted on the effects of gait training among elderly.

Purpose: To investigate the effect of gait training on gait speed of elderly.

Methods: PubMed, Cochrane Library, Medline, EMBASE and Web of Science of selected randomized controlled trials (RCTs) were searched for eligible studies. Because there were no consistent terms for training that incorporates gait exercise, in this study, we use the term "gait training" to describe any training program aimed primarily at improving gait performance. The population focused on this study were elderly who participated in RCTs that investigated the effectiveness of gait training. This study adopted the standards defined in the Cochrane Handbook for Systematic Reviews of Interventions, adopting quality appraisals such as random sequence generation, allocation sequence concealment (selection bias), blinding of participants and personnel (performance bias), blinding of the outcome assessment (detection bias), incomplete outcome data (attrition bias), selective outcome reporting (reporting bias), and other potential sources of bias. The outcomes of this study is gait speed. Additionally, we used subgroup analysis and meta-regression to determine which variables (e.g., training frequency, characteristics of participants, or study quality) would be the most effective and significant.

Results: We collected a total of 10 RCTs, the results showed that gait training has a moderate effect on gait speed ($g = -0.761$). Subgroup analysis and meta-regression indicated that the effect size of the age score was the most crucial indicator ($p = 0.017$).

Conclusion: This is the first meta-analysis to examine the gait training on gait speed of elderly. Gait training is effective on gait speed for elderly. This improvement can represent a clinically important benefit, provide information about the use of gait training in elderly, and help the older people obtain the greatest possible benefit in health promotion and disease prevention.

Title:

Effectiveness of Gait Training on Gait Speed of Elderly: A Meta-Analysis of RCTs

Keywords:

elderly, gait and meta-analysis

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Abstract Summary:

Gait training has a moderate effect on gait speed. Subgroup analysis and meta-regression indicated that the effect size of the age score was the most crucial indicator. Gait training can help the older people obtain the greatest possible benefit in health promotion and disease prevention.

Content Outline:

1. **Background:** No meta-analyses have been conducted on the effects of gait training among elderly.
2. **Objective:** To investigate the effect of gait training on gait speed of elderly.
3. **Methods:**
 - PubMed, Cochrane Library, Medline, EMBASE and Web of Science of selected randomized controlled trials (RCTs) were searched for eligible studies.
 - This study adopted the standards defined in the Cochrane Handbook for Systematic Reviews of Interventions.
 - Additionally, we used subgroup analysis and meta-regression to determine which variables would be the most effective and significant.
4. **Results**
 - Gait training has a moderate effect on gait speed ($g = -0.761$).
 - Subgroup analysis and meta-regression indicated that the effect size of the age score was the most crucial indicator ($p = 0.017$).
5. **Conclusion:**
 - Gait training has a moderate effect on gait speed.

- Subgroup analysis and meta-regression indicated that the effect size of the age score was the most crucial indicator.
- Gait training can help the older people obtain the greatest possible benefit in health promotion and disease prevention.

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Author Summary: Huei-Ling Chiu is an Assistant professor in the School of Gerontology Health Management. She is good at health promotion and disease prevention related research of elderly.