

Systematic Review of Physical Activity Interventions in Improving Body Composition in Individuals with Disabilities

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Introduction

- Prevalence of overweight and obesity among people with physical and intellectual disabilities is substantially higher than people without disabilities.
- As noted in the *2008 Physical Activity Guidelines for Americans*, healthy weight is one of the major outcomes of regular physical activity.

Purpose

- Examine the effects of physical activity on body composition in people with disabilities.
- Identify the characteristics of effective physical activity intervention on improving body composition in people with disabilities.

Methods

- Retrieved studies from two systematically searched databases developed by the National Center on Physical Activity and Disability at UIC and the Rehabilitation Research and Training Center on Health and Wellness at Oregon Health & Science University.
- Electronic Databases: PubMed, CINAHL, PsycINFO
- Inclusion Criteria:
 - Written in English
 - Published 1986 - 2007
 - Peer-reviewed
 - 11 disabilities of interest
 - Exercise as primary intervention
 - Outcome measures related to body composition
- Exclusion Criteria:
 - Rehabilitation/therapeutic exercise (e.g., body weight supported treadmill training)
 - Single bouts of exercise
 - Qualitative or case studies

Results

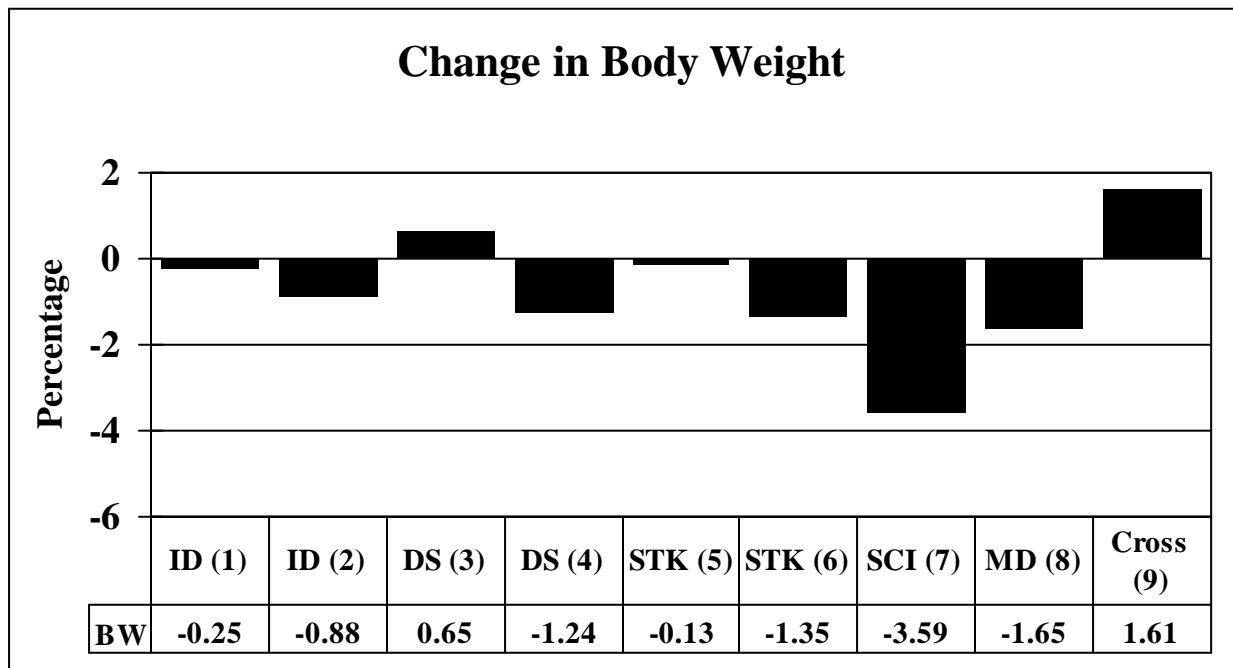
I. Overview

- 9 trials met the inclusion criteria.
- By research method
 - Randomized controlled trials (n=4)
 - Controlled trials without randomization (n=1)
 - Pre-post trials (n=4)

- By disability
 - Intellectual disability (n=2); Down syndrome (n=2)
 - Stroke (n=2); SCI (n=1); muscular dystrophy (n=1); crossed disability groups (n=1)
- By Intervention
 - Physical activity intervention only (n=5)
 - Physical activity plus nutrition intervention (n=4)

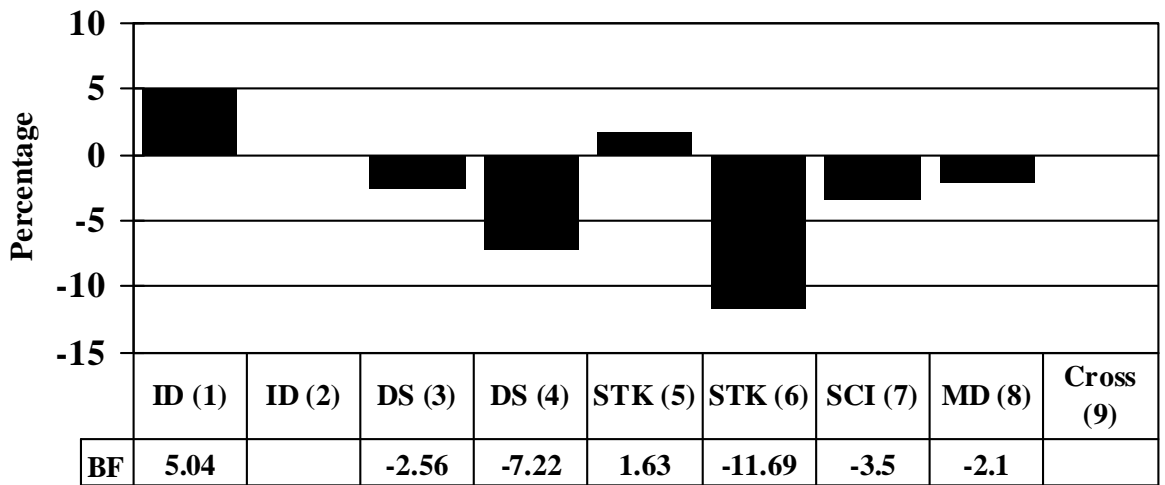
II. Effects of physical activity intervention on body composition

The following figures display changes in body weigh, body fat, waist girth, and lean body mass across studies.

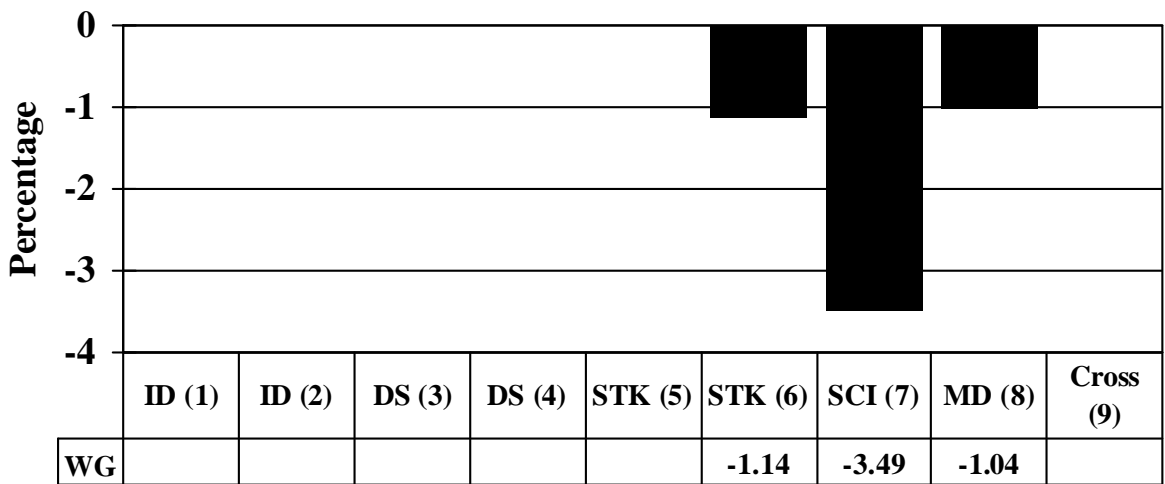


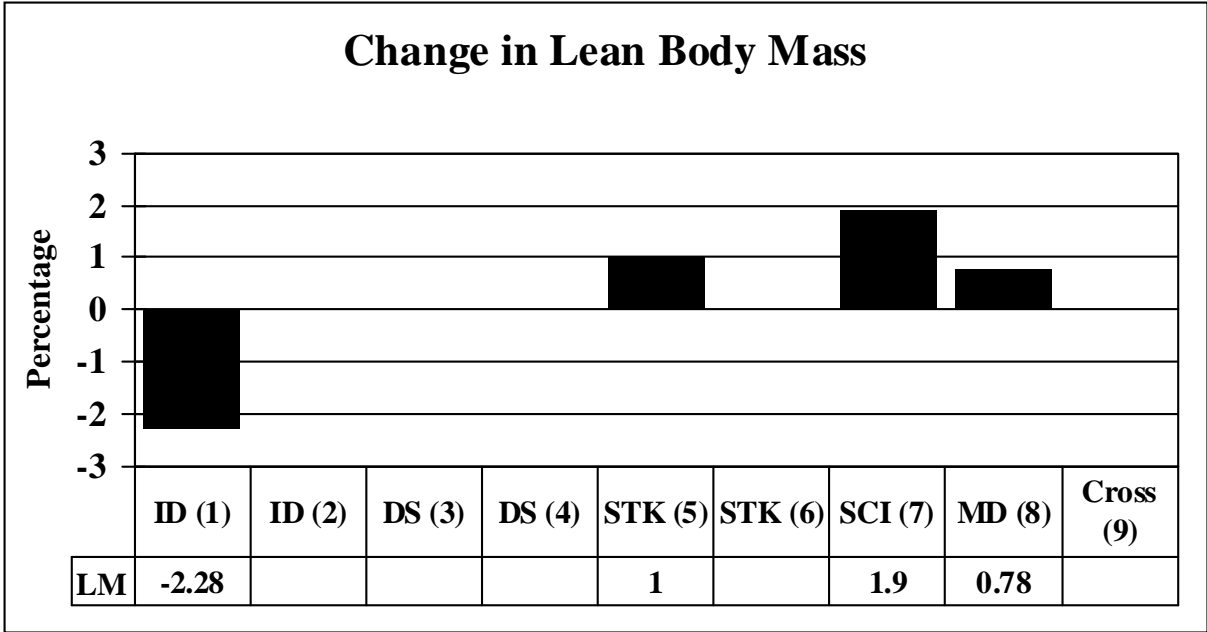
Criteria of weight loss: weight maintenance (1%~3%); small fluctuation (3%~5%); weight loss clinical significance (> 5%)

Change in Body Fat

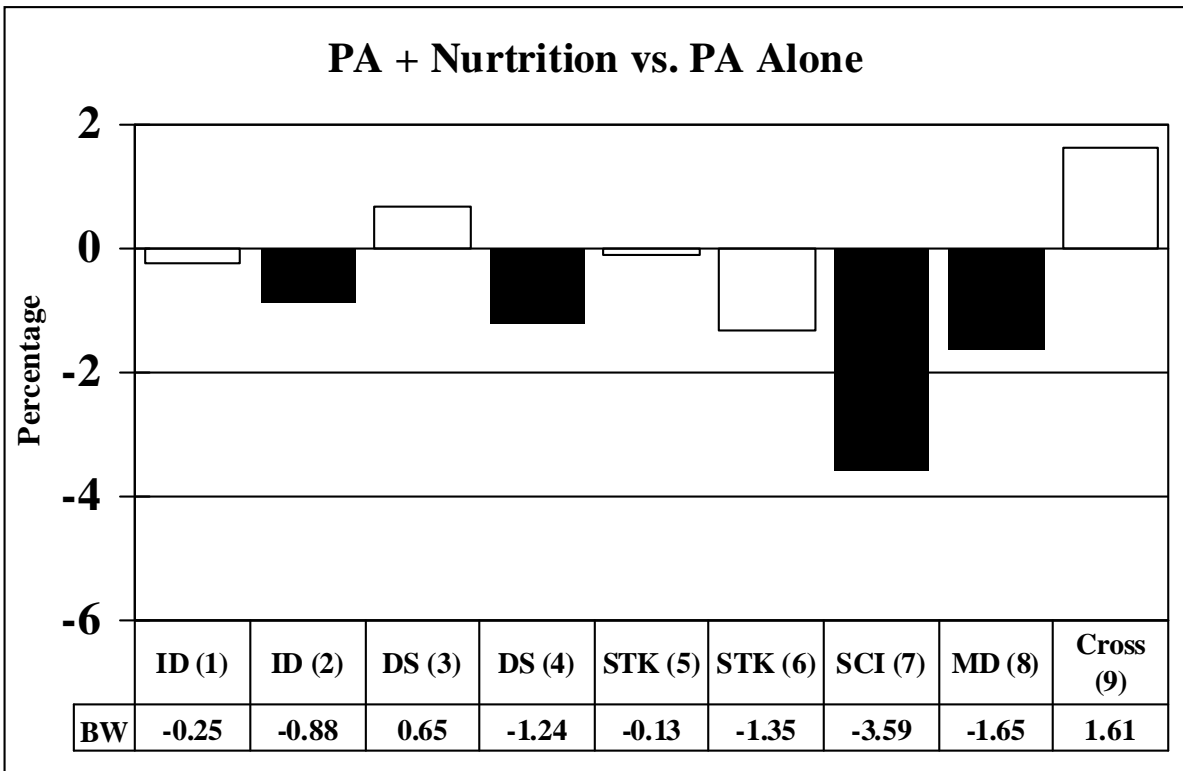


Change in Waist Girth



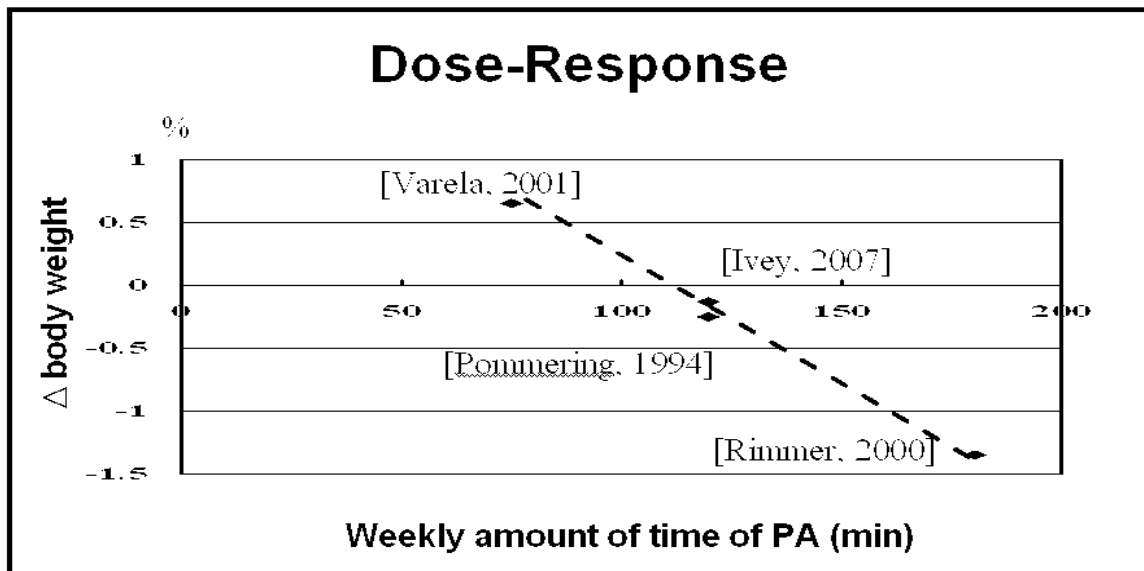


III. Characteristics of effective interventions



■ PA and Nutrition intervention; □ PA intervention

* Significant difference



Conclusion

- Insufficient evidence to support the use of physical activity to reduce body weight in people with disabilities.
- Major effects of physical activity interventions were more on weight management vs. weight loss.
- Physical activity interventions should be coupled with nutrition interventions for achieving weight loss.
- With controlling calorie intake, either doing moderate intensity structured exercise at gym or just being more lifestyle physically active such as walking more could be beneficial.
- Based on the dose-response curve, the greater weekly time spent in physical activity resulted in greater weight loss.

Recommendations

- Need more experimental studies targeting weight loss in obese individuals with disabilities.
- Future research should identify the characteristics of effective programs that improve body composition in obese adults with disabilities that combine physical activity and nutrition.

Studies Included

1. Pommering *et al.*, 1994. *Mental Retard* 32(3): 218-26
2. Mann *et al.*, 2006. *Am J Mental Retard* 111: 62-73
3. Varela *et al.*, 2001. *Am J Mental Retard* 106 (2): 135-44
4. Rimmer *et al.*, 2004. *Am J Mental Retard* 109 (2): 165- 74
5. Ivey *et al.*, 2007. *Stroke* 38 (10): 2752-8
6. Rimmer *et al.*, 2000. *Med Sci Sports Exer* 32 (12): 1990-6
7. Chen *et al.*, 2006. *Spinal Cord* 44(2): 82-91
8. Kilmer *et al.*, 2005. *Arch Physical Med Rehabil* 86 (11): 2150-6
9. Froehlich-Grobe *et al.*, 2004. *Arch Physical Med Rehabil* 85 (4): 640-8

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