



# The Effects of Exercise on Physical, Psychosocial, and Cardiovascular Functioning in Individuals with Mild to Moderate Intellectual Disabilities

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## INTRODUCTION

Some authors have advocated that for adults with intellectual disability, participation in exercise programs has positively impacted physical performance and psychosocial functioning.

## PURPOSE

The purpose of this systematic review was to examine the effects that exercise has on the physical, psychosocial, and cardiovascular functioning of individuals with mild to moderate intellectual disabilities.

## METHODS

Articles were selected following a comprehensive search of 4 databases (PubMed, CINAHL, ProQuest and Google Scholar) for randomized control trials (RCTs) published from January 1990 to January 2014. Inclusion criteria involved individuals with Down Syndrome or mild to moderate intellectual disabilities, men or women 18 years of age and older, and RCTs and Non-RCTs examining the effects that exercise has on the physical, psychosocial, and cardiovascular functioning. Exclusion criteria involved individuals with intellectual disabilities less than 18 years of age. Three independent reviewers used the validated Physiotherapy Evidence Database (PEDro) scale to evaluate the methodological quality of the included studies.

## RESULTS

Sixteen studies met the inclusion criteria of this systematic review. The mean PEDro quality score was 6.3 with a standard deviation of 1.5 and range from 5 to 8. Of the 453 individuals included in these studies, 293 individuals received an exercise intervention and 160 individuals served as controls. The age range of these individuals was 18-65 years of age with a mean age of 37.9. Intervention studies included a variety of different types of physical activities, including walking, bicycle ergometry, dancing, resistance training of the upper and/or lower body, balance activities, and plyometric activities. The most commonly assessed outcomes included muscle strength, endurance, balance, anxiety, and quality of life. Notable evidence revealed that physical activity positively affected physical fitness, psychosocial attributes, and cardiovascular health. While several studies demonstrated significant improvements in muscle strength and balance with a variety of different training activities, the two studies that examined cardiovascular functioning following aerobic training demonstrated significant improvements in heart rate and peak VO2 rates. In general, significantly greater improvements in anxiety and overall quality of life were seen for individuals who participated in exercise interventions compared to controls. There were no adverse effects on the participants in any of the studies.

Databases: PubMed, CINAHL, Google Scholar, and ProQuest Central

Search Terms: Mental Retardation, intellectual disabilities, Down Syndrome, Quality of Life, cardiovascular, physical activity

Inclusion criteria: RCTs, Non-RCTs, 18 yrs. and older, individuals with ID and DS, Examine effects that exercise has on physical, psychosocial or cardiovascular function



## CONCLUSIONS

Based on the finding of this systematic review, there is evidence to support the physical, psychosocial, and cardiovascular benefits of exercise on individuals with mild to moderate intellectual disabilities.

## CLINICAL RELEVANCE

Health maintenance through regular physical activity is vital for adult individuals with intellectual disabilities. Further research is needed to determine optimal exercise programming and dosages for individuals with intellectual disabilities.

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\*PEDro scores bolded at end of each reference



Study	Eligibility Criteria	Random Allocation	Concealed Allocation	Baseline Comparison	Blind Subjects	Blind Therapists	Blind Assessors	Adequate Follow-Up	Intention-to-Treat Analysis	Between Groups Comparison	Point Estimate & Variability	PEDro Score
Carmeli et al., 2002	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	8/10
Carmeli et al., 2004	Y	N	N	Y	Y	N	N	Y	Y	Y	Y	6/10
Carmeli et al., 2005	Y	N	N	Y	Y	N	Y	Y	Y	Y	Y	8/10
Heller et al., 2004	Y	Y	Y	Y	N	N	N	Y	Y	Y	Y	7/10
Rimmer et al., 2004	Y	Y	Y	Y	N	N	N	Y	Y	Y	Y	7/10
Shields et al., 2008	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	8/10
Tsimaras et al., 2004	Y	N	N	Y	N	N	N	Y	Y	Y	Y	5/10
Varela et al., 2001	Y	Y	Y	Y	N	N	N	Y	Y	Y	Y	7/10
Carmeli et al., 2009	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	8/10
Cowley PM,2011	Y	N	N	Y	N	N	N	Y	Y	Y	Y	5/10
Calders P,2011	Y	Y	N	Y	N	N	Y	Y	N	Y	Y	6/10
Giagkoudaki F,2010	Y	N	N	Y	N	N	Y	N	Y	Y	Y	5/10
Hardoy MC,	Y	N	N	Y	N	N	N	Y	Y	Y	Y	5/10
Mendonca GV,2011	Y	N	N	Y	N	N	N	Y	Y	Y	Y	5/10
Carraro A,2012	Y	Y	Y	Y	N	N	N	Y	Y	Y	Y	7/10
Tsimaras VK,2012	Y	Y	N	N	N	N	N	N	Y	Y	Y	5/10

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