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# The effects of a Special Olympics Unified Sports Soccer training program on anthropometry, physical fitness and skilled performance in Special Olympics soccer athletes and non-disabled partners

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ABSTRACT

The study investigated the effects of a Special Olympics (SO) Unified Sport (UNS) soccer program on anthropometry, physical fitness and soccer skills of male youth athletes with and without intellectual disabilities (ID) who participated in a training group (TRG) and in a comparison group (CG) without specific training.

Youth with ID (WID) were randomly selected out of all the students between the ages 12 and 15, with a diagnosis of educable mental retardation and no secondary disabilities, who were attending a special education school. Participants without ID (WoID) were randomly selected from a regular secondary school out of the same age groups of male students. All participants were given permission by their parents or guardians to participate in the study. Participants in the TRG included 23 youth WID and 23 youth WoID. Mean ages were = 14.1 (SD = 1.1) and 13.2 (SD = 0.79) respectively. Fifteen WID, and 15 WoID comprised the CG. Mean ages were 14.51 (SD = 0.81) and 13.78 (SD = 0.49) respectively. Prior to and following the program measurements were conducted, and data were collected on students' anthropometric and fitness components of the Brockport physical fitness test as well as a soccer skill performance based on the SO soccer skill test. Participants in the TRG trained 8 weeks, 1.5 h per session, three times per week, in an after-school soccer program. CG did not participate in any sports program outside of the school physical education class.

Dependent *t* tests and effect size calculations revealed that SO athletes and non-disabled partners scored significantly higher with regard to physical fitness and football skills in most variables compared with their CG.

This Unified Program was successful in increasing fitness and soccer skill performance of youth WID as well as of those WoID.



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## 1. Introduction

Compared to the typically developing population, persons with intellectual disability (ID) have been reported to exhibit a variety of health concerns including (a) higher BMI and obesity values (Bell & Bhate, 1992; Frey & Rimmer, 1995; Frey, 2004; Frey, Stanish, & Temple, 2008; Graham & Reid, 2000; Kelly, Rimmer, & Ness, 1986; Pitetti & Campbell, 1991; Rimmer, Braddock, & Fujiura, 1993); (b) lower cardiovascular fitness measured through their maximal oxygen consumption (Fernhall, 1993; Fernhall et al., 2001; Fernhall, Tymeson, Millar, & Burkett, 1989), and (c) reduced muscle strength and power (Croce, Pitetti, Horvat, & Miller, 1996; Fernhall & Pitetti, 2000). These health risks appear to increase over the years, particularly after graduation from school (Emerson, 2005; Graham & Reid, 2000; Lahtinen, Rintala, & Malin, 2007). However, in contrast to the flourishing research on exercise programs for adults with ID (see reviews in Andriolo, El Dib, Ramos, Atallah, & da Silva, 2010; Dodd & Shields, 2005; Heller, McCubbin, Drum, & Peterson, 2011), very few studies have involved youth with ID. One pilot program was conducted in a community based setting for a period of 8 weeks with a group of 18 adolescents, predominantly with ID and autism. The participants significantly improved their performance in curl-up, but not in other measures of the Presidential Fitness Test (Oriel, George, & Blatt, 2008). Another study in the USA examined the impact of a peer-guided YMCA-based exercise program lasting 15 weeks, for twice a week, on fitness and body composition of participants (Stanish & Temple, 2012), and one study in Turkey studied the impact of an inclusion school-based program on fitness of children with mental challenges (Berktaş et al., 2011). There is a need for collecting further data to evidence the impact of sport activity programs on fitness and skill performance on adolescents with ID. Special Olympics (SO) Unified Sport (UNS) is a year-round activity in a variety of competitive and recreational sports, which includes mixed groups of SO athletes and non disabled partners at a ratio of 50–60% athletes and 50–40% partners (Dowling, McCornik, & Hassan, 2009; Siperstein & Hardman, 2001). UNS is intended to provide children with and without ID continuing opportunities to develop physical fitness, skills and friendship with other SO athletes, their partners and the community (Special Olympics International, 2003). With the European Union and commercial enterprises as partners, SO Europe launched the Youth Unified Sports Development Project with UNS basketball and soccer programs for young people between the ages of 12–25 years, resulting in 2837 new young people joining the program, with 251 Unified soccer and basketball teams spread through 113 communities in 10 European countries (Special Olympics Europe/Euroasia, 2012).

Research conducted on UNS athletes and partners has mostly dealt with psycho-social aspects of the athletes with ID (Baran et al., 2012; Castagno, 2001; Dowling et al., 2009; Gencoz, 1997; Gibbons & Bushakra, 1989; Riggen & Ulrich, 1993; Rosegard, Pegg, & Compton, 2001; Wright & Cowden, 1986). In addition, Riggen and Ulrich (1993) also reported on the progress in basketball skills achieved over a period of 8 weeks. Another integrated environment for athletes with ID was investigated by Ninot, Bilard, Delignieres, and Sokolowski (2000) where groups of athletes with ID were integrated in an interscholastic competition program and tracked for a period of 8 months. Their research indicated that basketball and aquatic sports skills improved for individuals who participated in Integrated Scholastic Sport (ISS) similar to those who participated in a non-integrated program. Yet no information is available comparing the fitness or skill outcomes of athletes and partners in the same environment. This aspect of integrated sport training and competition is of particular interest, because many practitioners would argue that the integrated participation environment is less effective for the non-disabled partners than a regular sport environment (Aufsesser, 1991; Block & Zeman, 1996; Lavay & DePaepe, 1987; Walker & Bullis, 1991).

Therefore, the purpose of the present study was to examine the effect of participation in a UNS soccer training program on fitness and skilled performance compared to the fitness and skilled performance of a control group in soccer for youth with and without intellectual disability. Since soccer is the most popular sport activity worldwide, it is believed that outcomes of such a study may provide important conclusions for the target group of participants with ID and their partners.

## 2. Method

A randomized comparative intervention design was incorporated in this study, across two types of population (with and without ID) who were matched and selected in equal numbers into a training group (TRG) and a comparison group (CG).

### 2.1. Participants

Participants were recruited from a regional special education school and a secondary school from a large urban community in Turkey. Inclusion criteria for participants with and without ID were: (a) age between 12 and 15, and (b) male, Exclusion criteria were: (a) health problems preventing the youth from participation in sports training, (b) having a secondary disability such as physical or visual impairment, psychiatric diseases, brain injury, or Down Syndrome, and (c) having been previously trained in soccer, that is answering "yes" to the question "Did you participate in any soccer program before?". The total number of participants recruited to this study was 46 with ID and 30 without ID. The disability diagnosis was acquired from special school records, which did not provide the intelligence quotient (IQ). However, all SO athletes and their comparison group were reported as having an educable mental retardation, which corresponds to mild ID of an IQ of 50 and above. All participants regularly attended physical education lessons twice a week for 45 min at their schools.

Randomization was employed 1 week before the study in the participating special and regular schools, using a computer generated table of random numbers by a person without any knowledge about the study and its purpose. Half of the participants with ID (ID) and without ID (WoID) were allocated into each of the TRG, which included participation in an UNS