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### **Key Words**

Special Olympics,  
 athlete self-concept,  
 self-worth,  
 physical competence,  
 social acceptance,  
 longitudinal study

## **Participation in Special Olympics and change in athlete self- concept over 42 months**

### **Abstract**

*The present study investigated changes in the self-concept of 49 athletes with intellectual disabilities participating in traditional Special Olympics over a 42-month period. Athletes were interviewed to assess their perceived general self-worth, physical competence and social acceptance, and involvement in Special Olympics was operationalized through an overall standard score combining a number of components. After controlling for baseline levels of self-worth and involvement in Special Olympics, changes in involvement in Special Olympics predicted improved general self-worth. After adjustment for baseline levels of perceived physical competence and involvement in Special Olympics, changes in involvement in Special Olympics predicted perceived physical competence at 42 months.*

In terms of physical activity programs for individuals with intellectual disabilities (ID), none are so well known as Special Olympics. Special Olympics is a sport organization for individuals with ID that boasts over 1.2 million members worldwide, and provides access to a variety of competition and training experiences year round. There are a number of studies that have examined the impact of participating in Special Olympics on psychological functioning. In terms of psychosocial variables, research has largely focussed on self-concept, perceived competence, and actual competence.

Self-concept is the subjective self-perception and affective evaluation of our traits, which includes the beliefs, feelings, and intentions that a person holds in regard to the self

(Sherrill, 1993). There exist many facets (or domains) of the self. While we may see ourselves in general terms (e.g., general self-worth), we also possess distinct self-concepts within relevant domains of functioning (e.g., academic self-concept versus a physical self-concept). Perceptions of competence in these domains are central to one's self-concept (Harter, 1985), and it has been commonly found that individuals with ID are at risk for lower perceived competence than non-disabled peers (Harter, 1982; Renick & Harter, 1989).

Studies examining the effect of segregated Special Olympics involvement on general self-concept, or on perceived social acceptance and physical competence, have found an improvement in these traits in participants (Castagno, 2001; Gibbons & Bushakra, 1989; Simpson & Meaney, 1979; Wright & Cowden, 1986) or nonsignificant trends or no improvement over time (Edminston, 1990; Dykens & Cohen, 1996; Ninot, Bilard, & Sokolowski, 2000; Ninot, Bilard, Delignieres, & Sokolowski, 2000; Rikken & Ulrich, 1993). Dykens and Cohen (1996) found that athletes attending international Special Olympics competition had significantly more positive self-concept scores than a matched comparison group of non-athletes. As well, the number of competitions experienced, the number of medals and ribbons obtained, the number of years involved in Special Olympics, and the number of sports experienced have been found to be positively correlated with different facets of an athlete's self-concept (Weiss, Diamond, Demark, & Lovald, 2003).

Some authors have suggested that a lack of significant change in self-concept after a traditional Special Olympics experience may be due to high self-concept scores at the outset (Dykens & Cohen, 1996; Maïano, Ninot, & Errais, 2001). It has also been proposed that a segregated sports

experience may help maintain a high level of perceived competence due to an athlete's social comparison to other individuals who function at a similar level of competence, and due to the fact that competition is not conducted in an adversarial manner (Maïano, Ninot, & Errais, 2001). In contrast, integrated meets have been suggested to provide a social comparison with others who are more competent in many ways, and thus may decrease a person's perceived competence (Maïano, Ninot, & Errais, 2001; see Bebko & Weiss, 2006, for a more detailed discussion of social comparison in ID).

Another reason why studies fail to link Special Olympics participation to significant change in athlete self-concept may have to do with using only one variable to represent involvement in Special Olympics, such as length of time. There may be a number of "active ingredients" that together are important for athletes and that are related to change in self-concept (Dykens & Cohen, 1996). For example, variables such as the number of sports, medals, or competitions, which are correlated but not interchangeable with length of time, may be important for influencing psychosocial variables. Using multiple regression analyses, Weiss and colleagues (2003) found significant relations among three self-concept domains (general self-worth, perceived physical and social acceptance) and various indicators of involvement in traditional Special Olympics. Thus, it is possible that measuring individual components to reflect involvement in a program is too narrow a measure, and that an overall measure related to these ingredients is advantageous.

The purpose of the present investigation was to describe the changes in self-concept occurring in athletes with ID in traditional Special Olympics over a 42-month period,

the longest longitudinal study to date. We developed a standardized summary variable to represent comprehensive involvement in Special Olympics, and hypothesized that changes in the degree of overall involvement would be predictive of improvement in self-concept, after controlling for initial levels of involvement and baseline levels of self-concept.

## Method

### Participants

The original sample at Time 1 was comprised of 97 (64 male, 33 female) athletes in Special Olympics, described in detail in Weiss and colleagues (2003). Participants' ages ranged from 9.3 to 42.5 years, with an average of 24.9 years ( $SD = 8.6$ ), and IQs were between 40 and 90, with a mean score of 53.9 ( $SD = 12.7$ ). The York University ethics review committee approved the study prior to participant recruitment.

Participants at follow-up consisted of 49 (30 male, 19 female) athletes, just over half of the original sample. Because of failure to locate, refusals and deaths, 49.5% participants did not complete the follow-up data collection. *T*-tests between the responders (those who participated at follow-up) and non-responders (those who did not complete the follow-up) were calculated on Time 1 demographic variables and involvement in Special Olympics, as listed in Table 1. The two groups did not differ significantly on athlete age, IQ, number of sports or competitions. Responders had been in Special Olympics for significantly more years and more medals than non-responders at Time 1,  $t(96) = 2.54$ ,  $p = .01$  and  $t(96) = 2.46$ ,  $p = .01$ , respectively.

**Table 1**

*Characteristics of the respondents versus non-respondents at Time 1*

		Responders (n= 49)	Non- responders (n = 48)
Athlete age (years)	<i>M</i> ( <i>SD</i> )	26.23 (8.04)	23.64 (8.87)
IQ	<i>M</i> ( <i>SD</i> )	53.07 (12.23)	57.46 (14.66)
Number of sports	<i>M</i> ( <i>SD</i> )	3.57 (1.76)	3.12 (1.73)
Number of hours per week	<i>M</i> ( <i>SD</i> )	3.71 (2.29)	4.64 (2.47)
Number of years	<i>M</i> ( <i>SD</i> )	11.25 (7.67)	7.87 (5.23)
Number of total competitions	<i>M</i> ( <i>SD</i> )	43.03 (42.51)	26.80 (44.95)
Number of medals and ribbons	<i>M</i> ( <i>SD</i> )	81.79 (141.82)	23.84 (38.39)
Parent age (years)	<i>M</i> ( <i>SD</i> )	54.59 (9.21)	51.79 (10.49)
Parent education level			
<i>Did not graduate high school</i>		7.5%	17.2%
<i>Graduated high school</i>		17.2%	18.3%
<i>Graduated college</i>		18.3%	7.5%
<i>Graduated university /professional school</i>		6.5%	7.5%
Family income			
< 20, 000		4.3%	12.0%
20,000 - 40,000		8.7%	5.4%
40,000 - 60,000		18.5%	17.4%
60,000 - 80,000		13.0%	8.7%
> 80,000		5.4%	6.5%

At Time 2, athletes' ages ranged from 17.0 to 45.0 years, with a mean of 29.4 years ( $SD = 8.1$ ). In terms of ethnicity, 72% of the sample was noted as being Euro-Canadian, 6% noted as being of First Nations descent; 13.5% chose not to answer. The nature of

the athletes' disabilities was varied, with 38% of the individuals in the sample having Down syndrome, 44% having an unknown cause, and 18% with cerebral palsy or other brain damage.

## Measures

*Demographic information and involvement in Special Olympics.* Athlete involvement in Special Olympics was ascertained by parental completion of a demographic questionnaire. Involvement included the number of competitions experienced, the number of sports and hours of training, and the estimated number of medals and ribbons obtained. We did not differentiate between the number of bronze, silver, and gold medals won for success at competition, and ribbons obtained for participation in events (regardless of success). Thus, the number of medals and ribbons represented the act of completing an event within a competition, not winning. Athletes can participate in many events during any one competition, and thus although this measure is related to the number of competitions, it is conceptually distinct.

*IQ.* Athletes' cognitive abilities were assessed by using the Kaufman Brief Intelligence Test (K-BIT, Kaufman & Kaufman, 1990). Of the 49 participants at follow-up, 43 were administered the K-BIT. The K-BIT is a relatively motor-free screener of verbal and nonverbal intelligence. Internal consistency averages .94 for the overall K-BIT IQ Composite, .93 for the Vocabulary subtest, and .88 for the Matrices subtest (Kaufman & Kaufman, 1990). Test-retested reliabilities are also strong (i.e., IQ Composite = .92-.95).

*Self-Concept.* Multiple components of participants' self-concepts were examined using a modified version of the

Perceived Competence Scale for Children (Harter, 1982), deemed the Perceived Competence Scale for Special Athletes (PCSSA, Riggen, 1992). Despite being normed on typically developing children, the Perceived Competence Scale for Children has been used successfully to assess the self-concept of adolescents with ID (Silon & Harter, 1985). The PCSSA consists of 21 items equally measuring the domains of *general self-worth*, *social acceptance*, and *physical competence*, reflecting the importance of measuring self-concept using a multidimensional tool (Harter, 1985; Riggen & Ulrich, 1993). Perceived social acceptance involves a respondent's belief that they are included in social activities by their peers and the degree to which they feel they can make friends and has friends (not specified in terms of typically developing peers or those with intellectual disabilities).

All testing with participants was done in an interview format. Participants were first required to choose the statement that most reflected themselves (i.e., the high or low competence statement), and then to indicate the degree to which the statement was true (e.g., "Sort of true" or "Really true"). Wording on the PCSSA was age-appropriate for use with adults with intellectual disabilities (i.e., the word "children" was changed to "people") and has demonstrated good internal consistency, Chronbach alpha = .89, and test-retest reliability,  $r = .86$  (Riggen, 1992; Riggen & Ulrich, 1993). Items are counterbalanced to reduce the likelihood of socially desirable responses, by alternating positive responses to the left and right sides (e.g., one item would have the positive self-concept comment first, and the next item would have a positive self-concept comment second). Chronbach alpha was calculated for the current sample, and demonstrated similar levels of overall

internal consistency (Chronbach alpha = .82).

## Procedures

Athletes and their families were initially solicited by telephone and letter from regional Special Olympics chapters across Ontario in 2001, with testing completed for Time 1 in May 2002. After informed consent was explained to parents and athletes over the telephone, families who agreed to participate were mailed a copy of the demographic questionnaire, along with other questionnaires as part of a larger prospective study of involvement in Special Olympics. When participants returned signed informed consent forms and the questionnaire packages, athletes met individually with a trained researcher and were interviewed using the PCSSA, followed by the K-BIT.

Data collection for the Time 2 sample was completed in September 2005, approximately 42-months later. Individuals were mailed a Time 2 questionnaire package (the demographics questionnaire), and when returned, a research assistant trained in conducting the PCSSA interview, but blind to the content of athletes' Time 1 responses, traveled to their homes to conduct the Time 2 interview.

## Statistical Methods

Multiple linear regression was used to determine the significance of particular variables as predictors of outcome with and without adjustments for baseline levels. Statistical significance was assessed at the 95% confidence level. Three predictor variables were tested in each model, meeting the recommended sample size for adequate power (i.e.,  $n > 10 / \text{predictor}$ ).

## Results

We developed a summary variable reflecting involvement in Special Olympics at Time 1 and Time 2 by transforming the number of years, of medals, of competitions, of sports, and of hours, into t-scores; these had a mean of 50 and standard deviation of 10. T-scores are calculated using the formula  $t = 10 (X - M / \sigma) + 50$ , where  $M$  and  $\sigma$  are the mean and standard deviation of the distribution and  $X$  is the value requiring transformation. An average of individual t-scores was calculated to reflect an athlete's overall degree of involvement. Mean involvement in Special Olympics at Time 1 was found to be correlated to number of years in the program,  $r(96) = .67$ ,  $p < .001$ , medals and ribbons,  $r(96) = .63$ ,  $p < .001$ , competitions,  $r(96) = .77$ ,  $p < .001$ , hours,  $r(96) = .70$ ,  $p < .001$ , and sports played,  $r(96) = .69$ ,  $p < .001$ , indicating that the summary variable reflects the individual components (i.e., the summary variable represents the number of sports, medals, etc...) well. Similar strengths were found among the summary variable at Time 2 and individual components at Time 2 (all p-values  $< .001$ ).

We examined the relationship between involvement in Special Olympics and changes in self-concept and competence through analyses that have been used in other longitudinal studies involving people with ID (Lloyd & Hastings, 2008). To predict the outcome variables of self-concept, we calculated multiple regression models with Time 2 general self-worth, perceived physical competence, and perceived social acceptance as separate dependant variables. As predictor variables, we entered Time 1 scores for the respective dependent variable, Time 1 Special Olympics involvement, and change scores across time in Special Olympics

involvement. Change across time was operationalized as Time 2 Special Olympics involvement - Time 1 Special Olympics

involvement. The results are presented in Tables 2 and 3.

**Table 2**

*Standard multiple regression analyses of general self-worth at Time 2.*

Predictor	Beta	p-value
General self-worth Time 1	.38	.05
Involvement in Special Olympics at Time 1	-.16	.43
Change in involvement in Special Olympics Time 1 to Time 2	.39	.05

Total model  $R = .53$ , Adjusted  $R^2 = .18$ ,  $F(3, 35) = 2.93$ ,  $p = .05$

After adjustment for general self-worth at Time 1, the change in involvement in Special Olympics over 42 months, but not involvement in Special Olympics at Time 1, predicted general self-worth at Time 2 (42 months).

**Table 3**

*Standard multiple regression analyses of perceived physical competence at Time 2*

Predictor	Beta	p-value
Perceived physical competence Time 1	.99	< .001
Involvement in Special Olympics at Time 1	.38	.01
Change in involvement in Special Olympics Time 1 to Time 2	.32	.03

Total model  $R = .86$ , Adjusted  $R^2 = .71$ ,  $F(3, 35) = 21.72$ ,  $p < .001$

After adjustment for levels of perceived physical competence and involvement in Special Olympics at Time 1, the change in involvement in Special Olympics over 42 months predicted perceived physical competence at Time 2 (42 months).

After controlling for general self-worth at Time 1, the change in involvement in Special Olympics over 42 months, but not involvement in Special Olympics at Time 1, predicted general self-worth at time 2 (see Table 2). Athletes who had more involvement in Special Olympics over time reported better general self-worth at Time 2. As shown in Table 3, perceived physical competence at Time 2 was predicted by involvement in Special Olympics at Time 1 and by the change in involvement in Special Olympics from Time 1 to Time 2. Athletes who initially had more involvement in Special Olympics had better perceptions of

physical competence at Time 2. After controlling for this relationship and baseline levels of perceived physical competence by forcing them in the multiple regression model, athletes whose involvement changed over time reported improved perceptions of physical competence at Time 2. Multicollinearity was not present. Contrary to expectations, involvement in Special Olympics was not found to be a significant predictor of perceived social acceptance at Time 2, which was solely predicted by baseline levels of perceived social acceptance ( $p < .001$ ).

## Discussion

The purpose of this study was to examine the hypothesis that changes in involvement in Special Olympics would be related to changes in self-reports of general self-worth, perceived physical competence, and perceived social acceptance of athletes with ID.

We found significant changes in perceived general self-worth and perceived physical competence, which were predicted by athletes' change in involvement in Special Olympics. This result replicates a similar correlation reported previously in Weiss and colleagues (2003), and reinforces the possibility that it may be more relevant to examine the benefits of sports programming through numerous components rather than merely time spent in the program. For example, it has been suggested that competition may increase an athlete's self-worth because it represents personal effort, the act of doing more than winning, and successfully meeting the challenges of a task (Gibbons & Bushakra, 1989; Harter, 1978). Overall, Special Olympics may facilitate an increase in self-worth because it is more about cooperation and personal competition than adversarial rivalry (Maïano, Ninot, & Errais, 2001). Other researchers have shown that typically developing athletes improve in self-esteem when a number of variables are present, such as competition combined with peer acceptance, parental support, and positive coaching style (Hines & Groves, 1989; Shephard, 1983).

A number of studies found no change over shorter periods of time in these two self-concept domains (Dykens & Cohen, 1996; Riggen & Ulrich, 1993), and Ninot, Bilard, & Delignieres (2005) reported stability in perceived physical ability and general self-

worth over 32-months. Both Dykens and Cohen (1996) and Maïano, Ninot, and Errais (2001) have suggested that one reason for this stability may be high self-concept scores at Time 1. This explanation was not an issue in the current sample, in which self-concept had room to improve. The present study however did not find that a change in social acceptance was related to overall involvement in Special Olympics. Research by Riggen and Ulrich (1993) used the same measure of self-concept and also reported no significant change in perceived social acceptance, over a 12-week program. It is likely that the stability found with regard to social acceptance reflects the fact that variables other than Special Olympics are largely important for feelings of social acceptance, such as successful inclusion into community, vocational or day activities, and friendships, as well as the fact that the highest Time 1 self-concept score was in the realm of perceived social acceptance. To examine the possibility of a limiting factor due to high self-concept at Time 1, future research would do well to identify individuals with ID with low self-worth and specifically examine whether participation in Special Olympics can improve their self-concepts.

Despite the advantages of repeated measures design, in that it controls for many individual differences and can aid in the hypothesis testing of causal elements, it is plagued by limitations, such as panel attrition. Indeed, the present study had a 50% participation attrition rate, and a number of significant differences were found between respondents and non-respondents. Respondents had been involved with Special Olympics for more years at Time 1, and had received more medals and ribbons than non-respondents at Time 1. As such, this study cannot control for the possibility that a selection bias occurred in participants who chose to

participate at Time 2, such as for families who themselves are, or whose athletes are, more highly motivated to participate in Special Olympics. This limitation however does not detract from the significant within-subject changes observed, or from the fact that participants were recruited from the local community level and thus represent a substantial group of athletes in Special Olympics. This research certainly does not support the hypothesis that Special Olympics has a negative impact on participants' self-concepts.

In sum, this longitudinal research has examined whether involvement in Special Olympics was related to athlete self-concept, including perceived physical competence and social acceptance. Results suggest that overall involvement in Special Olympics is related to changes in general self-worth and perceived physical competence over time, however not related to perceived social acceptance. Future controlled program evaluation is needed to test causal hypotheses regarding the effect of Special Olympics. As well, research within other community-based programs for individuals with ID is needed to investigate potential changes in participant self-concept. The growing evidence regarding Special Olympics suggests that physical activity programs are viable avenues to support the well-being of individuals with intellectual disabilities across the lifespan.

### Acknowledgements

This research was supported by a research grant from Special Olympics Canada and a postdoctoral fellowship from the Canadian Institutes of Health Research. The authors acknowledge Terry Diamond for her substantial contributions to the first phase

of this research. Most important, a special thank you to the many families in Special Olympics Ontario for their participation. Correspondence regarding this article should be sent to Jonathan A. Weiss, York University, Department of Psychology, 4700 Keele St., Toronto, Ontario, M3J 1P3. E-mail: jonweiss@yorku.ca.

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