

Special Olympics and Down syndrome: The investigate of Self-efficacy and interpersonal dependency**¹Abdollah Ghasemia, ²Vajihe Atashib, ³Maryam Momenic**¹*Science and Research Branch, Islamic Azad University, Tehran, Iran.*²*Nursing Faculty Member of Qazvin University of Medical Science, Qazvin, Iran.*³*University of Social Welfare and Rehabilitation Sciences, Tehran, Iran.*

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ABSTRACT

The aim of this study was to investigate the effect of Special Olympics (SO) programs on self- efficacy and interpersonal dependency among Iran Special Olympians with Down Syndrome (DS). Forty DS members of Iran's national team were selected as SO athletes and 36 DS athletes were selected as control group. The SO group participated in 9 months SO sport specific program whereas athletes were involved in common physical exercise. Wheeler and Ladd's Children's self-efficacy for Peer Interactions Scale and Interpersonal Dependency Inventory (IDI) were used to collect data from the two groups before and after 9 month long athletic programs. The results showed that both programs have significant effects on the Self- efficacy and interpersonal dependency of the two groups, but after 9 months, the SO athletes were significantly ($p \leq 0.01$) better than the non-SO athletes in all sub-scales of self-efficacy and interpersonal dependency. It seems that participation in social-sport aspects of Special Olympics programs can promote the self-efficacy and interpersonal dependency among this population beyond the ordinary sport programs, especially for DS people. Generalizing these programs for this people can help them to show their abilities and give them self-efficacy to live without dependency to others.

Key words: Special Olympics (SO), Down Syndrome (DS), Self-efficacy, Interpersonal Dependency.**Introduction**

One of the major mental disorders among intellectually disable individuals is lack of social skills caused by their physical disabilities [1]. They also have other disorders including the inability in building up peer relationships, low self-confidence and mental disorders caused by the lack of physical fitness and adiposity [2 and 3]. When people have high self-efficacy and little dependence on others, they feel minimal levels of social anxiety and thus do not experience the subsequent problems [4]. On the other hand, individuals with high self-efficacy bear the lowest degrees of mental pressures in dealing with the social world [5].

Inadequate social skills may also be one of the sources of children's social anxiety, which may result in their lack of self-efficacy and dependency [6]. According to the self-efficacy theory, when individuals notice a social disorder in themselves, they doubt their capabilities and, consequently, lose their self-efficacy [7].

A variety of factors including exposure to novel and unknown situations unfavorable social

experiences [8] and mental and physical defects [9] may reduce self-efficacy and dependency [6] in intellectual disability individuals. Since there is a significant negative relationship between self-efficacy and dependence on others [10 and 11] it seems that the lower is one's self-efficacy, the more he/she loses his/her abilities in expressing excitement and, consequently, he/she grows more dependent on others. Over time, this cycle will result in the individual's confusion and loss of self-confidence [12].

Interpersonal dependency has been found to act as a diathesis through which high levels of interpersonal stress lead to increased symptoms of depression and illness [13].

One of the most common genetic disorders among the intellectually disable individuals is DS. One out of every 700 to 1000 infants is afflicted by DS [14]. It has been estimated that individuals with DS 5 times as much mental disorders as healthy people [15].

It seems that individuals with DS have higher levels of mental and behavioral disorders comparing with the other mentally retarded individuals [16]. Bhattacharyya, Sanyal, Roy & Saha (2009) reported

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that individuals with DS experience more serious mental and psychological disorders than the other intellectually disable individuals [17].

According to Hayes and Batshaw (1993), most of the individuals with DS live dependent on others, mainly relying on one or both of their parents [14]. Therefore, they need psychological treatments to remove their disorders. The dependence on parents may expose their parents to many problems including the devotion of ample time to these individuals, which prevents the parents from participating in social activities [18] as well as the parents' mental disorders due to interaction with these children [19].

Research has shown that practicing social skills (e.g. sport activities) may improve the intellectual disability individuals' self-efficacy [20, 21 and 22] and dependency to others [11].

Dykens, Valkova & Mactavish (1998), in a review of the literature, studied the effects of participation in training programs on the mental factors of intellectual disability children and adults. They maintained that participation in training programs and physical exercises may improve behavioral disorders, physical fitness and mental health (including self-esteem, self-concept and social self-competency) in these people. Their study suggested the significant effect of participation in SO competitions on the intellectually disable individual [23].

Dykens and Cohen (1996) studied 104 intellectual disability American national teams in 1993 in order to investigate the effect of athletes' participation in SO on their social self-efficacy and self-esteem. The results indicated that the duration of participation in the competitions was the most influential factor affecting their self-sufficiency [24].

Interviewing the participants in the SO games, Farrell, Crocker, McDonough & Sedgwick (2004) investigated the major reasons for their participation in such games as well as challenges they may face. The findings suggested that the major incentives for their participation included achieving a sense of independence, competence and interaction with other people. The participants reported the main reasons for the development of such feelings to include the involvement in different situations including receiving positive feedback, the right of selection, skill learning, showing their skills to others, making friends, social approval and getting entertained in the SO programs [25].

Also several studies have suggested that physical training programs for intellectually disable individuals should be designed in a way to foster their motivation for participation and persistence in participation in the training programs for longer periods [26 and 27].

On the other hand, some researchers believe that many of the training (or even SO) programs may not positively affect the general health of individual with

intellectual disability. Thus they cannot resolve their immobility problems and the consequent psychological problems [24 and 28]. They do not offer a specific reason for their claim but believe that there ought to be more studies on the development of more complex and specialized exercises for those individuals [29].

A major problem with the previous studies, which examined the effects of SO on the intellectual disability individuals' social skills, is that they did not distinguish the types of disorders in those people (i.e., DS, learning disorder, Autism, etc.), which makes it difficult to draw conclusions about the effects of these competitions on individual with intellectual disability. Besides, the studies have mainly concentrated on the athletic aspects of the SO rather than its peripheral programs (i.e., family programs, host town, camping, festivals etc.).

We know that there is correlation between self-efficacy and interpersonal dependency [6]. Considering that previous studies have mostly concentrated on the effects of participation in SO on the self-concept and competence of participants [23], there has been no empirical research to investigate the effects of participation in these programs on the children's self-efficacy and interpersonal dependency, and interestingly, to our knowledge, no research has ever addressed the effects of these exercises or participation in sports events such as SO on the self-efficacy of DS people, and that no research has been reported about the SO program efficiency in comparison with other sport programs as well as the effect of SO on the psychological aspects of DS, therefore, this study aims to compare the effect of two different sport programs (i.e. Special Olympics program and common physical exercises) on the self-efficacy and interpersonal dependency of people with DS. We hypothesized that SO program might have more benefit for DS people.

Method:

Participants were 16 females ($M_{age}= 21.66$ and $SD= 4.87$) and 24 males ($M_{age}= 22.39$ and $SD= 5.12$) DS who were the members of Iran's SO teams in Track and Field, Soccer, Table Tennis, Volleyball and Swimming, that participated in the study as the experimental group. The control group included 15 females ($M_{age}= 23.12$ and $SD= 6.11$) and 21 males ($M_{age}= 24.31$ and $SD= 7.91$) who were randomly selected from DS associations. All the participants had lived at home, and none was institutionalized. They were literate and had the IQ scores of 52 to 76 with Kaufman Brief Intelligence Test (K-BIT; Kaufman & Kaufman, 1990). We also used one-sample Kolmogorov-Smirnov test to determine the normality of age and IQ scores distribution (table 1).

Table 1: Result of one sample K-S test for age and IQ.

One sample K-S test		mean	range	Z	p
age	SO athletes	22.10	17- 26	36.12	0.37
	Non-SO athletes	23.34	15-27		
IQ	SO athletes	62.64	55-75	8.91	0.09
	Non-SO athletes	60.95	53-79		

The experimental group participated in a 9-month SO program including sport specific training (three sessions per week, each 1.5 hours), 3-day sport camping once a month, qualification competitions (3 times during the whole training period), SO MENA (Middle East and North Africa) games in Syria (2010) and, finally, Special Olympics World Summer Games in Greece (2011). The control group participated in the usual physical exercise programs such as aerobic training (juggling and running), dancing, stretch training and recreational play three times per week, 1.5 hours, each time in their association's gym. The whole training period for the two groups was 9 months. We equalized the training time for two groups. The participants and their parents were given informed consent forms and their parents were assured that their data would be kept confidential.

The Interpersonal Dependency Inventory (IDI), developed by Hirschfeld, Klerman, Gough, Barrett, Korchin & Chodoff (1977), was used to measure the participants' degree of dependence on others [30]. Gettysburg (1994) and Bornstein (1997) examined the validity and reliability of the scale and confirmed that it had appropriate validity and reliability [31]. The IDI comprises 48 items on the whole and three subscales: Emotional reliance on another person (ER, 18 items); Lack of social self-confidence (LSS, 16 items) and Assertion of autonomy (AUT, 14 items). We also calculated the IDI reliability. The inter-rater reliability of the IDI subscales in this person was found to be 0.82 and the test-retest reliability of the subscales was reported to be 0.71.

Also, Wheeler and Ladd's Children's Self-efficacy for Peer Interactions Scale (1982), including 26 items, was used to measure the participants' self-

efficacy (both general self-efficacy and social self-efficacy). The scale has already been validated ($\alpha=0.83$) and homogenized for intellectual disability individuals based on age by Ulrich and Riggen (1992 & 1993) [32 and 33]. They have also examined the validity and reliability of the subscales via the test-retest ($r=0.86$) and internal consistency ($\alpha=0.89$) techniques [28 and 33]. The items on the scale have 4 alternatives including very easy, easy, difficult and very difficult based on the Likert's scale. The scoring is based on the type of answers, negative or positive. The questionnaire asks the children to assess the difficulty or simplicity of interaction with their peers in 22 different situations, which can be subsumed under two categories: conflict and non-conflict. For example, in a conflict situation, the child is asked to verify how easy it is for him/her to prevent others from teasing his friend. In a non-conflict situation, he/she is asked to confirm how difficult or easy it is for him/her to want others to sit beside.

All the participants filled in the questionnaires before and after the training protocol by the help of their parents, and in case they needed elaboration on the items, they were assisted by the investigators.

We used independent t test to compare the interpersonal dependency and self-efficacy before and after the training period. And also dependent t test to assess the effect of two different training protocol.

Results:

As Table 2 illustrates, the participants in either of the groups are similar in age, weight, height and IQ.

Table 2: The mean age, weight, height and IQ of the participants in the two groups.

	Age(years)		Weight(kg)		IQ		height	
	Men	women	men	women	men	women	men	women
SO participant	20.5	22.8	54.86	58.16	61.54	63.11	164	154
athletes	24.1	22.34	57.11	60.05	62.8	59.4	160	153

Table 3: Self-efficacy and interpersonal dependency subscales between the two groups before the protocol.

	SO participant	athletes	T	P value
General Self- efficacy	28.6	27.9	-1.12	0.39
Social Self- efficacy	21.2	20.18	-2.54	0.34
Emotional reliance of another person (ER)	24.67	26.54	-1.9	0.16
Lack of social self -confidence (LSS)	25.49	25.65	-3.69	0.08
Assertion of autonomy (AUT)	29.34	26.18	-4.12	0.074

Because we wanted to ensure that both groups are similar in all of the sub-scales of self efficacy and interpersonal dependency in the pre-test, we used independent t test. The result of this test shows that

there is no significant difference in all of the subscales between two groups, so the participants in two groups have started their progress from the same point.

Table 4: Pre-test and post-test scores for the two groups.

	So participants				athletes			
	Pre test (SD)	Post test (SD)	t	p	Pre test (SD)	Post test (SD)	t	p
General Self- efficacy	28.6 (6.34)	38.9 (4.09)	-12.18	0.00	27.9 (7.29)	34.2 (6.65)	-9.01	0.00
Social Self- efficacy	21.2 (7.18)	32.1 (5.79)	-13.86	0.00	20.18 (8.65)	27.91 (8.92)	-10.23	0.00
Emotional reliance (ER)	24.67 (8.25)	34.9 (3.11)	-5.76	0.00	26.54 (9.32)	32.1 (11.24)	-5.11	0.00
Lack of social self - confidence (LSS)	25.49 (6.19)	41.4 (4.86)	-8.12	0.00	25.65 (7.54)	37.6 (7.13)	-9.37	0.00
Assertion of autonomy (AUT)	29.34 (7.14)	38.62 (4.39)	-5.11	0.00	26.18 (10.24)	33.12 (11.36)	-9.04	0.00

As can be seen in Table 3, there are significant differences between the pre- and post-test scores in all of the subscales among two groups. It means that

both of the training methods had significant effect on self-efficacy and interpersonal dependency in SO and non-SO athletes.

Table 5: Self-efficacy and interpersonal dependency subscales between the two groups.

	SO participant	athletes	T	P value
General Self- efficacy	38.9 (4.09)	34.2 (6.65)	-4.60	0.008
Social Self- efficacy	32.1 (5.79)	27.91 (8.92)	-6.54	0.001
Emotional reliance of another person (ER)	34.9 (3.11)	32.1 (11.24)	-1.9	0.064
Lack of social self -confidence (LSS)	41.4 (4.86)	37.6 (7.13)	-5.69	0.009
Assertion of autonomy (AUT)	38.62 (4.39)	33.12 (11.36)	-9.12	0.007

While the main purpose of this study was to compare the SO programs with usual physical exercise, we used t test. Table 5 shows that the SO participants are significantly ($p < 0.01$) better than non-SO athletes in all of the sub-scales (except, emotional reliance of another person) after the training protocol. An important point that should pay more attention to it is the data distribution in SO athletes in post-test. As can be seen in this table, the standard deviation (SD) scores in SO athletes are smaller than SD in non-SO athletes.

Discussion:

The aim of this study was to compare the effect of two different programs (SO and usual physical exercise) on DS self- efficacy and interpersonal dependency. The results showed that both programs have positive effect on these psychological aspects, but it seems that SO programs have better effect on self-efficacy and interpersonal dependency compared with usual physical exercises.

As mentioned earlier, one of the major problems of intellectually disabled individual is their behavioral disorders, making them vulnerable to social exclusion and public disregard [27]. This negative self-concept manifests itself in such symptoms as depression, anxiety, lack of motivation and/or anger [34]. There have been few studies about the effects of physical exercises on the general health and self-efficacy of intellectual disability people. Most of these researches have studied children and adolescents [23], while adults have scarcely been

studied [35]. In this regard, the results of this study are in congruent with previous studies about the effect of SO programs or physical activity on psychological aspects of intellectual disability individuals [14, 26 and 27].

According to self-determination theory (SDT), the athletes' participation in SO programs improve intrinsic motivation (triggered by pleasure, play, learning new things and building trust), identified regulations (i.e., making friends, a sense of competition, interaction with coaches and voluntaries, getting active and physical fitness and having the opportunity to help others) and non self-determined regulation (i.e., winning medals and ribbons, and holding special ceremonies like opening and closing ceremonies), which may improve their self-confidence and, consequently, enhance the influenced mental factors (including independency and self-efficacy) [25].

In the other hand, some researcher believes that SO participation has no effect on psychological aspect [24 and 28]. Maybe the reason of this discrepancy is the amount of SO participation time [36]. They showed that one of the important factors that promotes the SO participant self-concept is the participation duration. The SO participant in this study have involved in SO programs since 4 years ago.

The high level of vulnerability appears to be related to poor interpersonal competence [37], the variables of social isolation, dependency, feelings of helplessness and powerlessness [9], ignorance about

violence and sexuality, and susceptibility to coercion and bribery [8].

In this study, the SO athletes had higher social self-efficacy and more positive interpersonal dependency comparing with non-SO athletes. In this regard, the result of this study is in congruent with other studies. The preservation of these factors in high status over the course of time indicated that these effects were not merely due to the emotional load of wins or family support, rather the psychological effects of participation in SO programs can also produce sustainable positive effects on these people [25]. Our findings thus support the hypothesis that participating in SO competitions may improve social skills and, subsequently, result in improved self-efficacy and independence from others. Participating in sport activities including SO may act as a practice in social skills for individuals with DS to improving their social skills and, thus improve their self-efficacy and decrease their dependency on others.

Besides, it seems that intellectually disable individual are often driven by extrinsic rewards to carry out sorts of work [29]. Relatedness is said to be one of the most powerful motivators DS person since they feel more barriers in making friends comparing with their healthy peers [38]. Making friends in SO games and trying to maintain this friendship are among the influential factors affecting their socialization, which is thought by the researchers to be among the most complex aspects of self-efficacy in intellectually disable individual [39].

In addition to being a sports event, SO seems to be a social event as well, in which the participants benefit from both physical exercises and social interaction with peers and thus they improve their psycho-social skills including self-esteem [40], self-concept [26] and a sense of usefulness via participation [33]. Therefore, we believe that in the present study, participation in the SO programs has improved self-efficacy in the experimental group comparing with the control group.

One of the unique aspects of this study was the comparison of SO athletes with active DS people. As we know from the literature, physical exercise can help intellectually disable individual to promote their psychological aspect [35], but as this study showed, SO programs can help DS person to provide positive behavior beyond the ordinary physical exercise. This difference could be due to the nature of SO programs that seems its program planners know the problems of DS person and thus plan their programs on the basis of their needs.

A major advantage of SO is that all intellectual disability people with any type of disability and competence level can participate in it, and beside competing with their counterparts, they can enjoy the mental merits of winnings, recognition, medal and ribbon awards, etc. [23 and 24]. Research has also shown that participation in ordinary athletic

recreational games (like playing at home and in school) may also improve the social skills including self-protection in the intellectually disable individual but it seems that SO games especially planed for these people may help them to address and cover their needs, recognize their capabilities and promote their courage, skill, participation sense and respect (Special Olympic slogan).

According to the Special Olympics International (SOI), the amount of DS people participated in these games since 1999 is approximately 30 percent. On the other hand, DS is the most prevalence disease among the intellectual disability individuals [16]. This large difference is representative of little attention to this people in SO games. Also the literature shows that DS people have more special needs in comparing to other intellectual disability individuals [1]. So, the SO managers must pay more attention to these people in their planning and programming.

One of the limitation of this study was the lack of non intellectually disable children that be chronically equalized with DS person. So we propose to other researcher to match DS person with a control group based on IQ and age to compare the physical exercise and SO programs benefits for DS person with their peers. Also we propose to classify DS person based on their mental disability and compare the SO programs benefit on their psychological aspect. Also, because our entire participant lived with at least one of their parents, future research is needed to test whether similar findings hold for DS athletes whose live with other than a parent and who live in more institutionalized settings.

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