

Effects of Integrated Sport Participation on Perceived Competence for Adolescents With Mental Retardation

Grégory Ninot, Jean Bilard, Didier Delignières
University of Sport Sciences, Montpellier, France

Michel Sokolowski
Sainte-Marguerite University Hospital Center, Marseilles, France

The purpose was to examine the effects of type of program (integrated vs. segregated) and type of sport (basketball vs. swimming) on sport skills, four domains of perceived competence, and general self-worth. Participants were 48 adolescent females with mental retardation (MR) divided equally into six groups: (a) segregated basketball, (b) integrated basketball, (c) segregated swimming, (d) integrated swimming, (e) adapted physical activity (APA), (f) sedentary. The experimental treatment was 8 months long. We administered sport skill tests and Harter's (1985) Self-Perception Profile for Children four times to determine changes in sport skill, perceived competence, and general self-worth. Results indicated (a) significant improvement in skill for all sports groups, (b) no changes in perceived social acceptance and physical appearance, (c) significantly lower perceived athletic competence for the integrated basketball group compared to the sedentary group, (d) significantly lower perceived conduct for the basketball groups compared to the APA and sedentary groups, (e) and no significant changes in general self-worth.

Experts in the field of adapted physical activity (Gibbons & Bushakra, 1989; Riggen & Ulrich, 1993; Dykens, 1996; Sherrill, 1997) have long wondered about sport participation as a means to improve self-image, especially in individuals with mental retardation (MR). Adapted sport programs often have as an objective the improvement of perceived competence (Songster, 1990). Although some of the studies based on a single meet for persons with MR (Special Olympics) show an improvement in perceived competence over periods of up to 16 weeks, no study,

Grégory Ninot, Jean Bilard, and Didier Delignières are with the Laboratory of Sport, Health, and Development at the University of Sport Sciences, 34090 Montpellier, France; Michel Sokolowski is with the Sainte-Marguerite University Hospital Center in Marseilles, France.

to our knowledge, has studied the effects over a longer term, such as an entire sports season. Moreover, we know little about the repercussions of the new models of sport competition for these individuals, such as the Unified Special Olympics or the Integrated Scholastic Sports Program. The goal of our study was to analyze the effects of the different modalities of sports meets on the perception of competence in six groups of adolescents with mild to moderate MR over a period of 8 months.

Perceived Competence

The perception of competence is a component of self-concept (Weiss, 1986), which indicates mental health status (Biddle & Mutrie, 1991). An individual's perceived competence is involved with the engagement in physical activity in individuals with MR (Gibbons & Bushakra, 1989; Ulrich & Collier, 1990). Compared to the notion of self-esteem, a one-dimensional model that is global and abstract (Sherrill, 1997), perceived competence is based on a great many perceptions relative to the different aspects of daily life where we are confronted with our own competence. In each of these aspects, we are more or less satisfied with ourselves (Harter, 1982). According to the author of this theory (Harter, 1985), the perception of competence is a multidimensional concept integrating five specific domains of competence within the child: scholastic competence (scholastic and intellectual performance), social acceptance (relationships with peers, popularity), athletic competence (performance in leisure and athletic activities), physical appearance (body image), and conduct (behavior with others). Additionally, Harter (1985) recommends an evaluation of general self-worth (extent to which students like themselves as persons).

Perceived Competence and Individuals With MR

In contrast to the work that has been published on global self-esteem, Harter (1982) proposed a multidimensional approach to study the representation of self in a differentiated manner. Moreover, this approach can be adapted to the particularities of individuals with MR (Ulrich & Collier, 1990; Sherrill, 1997). The study of perceived competence in adolescents with mild to moderate MR, for example, requires a certain number of methodological precautions. Participants with moderately MR before the age of 12 years were tested using Harter's questionnaire for children (Harter, 1985), but the results did not support validity from a construct validation perspective because before this age, the child is unable to differentiate between the physical and scholastic domains (Silon & Harter, 1985). Also, the child's responses to this tool must fully take into account the population serving as a reference (Renick & Harter, 1989). The institutional context, for example, can clearly influence self-judgments in that children who compare themselves to peers in the classic school system will respond differently from children who compare themselves to peers in a specialized school. Indeed, although the studies of self-esteem show an inferiority in individuals with MR compared to individuals without MR (Ribner, 1978), studies of perceived competence show that this relationship is far from established in a definitive manner either in terms of general self-worth or any of the specific domains (Renick & Harter, 1989). Regarding the heterogeneity

of populations (Widaman, McMillan, Hemsley, Little, & Balow 1992), we must also take into account differences in age and gender. It has been widely acknowledged that males reveal higher perceived competence than females for their athletic performance and their physical appearance, whereas females are more invested in social and relational domains (Crocker & Ellsworth, 1990). Last, studies in the field of athletics have indicated that any study of progress in self-perceived athletic competence must be complemented by field tests (Gibbons & Bushakra, 1989; Riggen & Ulrich, 1993). Beyond these methodological issues, we also need to develop our theory of perceived competence as it is experienced by this population (Sherrill, 1997) so that its explanatory power may be strengthened (Reid, 1987).

Sports Competition for Individuals with MR

Since the beginning of the 1990s, competitive meets for individuals with MR have undergone tremendous development (Sherrill, 1997). Two types of competitive organizations exist. Certain meets are reserved exclusively for individuals with MR and thus are segregated. Others include individuals without disabilities and thus are integrated.

Two official international organizations define and structure segregated meets: Special Olympics International (SOI) and the International Federation for Persons with Mental Handicap (INAS-FMH), a member of the International Paralympic Committee. SOI offers to all individuals with MR the possibility of participating in athletic competition adapted to their needs, in a sport of their choice, based on the Olympic model in terms of organization and the atmosphere of celebration (Songster, 1990). The principal objective is to have as many divisions as possible to match abilities of competitors to possibilities for success. Moreover, the number of divisions is inversely proportional to the level of playing. INAS-FMH has invited national federations to create a system of selection of elite athletes with MR for Paralympics that is consistent with selection of elite athletes without disabilities for the Olympics. Matches between national teams have been integrated into the Paralympic Games since 1996 in Atlanta.

Integrated events lead to other types of meets. In 1987, SOI initiated a new competitive model called Special Olympics Unified Sports (Aufsesser, Paciorek, & Rich, 1996). The goal is to have teams composed of individuals with and without MR. Apart from this particularity, the games are held according to the same principles as the classic SOI games. Thanks to this conception, which allows for maximal successful social integration, individuals with MR of good athletic skill—particularly the most autonomous—can find their way into ordinary sports clubs where they can participate in regular meets. Few athletes with MR can successfully take this way (Kozub & Porreta, 1996). Last, ordinary junior and senior high schools are beginning to accept the participation of students from specialized schools in their athletic meets, based on specific conventions. In France, these integrated scholastic sports (ISS) meets are fully included in the existing championships (Ninot, Bilard, & Brunet, 1998). To date, no athletic guidelines have been specifically adapted for these integrated meets, except for the participants with MR, which may be greater than that of the regular participants. Given the multitude of existing competitive activities and the heterogeneity of the populations, each coach can enroll his or her teams in divisions that correspond best to their abilities.

Effects of Sports Competition on Perceived Competence

The diverse modes of competition that exist today encourage us to examine more closely the longer-term effects of these meets on the self-perceptions of individuals with MR. Beyond the small number of studies published on this topic (Riggen & Ulrich, 1993; Dykens, 1996; Sherrill, 1997), it should be noted that these studies are concerned exclusively with short-term effects (16 weeks maximum) and that most of them concern SOI segregated meets.

For the segregated meets, Wright and Cowden (1986), following the lead of Sheare (1978), used the Piers and Harris Self-Concept Scale and showed that SOI competition improved the global self-esteem of young athletes with MR compared with nondisabled participants over a period of 10 weeks. Gibbons and Bushakra (1989) reported that, if performance improves, perceived competence in athletic and social areas also increases in children with MR when they are reevaluated the day after competition. These results were obtained by comparing a control group to a group of 24 children with MR participating in the SOI track and field meets conducted over a day and a half. In a study of 60 American adults with MR participating in the SOI Winter Games, the Child Behavior Checklist was used by Dykens (1996), who noted no significant improvement in self-perception 4 months after the competition. This last result does not really contradict the general tendency toward improvement noted by most authors because Dykens (1996) herself explained her results by a high level of self-perception on the pretest, a level that was significantly higher than that of the nonathletic control group. To our knowledge, no studies have been done on the INAS-FMH model.

Concerning integrated meets, even fewer longitudinal studies have been published. In the context of Special Olympics Unified Sports competitions, Riggen and Ulrich (1993) compared progress in perceived competence in three groups of 25 adults with MR, with one group participating in competitions, another in Special Olympics Unified Sports competitions, and a nonathletic control group. The researchers used the instrument of Harter (1982) and showed no significant improvement in perceived athletic competence, social acceptance, or general self-worth in the two competitive groups as opposed to the control group. No significant difference was reported between the integrated and segregated groups. This study confirmed the results obtained in the classic SOI context. For participants with MR in a traditional athletic structure, we found only one study that showed no variation in self-esteem in adults with MR who participated in one competitive match with an ordinary club (Levine & Langness, 1983). This study, which was based a single losing match of an eight-member basketball team, used an empirical method that did not include a validated self-esteem test, and it therefore cannot be considered to be satisfactory. For school athletics, no study has been published, to our knowledge. In France, the first attempts at bringing together specialized and ordinary schools for sport activities date only to 1993. The literature thus reveals a general uncertainty concerning the effects of an integrated sport environment.

A review of the literature reveals that the following individual variables have not often been taken into account: age, gender (Zoerink & Wilson, 1995), level of MR (Dykens, 1996), environmental variables such as the different modes of competition, different athletic activities, and time. Indeed, no study has ever covered a period of more than 4 months (Riggen & Ulrich, 1993). We designed a longitudinal

protocol to evaluate progress in athletic abilities and perceived competence in adolescents with MR engaged in one of two distinct programs: segregated or integrated. We thus tested Harter's perceived competence theory in these adolescent French students placed in specialized schools. Our first hypothesis, based on the findings of Gibbons and Bushaka (1989), was that regular preparation for sport competition would increase athletic skills both in a sport of high uncertainty (basketball) and in a sport of low uncertainty (swimming). Our second hypothesis was that progress in the specific domains of perceived competence would depend on the sport being practiced, whatever the mode of organization. Our third hypothesis was that sport training and competition would increase perceived competence for both modes of organization (segregated or integrated).

Method

Participants

The population of interest was adolescent females receiving special education in four French segregated schools. These schools, which belong to the same association, developed similar pedagogical instructions. Most of the participants came from families of low to middle socioeconomic backgrounds. All of them lived at home. Six homogeneous groups were constituted with help of administrators of specialized schools, each with 8 volunteer adolescents with MR (Table 1). The sampling design was purposive, meaning that criteria were used to select participants who would be representative of the population. We equated the six groups qualitatively, then quantitatively. Qualitatively, we equated the groups by cross-checking from case to case in terms of the following seven inclusion criteria: all females; ages between 13 and 17 years; school failure leading to placement in a specialized class; duration of placement of at least 1 year; either mild or moderate MR—IQ of 40-78 on the Revised Wechsler Intelligence Scale for Children—of nonorganic origin; associated problems of nonorganic origin; little experience in athletic activity; and no prior experience of athletic competition. Quantitatively, a one-way analysis of variance (ANOVA) showed no difference between groups for age, $F(5, 42) = 0.78, p = .59$; duration of placement, $F(5, 42) = 1.61, p = .18$; or overall IQ, $F(5, 42) = 1.60, p = .40$. We were thus able to consider our six groups as equated from the start of the experiment.

Four groups participated in sport competitions for 8 months. One of these groups played basketball and participated in segregated SOI events (BBSO). The second group included swimmers who also participated in SOI events (SwSO). The two other sport groups also practiced basketball and swimming but participated in integrated scholastic sport meets with teams from ordinary schools (BBISS and SwISS, respectively). Two groups served as comparisons: the first, APA, followed a traditional program of adapted physical activities in a specialized center, and the second, sedentary, was composed of sedentary participants.

For every participant, we defined seven standardized conditions of participation: (a) agreement to participate in sport competition from each member of the four competitive groups; (b) free choice of the sport activity; (c) freedom to stop the experiment if an individual found placement in a job-training program; (d) minimum of 2 hr training per week in the competitive sport; (e) teaching/coaching methods adapted to each individual; (f) the same APA instructor throughout the

Table 1 Description of the Six Groups of Adolescents With Mental Retardation

Name	Sport	Modality	Practice	<i>n</i>	Age		Placement period		IQ	
					<i>M</i>	<i>SD</i>	<i>M</i> ^a	<i>SD</i>	<i>M</i>	<i>SD</i>
BBSO	Basketball	Segregated	Classic SO	8	15.8	1.1	40.5	8.9	65.1	11.6
SwSO	Swimming	Segregated	Classic SO	8	15.8	0.9	36	6.4	65.3	16.8
BBISS	Basketball	Integrated	School competition	8	15.3	0.7	33.2	10.8	69.9	9.9
SwISS	Swimming	Integrated	School competition	8	15.5	1.2	39	5.6	60.0	6.8
APA	Swimming	None	Physical education	8	15.1	0.6	43.5	6.2	60.4	8.6
Control	None	None	None	8	15.5	0.4	39	8.5	60.8	7.3

^ain months

entire competitive period; and (g) training with fixed objectives and a precise calendar for the competitive groups. The competitive groups participated in six meets over a period of 8 months.

The sport skill tests were done before the first sport meet (T0) and then systematically after the second (T1), fourth (T2), and last meet (T3). At the same times, the Harter scale (1985) was administered individually by the same investigator.

Measures

Swimming is an activity of low environmental uncertainty because of its internal logic, and thus it requires little capacity for adaptation from individuals with MR. We chose a swim stroke requiring strong technique, the breaststroke. In contrast, basketball has high environmental uncertainty, which theoretically places the person with MR in a situation of greater difficulty (Drowatzky & Geiger, 1993). Indeed, basketball mobilizes many skills that depend on the ability to take into account many environmental factors, such as the ball, teammates, the coach's team strategy, the opposing team, arbitration, and the spectators.

For swimming, we used the skill tests of Cazorla (1993) specific for the breaststroke. These tests measure maximal speed of the swimmer (MS, maximal speed for 15 m), ventral glide (VG, maximal push against the wall and measure of the ventral glide), and performance over 50 m during training (TP, training performance for 50 m of breast-stroke with diving start) and during competition (CP). ANOVA revealed no significant difference between SwSO, SwISS, and APA for any of the tests before beginning the series of competition, MS, $F(2, 21) = 1.72$, $p = .20$; VG, $F(1, 14) = 0.48$, $p = .50$; TP, $F(2, 21) = 3.14$, $p = .06$.

For basketball, we used the latest tests validated by Grosgeorges and Wolff (1998). These tests measured five variables: shoot accuracy (SA, 20 shots from 10 different court positions), the long pass (LP, longest pass possible, measured in meters), and the free throw (FT, shots from a fixed free-throw position). For each measure, the successful basket was coded 1 point, touching the rim was coded 0.5, and touching the backboard was 0.25. No significant difference was noted with a Kruskal-Wallis one way analysis of variance on ranks between BBSO and BBIS on the pretest, SA, $H(1) = 0.71$, $p = .44$; LP, $H(1) = 2.19$, $p = .16$; FT, $H(1) = 3.18$, $p = .08$.

To measure perceived competence, we used Harter's Self-Perception Profile (SPP) for children because it is one of the tools most often used in research and practice concerning perception of self in children and adolescents with MR (Riggen & Ulrich, 1993). This instrument is also able to differentiate between two orders of reality: perceived competence in different specific domains and a perception of general self-worth. The French validation of this instrument was done by Pierrehumbert, Plancherel, and Jankech-Caretta (1987). The test is composed of five domains of competence: scholastic competence, social acceptance, athletic competence, physical appearance, and conduct. The perception of general self-worth is measured by a separate scale, which indicates the degree of assurance and contentment of the individuals in a very general manner. MANOVA revealed no difference at the beginning of the study for four selected domains of perceived competence or general self-worth between the six groups: social acceptance, $F(5, 47) = 0.13$, $p = .98$; athletic competence, $F(5, 47) = 0.73$, $p = .60$; physical appearance, $F(5, 47) = 0.81$, $p = .55$; conduct, $F(5, 47) = 1.31$, $p = .28$; general self-worth, $F(5, 47) = 0.65$, $p = .66$.

Results

We will first present the results of the sport skill tests and then the results on perceived competence. One should note that the number of wins and losses was the same for the four competitive groups. The two basketball groups had as many wins as losses. The two swim groups placed just about the same in their respective series. We thus do not consider the win/lose variable as a contributing factor in the changes in sport skill or in perceived competence.

Sport Skills

Table 2 shows the performances on the four tests of swimming. Each test showed a significant effect of time with two-way repeated measures analysis of variance on two factors. All groups progressed on each test of swimming, MS, $F(3, 95) = 29.33, p < .0001$; VG, $F(3, 95) = 38.40, p < .0001$; TP, $F(3, 95) = 14.17, p < .0001$. Moreover, the competitive performances (CP) also improved, $F(2, 63) = 14.71, p < .0001$, with no difference between the SwSO and SwISS groups, $F(1, 63) = 1.85, p = .22$.

For the between-group comparisons of the three tests during training, MS showed a significant group effect, $F(2, 95) = 4.28, p = .035$. The Student-Newman-Keuls method showed that the SwISS made more progress than the APA ($p < .05$). In addition, the study of interactions, MS, $F(6, 95) = 14.46, p < .0001$, specified that the SwISS had greater progress in the MS compared to APA and SwSO at T3 ($p < .05$).

Table 3 shows the performances achieved on the five basketball tests. Similar to the swimming groups, the two basketball groups progressed over the course of evaluation. Performance improved with the test of SA, $F(3, 63) = 24.71, p < .0001$; LP, $F(3, 63) = 50.83, p < .0001$; and FT, $F(3, 63) = 41.11, p < .0001$. There was no difference, however, in the course of progress between the two groups.

Perceived Competence

For the domains of social acceptance and physical appearance, the two-way repeated measures analysis of variance on two factors revealed no effect for groups, time, or interaction.

For perceived athletic competence, our results showed a significant difference only for time, $F(3, 191) = 15.32, p < .0001$. There was an overall decrease between pretest and Tests 1, 2, and 3 ($p < .05$). The Student-Newman-Keuls method showed a BBISS score at T3 that was significantly lower than that of the sedentary group ($p < .05$). The mean results for this domain of perceived competence between the six groups are illustrated in Figure 1.

For conduct, the two-way repeated measures analysis of variance on two factors showed significant differences for groups, $F(3, 191) = 11.92, p < .001$; time, $F(5, 191) = 7.48, p < .0001$; and interaction, $F(15, 191) = 5.9, p < .0001$. The results of the competitive groups were significantly lower than those of APA and sedentary groups ($p < .05$). Moreover, the analysis of interaction showed that this domain in BBISS and BBSO decreased between pretest and Test 3 ($p < .05$). The mean results for perceived conduct between the six groups are illustrated in Figure 2.

Table 2 Progress in Skill Performing the Breast-stroke in the 3 Groups of Adolescents With Mental Retardation Over an 8-month Period

Variable		SwISS				SwSO				APA				
		T0	T1	T2	T3	T0	T1	T2	T3	T0	T1	T2	T3	
MS	<i>M</i>	0.57	0.63	0.64	0.82	0.56	0.59	0.61	0.59	0.48	0.46	0.48	0.49	**
	<i>SD</i>	0.09	0.11	0.11	0.09	0.13	0.14	0.15	0.15	0.11	0.13	0.14	0.14	
VG	<i>M</i>	4.00	4.41	5.19	5.96	4.46	4.94	5.38	4.94	4.56	5.08	5.45	5.66	**
	<i>SD</i>	1.22	1.53	1.22	1.46	1.42	1.43	1.46	1.24	1.52	1.18	1.48	1.46	
TP	<i>M</i>	85.82	82.17	80.04	78.17	103.7	92.62	90.37	91.28	111.6	113.9	110.4	106.9	**
	<i>SD</i>	17.09	15.45	14.58	14.33	22.09	23.09	21.33	21.50	23.67	26.00	27.14	30.02	
CP	<i>M</i>		80.45	77.44	74.61		94.36	91.92	90.89					**
	<i>SD</i>		15.74	14.79	13.81		24.48	21.68	22.02					

Note. * $p < .05$; ** $p < .001$; BBSO = basketball in Special Olympics; SwSO = Swimming in Special Olympics; BBISS = basketball in Integrated Scholastic Sport; SwISS = Swimming in Integrated Scholastic Sport; APA = Adapted Physical Activity; Control = Sedentary. T0= Precompetition; T1= at 2 months; T2= at 5 months; T3= at 8 months; MS= maximal speed for 15 m, VG= ventral glide, TP= training performance for 50m, PC= performance during competition for 50m.

Table 3 Progress in Basketball Skill in 2 Groups of Adolescents With Mental Retardation Over an 8-month Period

Variable		BBISS				BBSO				
		T0	T1	T2	T3	T0	T1	T2	T3	
SA	<i>M</i>	10.83	11.69	13.94	14.16	11.75	13.13	13.63	14.38	**
	<i>SD</i>	2.53	2.47	2.87	2.83	0.89	1.02	1.52	0.88	
LP	<i>M</i>	6.88	7.13	8.04	8.28	6.31	7.44	7.94	8.88	**
	<i>SD</i>	1.75	1.76	1.93	1.83	0.92	0.56	0.73	0.69	
FT	<i>M</i>	4.13	5.13	6.19	6.25	5.28	5.91	6.66	7.38	**
	<i>SD</i>	1.06	1.16	1.26	1.35	0.73	0.33	0.64	1.16	

Note. * $p<.05$, ** $p<.001$; BBSO = basketball in Special Olympics; BBISS = basketball in Integrated Scholastic Sport. T0= Precompetition; T1= at 2 months; T2= at 5 months; T3= at 8 months; SA= shoot accuracy, LP= longest pass possible, FT= free throw.

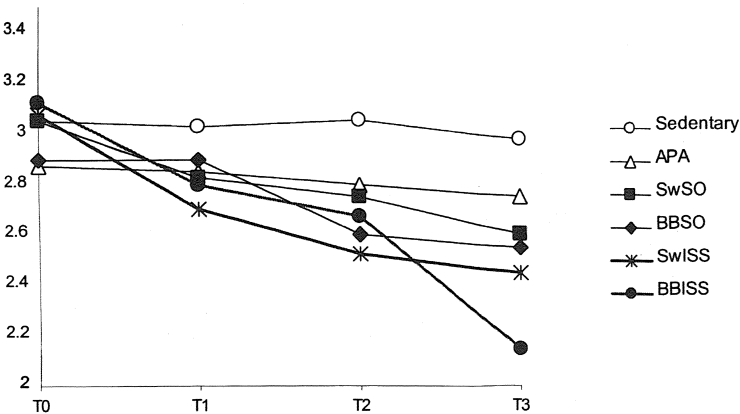


Figure 1 — Changes in perceived athletic competence domain over 8 months.

Note. BBSO = basketball in Special Olympics; SwSO = Swimming in Special Olympics; BBISS = basketball in Integrated Scholastic Sport; SwISS = Swimming in Integrated Scholastic Sport; APA = Adapted Physical Activity; Sedentary. T0= Precompetition; T1= at 2 months; T2= at 5 months; T3= at 8 months. For each group, $n = 8$. Minimum and maximum scores respectively 1 and 4.

For the general self-worth scale, the two-way repeated measures analysis of variance on two factors showed an overall significant difference for time, $F(3, 191) = 5.44, p < .01$). Although there was a change in scores for this scale, the Student-Newman-Keuls method showed that, in each group, the change between pretest and Test 3 was not significant, nor was there a significant difference between groups.

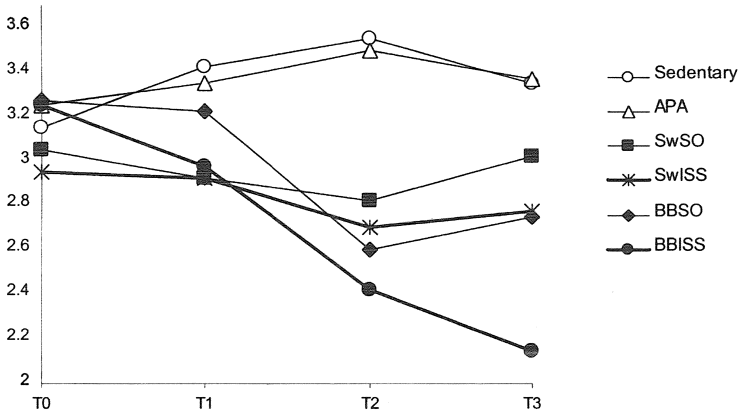


Figure 2 — Changes in perceived conduct competence over 8 months.

Discussion

The results of this longitudinal study contribute to our understanding of sport training and competition in relation to perceived competence of adolescents with MR. As has been suggested by the literature on swimming (Wright & Cowden, 1986), track and field (Gibbons & Bushakra, 1989), and basketball (Riggen & Ulrich, 1993), the sport skills of our adolescents with MR improved significantly over a period of 8 months. This progress, which confirms our first hypothesis, was verified both for swimming, a low-uncertainty sport, and basketball, a high-uncertainty sport that requires a great capacity of adaptation, which is theoretically lacking in this population. Except for one of the swim tests (MS), the skill tests indicated that the five groups (without sedentary group) progressed in similar fashion. Moreover, the type of organization, segregated or integrated meets, did not play a fundamental role in the progress. The adolescents with MR, thus, conformed, as does any individual, to the general law of learning of the novice in a given task. All task-training leads to a significant improvement in the novice's performance of that task (Rarick & Smoll, 1967).

Concerning perceived competence, the decrease in the domain of conduct noted in the two basketball groups supported our second hypothesis. In contrast to swimming, basketball is a team sport of physical contact, not only with one's teammates, but also with the opposing team. A highly codified game, it requires scrupulous respect for the rules in order to preserve its character as a team sport. For the adolescents with MR in this study, basketball provided an opportunity to recognize difficulties in adapting to team competition. The athletes' attempts at self-control led to a greater awareness of their capacities of adaptation, under the guidance of adults and the watchful eyes of the spectators. This greater awareness, in turn, seemed to be associated with lowered perceived competence in the domain of conduct.

The stability in the three domains (social acceptance, athletic competence, and physical appearance) and, in general, self-worth of BBSO, SwSO, APA, and sedentary groups, confirm the recent work of Dykens (1996) on the relative stability

of perceived competence in individuals with MR in a specialized center taking part in segregated competitions. This finding of stability, thus, does not support the third hypothesis concerning this type of competition. It also contrasts with the change in perceived competence noted by Gibbons and Bushakra (1989) in children and by Wright and Cowden (1986) in adolescents. One explanation is that our precompetition results showed that these adolescents with MR, placed in a specialized center for at least 1 year, manifested an initial high level of perceived competence. This finding is similar to that of Pierrehumbert, Zanone, Kauer-Tchicaloff, and Plancherel (1988), who used the Self-Perception Profile (Harter, 1985) in a population of French-speaking Swiss. The specialized context creates an artificial mechanism for social comparison that encourages overestimation of self-competence (Renick & Harter, 1989). Progressively, the adolescents in these segregated schools developed the habit of comparison between themselves at the risk of losing a sense of their real competence. This perceived competence is so high for the studied participants that the manifested progress in sport skill cannot increase this perception, particularly in perceived athletic competence.

Another result does not support Hypothesis 3 concerning integrated meets. The sharp decrease in the athletic competence and conduct domains for BBISS in the 8 months of competition indeed raises questions about the psychological mechanisms that operate during integrated competitive meets. This decrease was even more surprising because the level of sport skill increased in the sport groups. Perhaps the most important issue raised by our findings is whether a drop in perceived competence, as evaluated by the participants themselves, is favorable or unfavorable for the development of the adolescent in a specialized school. As this population has a tendency to overestimate in several domains of competence (Pierrehumbert et al., 1988), it is possible that integrated meets could help to limit the side effects of institutional care. Indeed, these adolescents, placed because of school failure, become too removed from an ordinary environment and are the focus of a teaching method based on systematic encouragement and maximal opportunities for success. An individual who has difficulty with abstractions will have problems perceiving himself simultaneously as the best in a specialized environment and the least performing in an ordinary environment. The comparison in sports with peers without MR can, therefore, encourage a more realistic self-evaluation in perceived physical competence, but without a decrease in general self-worth. Athletes with MR still feel good about themselves in general; they just have a more realistic view of their athletic competence. However, a realistic perception of sport competence would then affect the other domains of competence by an overgeneralization (Kernis et al., 1989).

Sports provide a framework for the mentalization of an individual's abilities by a comparison with others. When individuals with MR take the risk of comparing themselves, they develop a new way of viewing themselves and thus can modify a defensive overestimation (Sherrill, 1997). With a perceived physical competence that is a more accurate reflection of their capacities (Yun & Ulrich, 1997; Shapiro & Dummer, 1998), they are perhaps better prepared to undertake an athletic project and perhaps a more far-ranging project that is more closely based on real possibilities. Most important, the risk of disillusionment on leaving the specialized school environment will be lessened.

In conclusion, our study revealed three points concerning the longer-term repercussions of sport competition on the perceived competence of female

adolescents with MR. First, the effects of these meets, independently of pedagogical treatment, depend on the type of competition—integrated or segregated—and the type of sport practiced. Indeed, the integrated encounters led to a significant decrease in perceived athletic competence, and participation in basketball led to a significant decrease in perceived conduct. We may assume that these changes resulted in a more realistic evaluation of self in these individuals. These results support the initiatives of organizations such as SOI and Integrated Scholastic Sport. This study also supports the use of the SPP by APA professionals, who are trained to recognize the phenomena of overestimation in individuals with MR. Last, the uncertainty that persists concerning the long-term repercussions of the different modes of sports competition in this population (Riggen & Ulrich, 1993) underlines the interest of differential studies comparing all forms of organization.

References

- Aufsesser, P.M., Paciorek, M.J., & Rich, S. (1996). 1995 Special Olympics World Games came to Connecticut – As did sport, spirit and splendor. *Palaestra*, *12*(1), 26-38.
- Biddle, S.J.H., & Mutrie, N. (1991). *Psychology of physical activity and exercise: A health-related perspective*. London: Springer-Verlag.
- Cazorla, G. (1993). *Tests spécifiques d'évaluation du nageur*. Paris: Association de Recherche et d'Education en Activités Physiques et Sportives – Fédération Française de Natation.
- Crocker, P.R.E., & Ellsworth, J.P. (1990). Perceptions of competence in physical education students. *Canadian Journal of Sport Sciences*, *4*, 262-266.
- Drowatzky, J.N., & Geiger, W.L. (1993). Cluster analysis of intelligence, age, and motor ability performance of mentally retarded and nonretarded children. *Clinical Kinesiology*, *46*, 7-11.
- Dykens, E. (1996). Effects of Special Olympics International on social competence in persons with mental retardation. *Journal of the Academy of Child & Adolescent Psychiatry*, *35*(2), 223-229.
- Gibbons, S.L., & Bushakra, F. (1989). Effects of Special Olympics participation on the perceived competence and social acceptance of mentally retarded children. *Adapted Physical Activity Quarterly*, *6*, 40-51.
- Grosgeorges, B., & Wolff, M. (1998). *Détection et sélection en Sport Collectif*. Paris: Institut National des Sports et de l'Education Physique.
- Harter, S. (1982). The perceived competence scale for children. *Child Development*, *53*, 87-97.
- Harter, S. (1985). *Manual for the Self-Perception Profile for Children*. Denver, CO: University of Denver.
- Kernis, M.H., Brockner, J., & Frankel, B.S. (1989). Self-esteem and reactions to failure: The mediating role of overgeneralization. *Journal of Personality and Social Psychology*, *57*(4), 707-714.
- Kozub, F.M., & Porreta, D. (1996). Including athletes with disabilities: Interscholastic athletic benefits for all. *Journal of Physical Education, Recreation and Dance*, *67*(3), 19-24.
- Levine, H.G., & Langness, L.L. (1983). Context, ability, and performance: Comparison of competitive athletics among mildly mentally retarded and non-retarded adults. *American Journal of Mental Deficiency*, *83*, 528-538.

- Ninot, G., Bilard, J., & Brunet, F. (1998). Les courants issus de l'avènement des compétitions sportives chez les adolescents handicapés mentaux. *European Review on Mental Retardation*, 17(5), 10-26.
- Pierrehumbert, B., Plancherel, B., & Jankech-Caretta, C. (1987). Image de soi et perception des compétences propres chez l'enfant. *Revue de Psychologie Appliquée*, 4, 359-377.
- Pierrehumbert, B., Zanone, F., Kauer-Tchicaloff, C., & Plancherel, B. (1988). Image de soi et échec scolaire. *Bulletin de Psychologie*, 7-9, 333-345.
- Rarick, G.L., & Smoll, F.L. (1967). Stability of growth in strength and motor performance from childhood to adolescence. *Human Biology*, 39, 295-306.
- Reid, G. (1987). Motor behavior and psychological correlates in handicapped performers. In D. Gould & M. Weiss (Eds.), *Advances in pediatric sport sciences* (pp. 235-249). Champaign, IL: Human Kinetics.
- Renick, M.J., & Harter, S. (1989). Impact of social comparisons on developing self-perceptions of learning disabled students. *Journal of Educational Psychology*, 4, 631-638.
- Ribner, S. (1978). The effects of special class placement on the self-concept of exceptional children. *Journal of Learning Disabilities*, 11, 60-64.
- Riggen, K., & Ulrich, D. (1993). The effects of sport participation on individuals with mental retardation. *Adapted Physical Activity Quarterly*, 1, 42-51.
- Shapiro, D.R., & Dummer, G.M. (1998). Perceived and actual competence of adolescent males with mild mental retardation. *Adapted Physical Activity Quarterly*, 15, 179-190.
- Sheare, J.B. (1978). The impact of resource programs upon the self-concept and peer acceptance of learning disabled children. *Psychology in the Schools*, 15, 406-411.
- Sherrill, C. (1997). Disability, identity, and involvement in sport and exercise. In R.K. Fox (Ed.), *The physical self* (pp. 257-286). Champaign, IL: Human Kinetics.
- Silon, E.L., & Harter, S. (1985). Assessment of perceived competence, motivational, orientation, and anxiety in segregated and mainstreamed educable mentally retarded children. *Journal of Educational Psychology*, 2, 217-230.
- Songster, T. (1990). *Overview of the Special Olympics research program*. Washington DC: Special Olympics Monographs.
- Ulrich, D.A., & Collier, D.H. (1990). Perceived competence in children with mental retardation: Modification of a pictorial scale. *Adapted Physical Activity Quarterly*, 7, 338-354.
- Weiss, M.R. (1986). A theoretical overview of competence motivation. In M.R. Weiss & D. Gould (Eds.), *Children in Sport: Proceedings of the 1984 Olympic Scientific Congress* (pp. 48-72). Champaign, IL: Human Kinetics.
- Widaman, K.F., McMillan, D.L., Hemsley, R.E., Little, T.D., & Balow, I.H. (1992). Differences in adolescent's self concept as a function of academic level, ethnicity, and gender. *American Journal on Mental Retardation*, 96(4), 387-404.
- Wright, J., & Cowden, J. (1986). Changes in self-concept and cardiovascular endurance of mentally retarded youths in a Special Olympics swim training program. *Adapted Physical Activity Quarterly*, 3, 177-183.
- Yun, J., & Ulrich, D. (1997). Perceived and actual physical competence in children with mild mental retardation. *Adapted Physical Activity Quarterly*, 14, 285-297.
- Zoerink, D.A., & Wilson, J. (1995). The competitive disposition: Views of athletes with mental retardation. *Adapted Physical Activity Quarterly*, 12, 34-42.