



# Group-Based Physical Activity in Intellectual Disability and Severe Psychiatric Disorder: Functioning and Adjustment in Daily Life

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## Abstract

**Introduction:** Despite Intellectual Disability (ID) it's a condition with high risk for mental disorders, bad global functioning, high social and economic costs, abilities of ID people towards daily life are poorly studied. Sport is an important tool in mental health aimed to the recovery and a better functioning. The aim of the study was to assess the effectiveness of a sport group activity (SGA) on health, functioning and adjustment in a group of patients affected by ID, compared with a group of patients with Severe Psychiatric Disorders (SPD).

**Material and method:** 29 persons with ID made a 24 months' program that used different sports (football, basketball, fencing, archery, rugby) were compared with a 41 persons with SPD, treated with the same program.

**Results:** ID group showed an increase in all adjustment dimensions and in global functioning (after 12 and 24 months); such as it happened in the SPD group. SPD group showed a wider increase in all areas if compared with the ID group.

**Discussion and conclusion:** Sport represents a tool for the development of wellbeing and social health in selected populations such as ID people. People with ID often have strong difficulties to exercise regularly, and when it happens, they often attend project aimed only for person with ID without any integration with people without ID. Sport project for ID integrated with other persons not-ID aimed to facilitate social integration, and to stimulate not only the social and relational abilities but the physical abilities, too.



## Introduction

Intellectual Disability (ID) it's a condition with similar or higher risk for mental disorders and inadequate attitude towards daily situation that causes both poor adjustment and bad global functioning [1,2] with higher social and economic costs. Abilities towards daily life of people with ID are poorly studied. On the other hand, past research show that patients with Severe Psychiatric Disorders (SPD) have a reduced life expectation, a higher rate of disability with a worse functioning compared to general population [3,4]. Rehabilitation activities through sport represent a relevant tool towards the recovery of patients with SPD [5-7].

Talking about the role of sport in mental health, sport increases health state in patient with severe mental disorder [8,9,10,5,11] towards the recovery. Following the Council of Europe definition: Sport represents "all forms of physical activity which, through casual or organized participation, aim at expressing or improving physical fitness and mental well-being, forming social relationships or obtaining results in competition at all levels" [12]; this might suggest an important role in ID, too.

Sport have a key role in promoting wellbeing in groups with high risks for mental health conditions (such as pre-morbid conditions, social exclusion, high genetic load and other predisposing factors), in fact sport could represent a good tool in these risks populations to prevent maladaptive symptoms [13]; what we yet don't know is whether it can prevent maladaptive symptoms and reduce the risk of mental disorder in ID, too.

Despite the lack of evidence about the use of sport as a healthy tool in person with ID and the consequent effects on their daily life, sport could be considered a relevant therapeutic instrument since there are evidence of its efficacy in fragile population like SPD patients [8,9,10,14,5,11].

The aim of our study was to assess the effectiveness of a sport group activity (SGA) on health, functioning and adjustment in a group of patients affected by ID, compared with a group of patient with Severe Psychiatric Disorders (SPD), such as Schizophrenia, Bipolar Disorder, Severe Personality Disorders.

## Material and methods

Participants were 29 persons with ID engaged in group based sport activities at "Bellaria Solidarietà", a volunteering associations in the region of Tuscany (Italy). The SPD group was composed by 41 patients with SPD recruited through the psychiatric medical unit of the same area (Valdera Unit of Mental Health.).

The SGA was a 24 months' program that used different sports such as football, basketball, fencing, archery, rugby. The SGA treatment was added to the already existing treatment (psychopharmacology and/or psychotherapy) in SPD group. The SGA program was conducted from one to multiple sessions per week. Each session lasted 90 minutes. Patients were included in the study after a confirmation of their participation and then started SGA after 3 weeks. Those who interrupted the SGA after 3 weeks, were considered as "drop out".

Diagnoses were based on the DSM-IV Axis I and II Disorders [15], conducted by a trained senior psychiatrist using clinical interview.

Adjustment was measured by the LIFE scale [16]: We measured the level of adaptation in work activity, family life, home

working, with friends, enjoyment and satisfactions. A score of 6 means completely absent, while a score of 1 means perfect adjustment. The level of functioning was measured with the GAF scale [15].

All patients were evaluated at baseline, after 12 and 24 months.

Data were analysed using SPSS 18 [17]. A t-test for the dependent sample was used to test the differences pre-post SGA.

## Results

ID group showed a mean age of 29.38 years (range 17-67) and was composed by 89.6% of males versus 10.4 woman.

SPD group showed a mean age of 33.02 years (range 17-58) and was composed by 87.8% of males versus 12.2 woman.

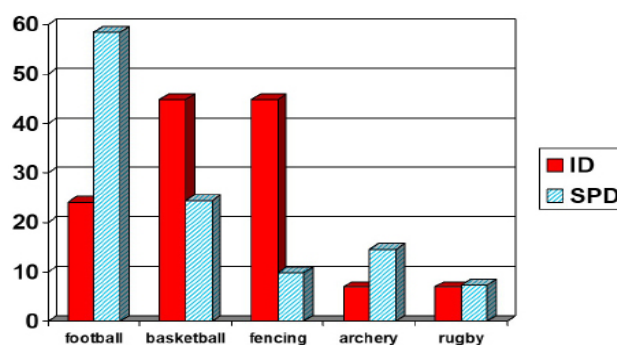
Bipolar Disorder was the prevalent diagnosis in 39.0%, while Schizophrenia was 34.2%, Severe Personality Disorders were 19.5%, and Autistic Spectrum was 7.3%.

Only one patient in the SPD dropped out after more than 3 weeks, all the others completed the study.

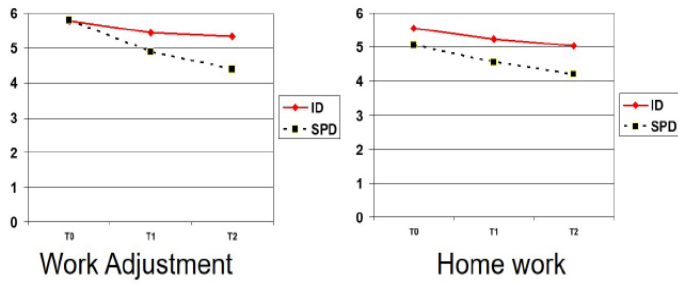
For adjustment variables, in the ID group the value of Work adjustment at beginning was 5.79, it became 5.45 after 12 months and 5.34 after 24 months. Home works were 5.55 and became 5.24 after 12 months and 5.03 after 24 months. The initial value of familiar relationships was 4.79, after 12 months it was 4.45 and at the end it was 4.17. Friendship at beginning was 5.14, it reduced at 4.41 after 12 months and at 4.07 after 24 months. Enjoyment at the start was 4.79, then after 12 months was 4.07 and 3.69 after 24 months. Global satisfaction passed from 4.86 at beginning, to 4.17 after 12 months and 3.83 after 24 months. Global adaptation was 5.00 at beginning and it was 4.48 after 12 months and 4.24 after 24 months (Table 1 & 2 and Graph 2-5).

Global level of function of the ID group was 31.07 at beginning, and it increased to 42.66 after 12 months and it went up to 46,86 at the end of the study (Table 1 & 2, and Graph 6).The differences between the means of adjustment and functioning are showed in Table 1.

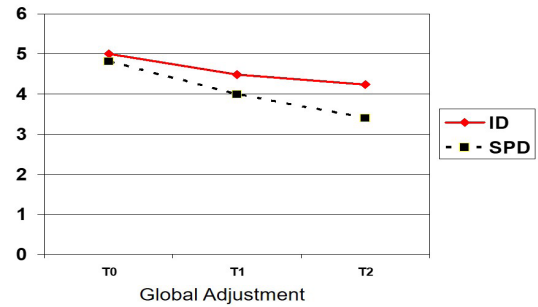
In the SPD group the value of Work adjustment at beginning was 5.76, it became 4.93 after 12 months and 4.44 after 24 months. Home works were 5.05 and became 4.56 after 12 months and 4.20 after 24 months. The initial value of familiar relationships was 4.63, after 12 months it was 4.02 and at the end it was 3.63. Friendship at beginning was 4.98, it reduced at 4.01 after 12 months and at 3.54 after 24 months. Enjoyment at the start was 4.68, then after 12 months was 3.80 and 3.34



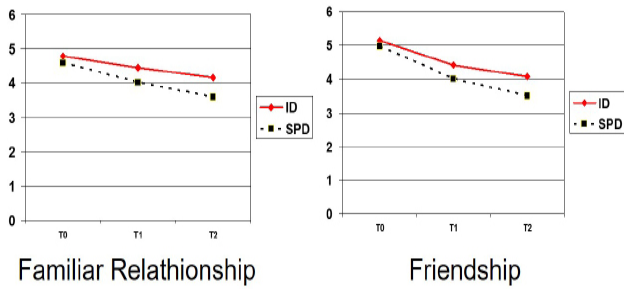
**Graph 1:** Sport activities in the ID group (n=29) and in SPD group (n=41).



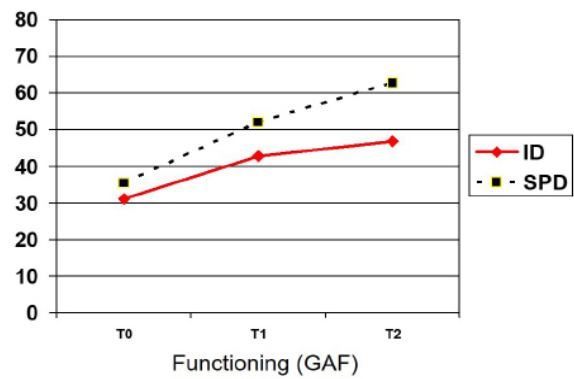
**Graph 2:** Adjustment in the ID group (n=29) and in SPD group (n=41): Work Adjustment and Home Work dimensions.



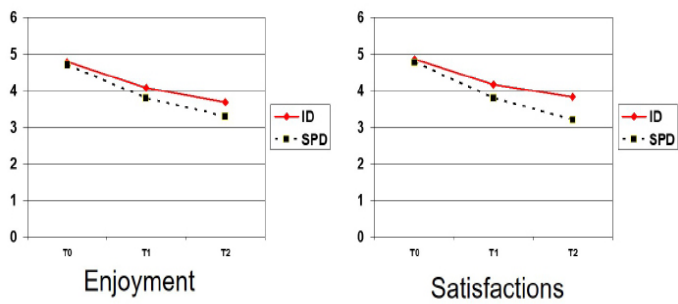
**Graph 5:** Global Adjustment in the ID group (n=29) and in SPD group (n=41).



**Graph 3:** Adjustment in the ID group (n=29) and in SPD group (n=41): Familiar Relationship and Friendship dimensions.



**Graph 6:** Functioning in the ID group (n=29) and in SPD group (n=41).



**Graph 4:** Adjustment in the ID group (n=29) and in SPD group (n=41): Enjoyment and Satisfactions.

**Table 1:** Adjustment and Functioning in ID group: means at baseline, after 12 and 24 months

	Baseline	12 months	24 months	significance
<b>Adjustment</b>				
Work	5.79 ± 0.67	5.45 ± 1.09	5.34 ± 1.17	*,***
Home works	5.55 ± 0.51	5.24 ± 0.79	5.03 ± 0.94	*,**,***
Familiar relationships	4.79 ± 0.67	4.45 ± 0.69	4.17 ± 0.71	*,**,***
Friendship	5.14 ± 0.58	4.41 ± 0.57	4.07 ± 0.70	*,**,***
Enjoyment	4.79 ± 0.73	4.07 ± 0.65	3.69 ± 0.66	*,**,***
Global satisfaction	4.86 ± 0.74	4.17 ± 0.71	3.83 ± 0.76	*,**,***
Global adaptation	5.00 ± 0.53	4.48 ± 0.69	4.24 ± 0.79	
<b>Functioning</b>				
Global level of function	31.07 ± 12.15	42.66 ± 14.08	46,86 ± 13.56	*,**,***

\*p<0.05 baseline-12 months; \*\*p<0.05 12 months-24 months; \*\*\*p<0.05 baseline-24 months;

**Table 2:** Adjustment and Functioning in DI vs SPD: means at baseline, after 12 and 24 months

		DI	SPD	t	p
<b>Adjustment</b>					
Work	Baseline	5.79 ± 0.67	5.76 ± 0.62	0.243	ns
	12 months	5.45 ± 1.09	4.93 ± 1.01	2.061	0.042
	24 months	5.34 ± 1.17	4.44 ± 1.29	3.001	0.003
Home works	Baseline	5.55 ± 0.51	5.05 ± 0.89	2.734	0.008
	12 months	5.24 ± 0.79	4.56 ± 1.00	3.052	0.003
	24 months	5.03 ± 0.94	4.20 ± 1.14	3.242	0.002
Familiar relationships	Baseline	4.79 ± 0.67	4.63 ± 0.62	1.016	ns
	12 months	4.45 ± 0.69	4.02 ± 0.69	2.541	0.013
	24 months	4.17 ± 0.71	3.63 ± 0.91	2.650	0.010
Friendship	Baseline	5.14 ± 0.58	4.98 ± 0.52	1.221	ns
	12 months	4.41 ± 0.57	4.01 ± 0.77	2.447	0.017
	24 months	4.07 ± 0.70	3.54 ± 0.92	2.610	0.011
Enjoyment	Baseline	4.79 ± 0.73	4.68 ± 0.52	0.739	ns
	12 months	4.07 ± 0.65	3.80 ± 0.78	1.490	ns
	24 months	3.69 ± 0.66	3.34 ± 0.82	1.884	ns
Global satisfaction	Baseline	4.86 ± 0.74	4.78 ± 0.61	0.502	ns
	12 months	4.17 ± 0.71	3.80 ± 0.70	2.188	0.032
	24 months	3.83 ± 0.76	3.24 ± 0.83	3.001	0.003
Global adaptation	Baseline	5.00 ± 0.53	4.80 ± 0.51	1.544	ns
	12 months	4.48 ± 0.69	3.98 ± 0.65	3.136	0.002
	24 months	4.24 ± 0.79	3.37 ± 0.83	4.444	0.001
<b>Functioning</b>					
Global level of function	Baseline	31.07 ± 12.15	35.32 ± 12.19	1.437	ns
	12 months	42.66 ± 14.08	52.15 ± 13.10	2.895	0.005
	24 months	46,86 ± 13.56	62,17 ± 14.25	4.673	0.001

after 24 months. Global satisfaction passed from 4.78 at beginning, to 3.80 after 12 months and 3.24 after 24 months. Global adaptation was 4.80 at beginning and it was 3.98 after 12 months and 3.37 after 24 months (Table 2 and Graph 2-5)

Global level of function of the SPD group was 35.32 at beginning, and it increased to 52.15 after 12 months and it went up to 62,17 at the end of the study (Table 2 and Graph 6)

The differences between the means of adjustment and functioning are showed in table 2: Only Enjoyment doesn't show any significant difference between ID and SPD groups.

### Discussion

During the last years, sport and physical exercise are progressively growth both as new techniques in psychiatric rehabilitation and as a tool for the development of wellbeing and social health in selected populations. It's efficacy may be due to different reasons: it is a quite inexpensive tool, it can be used

for group of people with different characteristics (diagnoses, age, gender, etc); it has a strong impact on health, functioning and adjustment. Also sport is usually quite well accepted by subjects.

People with ID often have strong difficulties to exercise regularly, and when it happens, they often attend project aimed only for person with ID without any integration with people without ID.

We have proposed a project of sport with other persons not-ID aimed to facilitate social integration, and to stimulate not only the social and relational abilities but the physical abilities, too.

ID group increased the level of adjustment in all the areas: Satisfaction, enjoyment, friendship. The abilities acquired through SGA are used during patient's daily life, which led to an increase in their familiar and work, adjustment. They improve in familiar relationship and home working.

Our results showed a relevant increase of global function both after 12 and 24 months, these findings suggest that sport can change patient inability state into a productivity condition. These goals are very relevant for the life of ID persons. In the past, ID persons were commonly viewed as unchangeable in the level of functioning or adjustment, they were labelled for their disability such as people affected by SPD. During last 40 years sometimes changed: people with SPD showed how if they received adequate treatment, they can commute their disability in abilities. Our thought is that if people with ID received an approach with adequate stimuli, they can improve their abilities. This implementation seems to be less rapid and less high if compared with people affected by SPD, but anyway the changes in ID people determine a real implementation in their daily ability which could mean less need of caregivers, less cost of their disability, high personal enjoyment and satisfaction.

Our study has several limitations: Participants were selected specifically by the Unit of mental health so the results may not be applicable to others; the sample was composed by people with different diagnosis, this aspect can represent a limitation on one side but also better express the clinical reality on the other.

The pharmacological treatment is an important variable that we did not consider in our study: **The medication remained unchanged during the study.**

We did not analyse the difference among the various sport, in the future it would be interesting to see whether different kind of heart stimulation and fatigue have an impact on the results.

The evidence from this study suggest that sport is an effective tool not only in psychiatric rehabilitation: Sport programs with integrated groups increase adjustment and functioning in ID people preventing maladaptive symptoms towards a better daily life. This study might have implication for clinical practice suggesting to add an integrated sport approach as a tool to improve mental health of people with ID.

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