

# Accept. Understand. Then play! The impact of sport and physical activity in autism spectrum disorder

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## Abstract

Participating in sports and physical activity has physical, psychological, cognitive and social benefits for everyone, including young people with autism spectrum disorder (ASD). The practice environment and instructorship are significant inclusion factors for young people with ASD. A safe, attractive and easy-to-access environment has a positive impact on the practice of physical activity for all disabilities, ASD included. Nonetheless, the teachers and coaches are not always informed of the condition of the young people for which they are responsible and they may not have been trained to adapt their coaching to the reality of these young people. They may not have the knowledge, openness or resources to properly integrate a person with ASD in their group. Hence, it is relevant to give them tools so they can intervene more adequately with people living with ASD.

## Introduction

### Overview

Recently, research has proposed effective ways to intervene with people living with ASD in order to optimize their integration in sports and physical activity. In particular, there have been suggested ecologic, cost-effective and scalable approaches. These smart strategies have to be disclosed to teachers, educators and instructors of all kind of sports. They should be aware of the barriers related to ASD, and should be also capable of implement strategies to overcome this barriers in order to include people with ASD in sport activities. Specifically, they should focus on the social environment, the kind of activity proposed, communication strategies ([Duquette et al., 2016](#)).

### Barriers

As briefly mentioned above, when it comes to engage in physical activities or playing sports (especially team sports), there are some barriers related to the ASD condition.

### ASD-related

Barriers related to ASD include repetitive, obsessional, or compulsive activities as well as communication and social interaction challenges. When engaging in sport and physical activity, a young person with ASD

might have a hard time understanding a play, paying attention to the rules, anticipating, and elaborating good strategies. Some barriers may also be related to their gross motor function

### Physical and social environment

As for the physical environment, the barriers are mainly at the sensory level. The texture of a uniform, the feeling of a bathing cap on the head, or the ambient noise during a swimming class, are all examples of barriers identified for people living with ASD.

However, barriers in sports and physical activity are mostly related to the social environment. The attitude and reactions of coaches as well as that of other parents and young people affect a young person with ASD. The social environment also involves other young people in the group. The practiced activity leads young people to interact. Coherence, stability and safety needs can also limit the participation of young people with ASD in sport and physical activity, especially when the activities are new or take place in a new environment with people they don't know. It is even more difficult for a young person with ASD to feel comfortable in such conditions.

### Kind of activity

In addition to the barriers related to ASD and the physical and social environments, some barriers are related to the physical activity itself and may even prevent the young people from participating. In fact, it can be difficult for young people with ASD when the activity is too intense or too competitive. In essence, the activity may not meet the interests or preferences of the young person. Elaborated and hard-to-master sequences of movements, material that is hard to manipulate, or many rules to understand and remember, may make the activity too difficult.

Areas	Examples
Caregivers (coaches, teachers, educators, etc.)	Too focused on competitiveness Close-minded Lack of knowledge Lack of resources
Peers	Intimidation Lack of knowledge Lack of awareness Inadequate integration of the person with ASD
Parents	Don't engage in sport and physical activity Lack of energy Lack of resources
Availability of activities	Type of activity Elementary to secondary transition Lack of support

Figure 1: Overview of the barriers related to the physical and social environment which have a negative impact on the practice of physical and sports activities among young people living with ASD

### Strategies

With regard to the social environment, awareness and strategies to circumvent the difficulties are the main ones. Indeed, awareness must not only be raised among caregivers and peers, it must also be raised among

all those who revolve around the young person, so that everyone learns how to live together. Communication between the parent and the caregiver is essential. By taking into account the person with ASD's interests, sensory and motor particularities as well as their abilities, it becomes much easier to integrate them. Coaches, other peers in the group, as well as parents/relatives, are those who influence a person with ASD. Peers in the group can also be facilitators by being helpers and instructors for people with ASD. Finally, a good way to reduce barriers is to develop communication strategies that allow the explanation of the physical activity to the young person with ASD in order for them to better understand it.

Communication strategies	Examples
Grab their attention	Name the young person Make sure there is visual contact, if possible Limit ambient noise Support the message with gestures, mimes
Adapt the message, instructions, and Teaching	Give less information Give one instruction at a time Use concrete, known vocabulary Speak more slowly Show an example of what to do Avoid long explanations Give concrete examples Adopt a routine
Make sure the young person understands what is being said	Give them time to understand and answer the questions Allow them to repeat what was said Ask questions in order to make sure they understood
Reword explanations and teachings	Be redundant, repeat, and reword if needed Use visual cues (gestures, writings, drawings, pictograms)
Let the young people express themselves	Make visual support available Encourage the young people to make gestures when saying something Make sure you understand them by rewording Encourage all efforts and attempts

Figure 2: Communication strategies that can optimize young people with ASD's participation in sport and physical activity.

## Take-home message

The most important strategies to remember are:

1. Know the strengths and weaknesses of the individual with ASD (e.g., their interests, fixations, distinctive features, what is acceptable and what is not);
2. Integrate the person with ASD gradually into an activity (e.g., show them before, visit the facilities, start alone, then add participants);
3. Adopt a routine (e.g., warm-up period before the class/exercises);
4. Use a structure when transmitting messages (e.g., give short and precise instructions, make sure that the young person is looking at you, that they pay attention);
5. Promote consistency among all those who intervene with the young person; use the same strategies (e.g., same approaches, same ways to communicate with the young person);
6. To inform other participants of the reality of young people with ASD and be vigilant in reducing any form of intimidation or exclusion of the other participants.

## Materials and Methods

In order to efficiently engage in physical activities among peers, greater motor skill proficiency and greater perceived motor competence are necessary. Greater perceived motor competence is also a contributing factor to participate in active games in a social setting. In addition, this may translate into more frequent engagement with peers, providing more opportunity for social interactions. (Guest et al., 2017)

### Intervention

Basing on current scientific literature, this intervention is designed to improve motor skills among individuals with ASD. The purpose is to evaluate the impact of multi-sport activities on motor skills, physical activity, physical self-perceptions, social and adaptive behaviour in a sport-related context. First, all the strategies described in the Introduction paragraph will be explained, disclosed and discussed with the educators/trainers which will participate in the project, then the same strategies will be implemented during the activities.

### Procedures

Motor skills will be incorporated into active group games in order to facilitate a high level of practice and repetition in realistic situations (Ryan et al., 2017). The camp curriculum was inspired by Special Olympics FUNDamentals program, which falls within the Long Term Athlete Development Model (LTAD) to target the development of fundamental motor skills of young children with IDD (Special Olympics Canada, 2007). Skills taught at the camp will include locomotor and object control skills. The skills taught will progress in difficulty throughout the week and will be implemented into translational sport settings including: track and field, basketball, soccer, and baseball.

### Parameters of evaluation

These parameters will be evaluated at the baseline and after the intervention:

**Motor proficiency.** Bruininks-Oseretsky Test of Motor Proficiency-2 (BOT-2). The BOT-2 delivers the most precise and comprehensive measure of motor skills, both gross and fine. It contains subtests and challenging game-like tasks and is very easy to administer.

**Physical activity.** Step-tracking app via smartphone. This is a reliable, validated, smart and very popular modality of assessing levels of general physical activity.

**Physical self-perceptions.** The Children and Youth Physical Self-Perception Profile (CY-PSPP) is used for to study how self-perceptions influence physical activity and other psychosocial constructs. The CY-PSPP is a 36-item questionnaire with insight on six subscales: sport/athletic competence, condition/stamina competence, attractive body adequacy, strength competence, physical self-worth, and global self-worth.

**Social and adaptive behaviour.** The Social Skills Improvement System (SSIS) was designed to assess individuals who are suspected of having significant social difficulties or ASD characteristics. It is a standardized assessment used to measure social skills, problem behaviours, and academic competence.

## Data analysis

Data will be statistically analyzed, doing pre-post comparisons based on the outcomes of the tests and questionnaires described above.

## References

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