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Analysis of existing sport programs 2022-2025

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Summary

The Analysis of the autism sport programmes of the partners and of other organisations worldwide provides a synthesis of autism programs that show good practices on how to build an adapted pedagogical model.

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Abbreviations and acronyms

- ABA: Applied Behavioral Analysis
- AE: Autism Europe
- ASD: Autism Spectrum Disorders
- FSASPTT: Fédération sportive des ASPTT (ASPTT Fédération Omnisports)
- Sacree: Sport and Autism, from a scientific diagnosis to the CREation of a pedagogical European model
- SISAAP: Sport for Increasing Socialisation and Abilities of Autistic People
- SSR: SS Romulea
- SUZAH / CUAA: Savez Udruga Za Autizam Hrvatske / Croatian Union of Associations for Autism
- TEACCH: Treatment and Education of Autistic and related Communication-handicapped Children



1. Summary

This Analysis of the partners' sports programme provides a synthesis of autism programs that demonstrate good practices on building an adapted pedagogical model.

This document enables us:

1/ To understand the definition of the pedagogical model: It's a framework or approach to teaching and learning. It is based on specific theories of how people learn and how best to facilitate their learning.

2/ To present the model of Sport and Autism of the partners:

- **Autism Europe** did not develop a model by themselves, but their documentation and expertise provide a very interesting starting point
- **SS Romulea** is the perfect in-field example that people with ASD can participate in inclusive sport, even for collective sport that requires socialisation at its core. Their in-field expertise on implementing sport programs within the ASD population is very precious.
- **SUZAH is already** involved in a previous Erasmus+ Project based on developing a handbook that provides an easy to use tool that can be a starting point for developing sports programs for people with ASD. It is the most similar project to the Sacree project and this brings a very strong base to start upon. The latter project is, however, only focused on the coach's experience and attitude.
- The model of the **FSASPTT** is interesting regarding the implementation of a sport program: costs, training of the coaches, how to motivate an organisation to promote sport towards people with ASD, etc. These aspects should not be neglected when it concerns establishing a sport program for people with ASD.
- The experience of **Inovar Autismo** shows that people with ASD can practice different sport activities inclusively: tennis, surfing lessons, water sports, gym...

3/ To present the first conclusions:

- 87% of the ASD population display motor impairments
- The ideal dose of physical activity for individuals with ASD may vary depending on their age, abilities, and health status, and remains yet to be determined
- It is recommended to start with a low-intensity activity and gradually increase the intensity as the individual becomes more comfortable and skilled
- Points of vigilance: sensory considerations, physical abilities, emotional support, Inclusion, the choice of a sport, safety, working with a coach or instructor, building self-esteem...
- Examples of sports recommended for people with ASD: swimming, tennis, golf, biking, horseback riding...



2. Introduction: Project Overview

The Sacree program aims at improving the daily lives of people with Autism Spectrum Disorders (ASD) by promoting the inclusive practice of sport activities. Running for 36 months, until 2025, the project is funded by the European Commission's Erasmus+ Sport Program.

A few recent studies have looked into the impact of sport on people with ASD. However, these studies targeted local participants and used small samples that might not reflect a common reality for people on the autism spectrum across Europe. Similarly, former EU projects dedicated to supporting people with disabilities through sports activities only targeted very specific sports, disabilities in general, or physical disabilities rather than ASD explicitly. Therefore, both the research on the impact of sport on people with ASD and their concrete access to sport across Europe need to be improved.

Sacree targets a better integration of people with ASD in sport activities and society in general by fostering their accessibility to physical activity that is adapted to their needs through sustainable solutions. The project will contribute to creating an inclusive ecosystem that can be replicated everywhere in Europe. It also aims to raise awareness among European sport clubs, their staff and practitioners, as well as other professionals, researchers, and involved stakeholders. By bringing together actors from the world of autism, sport, and science, the Sacree project intends to co-construct an evidence-based pedagogical model, built on a scientific comparative study and field-tests carried out in different environments and countries.

The main objective of the Sacree project is to contribute to the recognition of sport as a tool for the integration and inclusion of people with ASD and to foster European knowledge on both sport and autism. Beyond increasing the quality of life of autistic people as well as that of their families, friends, and relatives, the Sacree project will open new horizons to EU stakeholders and EU policy-makers for future actions to promote a more inclusive and diverse society.

To meet Sacree's overall objectives as efficiently as possible, partners have worked together to create a wide and innovative network, with 3 core characteristics: transnational, transdisciplinary, and cross-sectorial.

1. Transnational: 5 European Union countries (Belgium, France, Italy, Portugal, and Croatia) are targeted, with different contexts regarding the inclusion of people with disabilities.
2. Transdisciplinary: Sacree project addresses topics in sports, autism, social sciences and health sciences.
3. Cross-sectorial: Sacree groups 1 National Sport Federation (FSASPTT), 1 international association (Autism-Europe), 1 historical football club (SS Romulea SSD arl), 1 University (Laboratory C3S), 1 union of associations for autism (CUAA), and 1 national association (Inovar Autismo).

This pool of partners is dedicated to the exchange of good practices, the analysis of success factors and shortcomings of different field tests, and the understanding of how target groups benefit from the results to increase the impact and transferability of these.

FSASPTT leads the Management and the Coordination of the project.



3. Core objectives of the project

The main objective of the Sacree project is to contribute to the recognition of sport as a tool for integration and inclusion of people with ASD and to complete and harmonise European knowledge on sport and autism.

1.1 Increasing quality in the work, activities, and practices of the partners' organisations, and building capacity to work transnationally and across sector

1.2 Addressing needs and supporting the development of autistic people: sport as a way to foster inclusion and diversity

1.3 Enabling transformation and change, leading to improvements and new approaches



4. What is a pedagogical model?

A pedagogical model is a framework or approach to teaching and learning. It is based on specific theories that draw on how people learn and how to best facilitate their learning. Pedagogical models are used to guide the design and implementation of educational experiences, and they can take many different forms depending on the goals and context of the learning environment. Some common pedagogical models include:

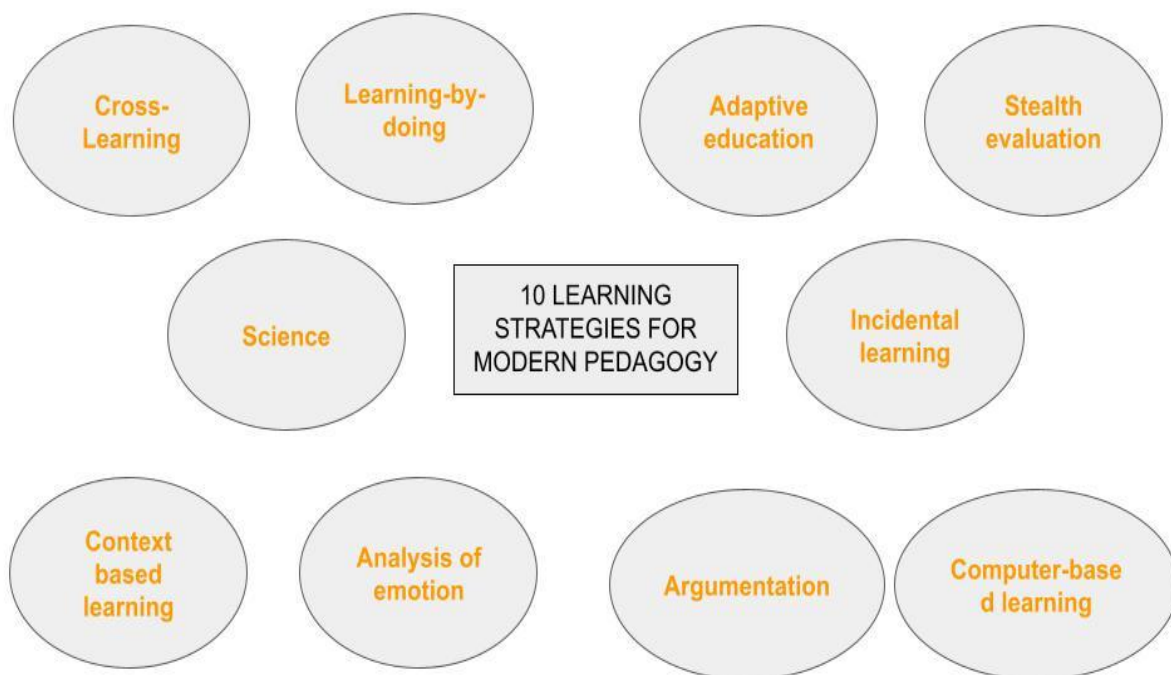
Constructivism: This model is based on the idea that learners construct their own understanding of the world through their lived experiences and interactions with others. The role of the teacher is to facilitate and guide learning, rather than simply transmitting knowledge.

Inquiry-based: This model is focused on encouraging students to ask questions, explore, and discover for themselves. Teachers provide support and resources, but the emphasis is on student-driven learning.

Problem-based: This model involves using real-world problems or challenges as the basis for learning. Students work together to identify and solve problems, with the teacher serving as a facilitator and coach.

Project-based: This model involves students working on extended, in-depth projects that require them to apply their knowledge and skills to solve a problem or complete a task. The teacher provides support and guidance throughout the process.

Blended: This model combines elements of online and in-person learning, often using technology to facilitate learning.



Information from : <https://www.teachthought.com/the-future-of-learning/innovative-strategies/>



There are many other pedagogical models, and each has its own unique characteristics and benefits. It is important to choose the model that best fits the goals and context of the learning environment. The Sacree project goes beyond these pedagogical approaches because it deals with physical activities and sport, which must imply many more dimensions than only teaching and pedagogy such as health care, cognitive and physical improvement, injury prevention, etc. The idea is that, based upon the specific characteristics of the population and the recommendation for sport activity, no actual pedagogical model actually truly fits with our objectives. *Does it matter? Let's build it on our own!*



5. Analysis of the models Sport and Autism of the partners

In this chapter will be described the specificities of the sports program already developed by some of the partners of the Sacree project. Indeed, many common aspects were observed that did not need to be repeatedly exposed. Only the particularities of these models will be highlighted here, since all common aspects of the partners models and others that were found worldwide are depicted in chapter 6.

Autism Europe (AE)

AE base their recommendations upon the United Kingdom's National Autistic Society (<https://www.autism.org.uk/>). This organisation emphasises sport interventions upon a few items: communication, social interactions, adapting the environment, engaging participants, and safety.

Regarding communication - since people with ASD may struggle on this matter - this model proposes some tips to improve the way the coach gives instructions, for instance with visual aids (demonstrations, pictures, etc.).

"My coach was giving me some instructions during a break in the game; he told me to 'use my head' when going into the tackle. I took this very literally and ended up head-butting the opposing player!" Tom Morgan – National Autistic Society Sports Ambassador

When it comes to social interaction, they particularly recommend going step by step, starting with one-on-one activities. Integrating participants into a larger group should be done very gradually.

The particular sensitivity of participants with ASD makes them more affected by their surrounding environment. The National Autistic Society advises being careful about lights, smells, and noise levels. Introducing new activity should be done in an environment that the participants are already familiar with.

The planning process of the training seems to be key, since there is no rule regarding independent time, at least in the beginning. Participants of a sports session should always know what they have to do and when.

"In a coach, I look for someone who is reliable and punctual, and who lets me know in advance what we will be doing in each session. They also need to be very straightforward and clear in their instructions - and have a lot of patience as my verbal processing can be slow."

Alis Rowe - weightlifter

The model finally highlights the safety of training sessions, since people with ASD may be unaware that they have sustained an injury. They recommend setting clear physical boundaries.

The involvement of siblings during training sessions seems to gather all the items stated above, and facilitate the participants to evolve in a more familiar context.

Although AE did not develop a model by themselves, their documentation and expertise provide a very interesting starting point.

SS Romulea SSD arl (SSR)

This football Club (SS Romelua) has a really singular approach with people with ASD, based on a mixed model. Indeed, they apply the usual principles of football to a diverse population composed of ASD and non-ASD populations.

They aim to provide individuals with ASD the opportunity to participate in organised sports in a safe, supportive, and inclusive environment. This may include:

- Setting up teams or programs specifically for individuals with autism, with adapted rules and environments that are more suitable for their needs
- Providing specialised training and support for coaches and other staff who work with individuals with autism
- Using visual cues and other strategies to help individuals with autism understand and follow the rules of the sport
- Creating a positive and inclusive environment that encourages participation and socialisation

It is important to note that each individual with autism is unique and may have specific needs or preferences, so it's essential to work with them and their families to develop a customised plan that takes their strengths and needs into account.

SS Romulea is the perfect in-field example that sport and ASD is possible, even for collective sport that requires socialisation at its core. Their in-field expertise on implementing sport programs with the ASD population is very precious. *There is a need to formalise their model and see if it can fit with other sport activities.*

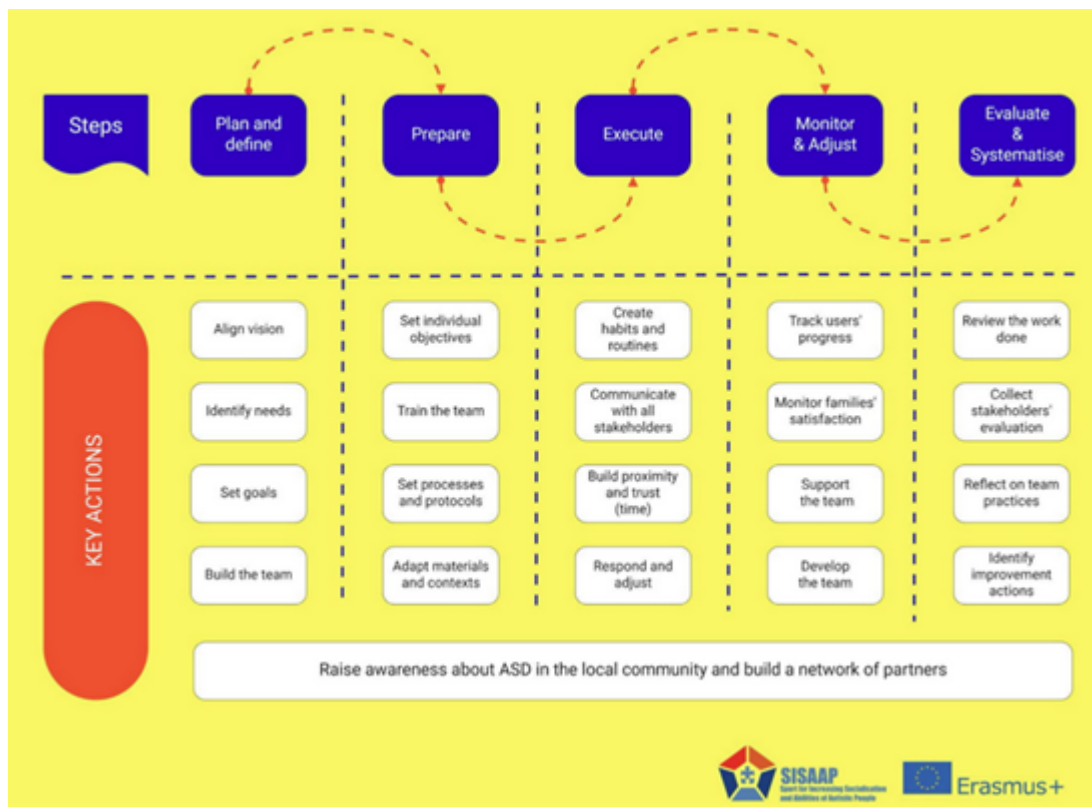
Savez udruga za Autizam Hrvatske (SUZAH)

SUZAH has an interesting role here since they were already involved in a previous Erasmus+ Project aimed at developing a handbook to provide an easy to use tool that can be a starting point for developing sports programs for people with ASD.



The project SISAAP, Sport for Increasing Socialisation and Abilities of Autistic People, gathered the Croatian union of Associations for autism (CUAA), Autismo Sevilla, the Fundación Escuela Andaluza de Economía Social (FEAES) and Nuove Rotte (ANR). The objective of the project was to develop a guide which gathers the main areas and factors that need to be considered in order to design and launch sports initiatives for people with ASD that are effective, consistent, participatory, and sustainable for the community.

Here after a summarise of the project in a picture :



Then the 10 tips and recommendations to never forget when you are working with a person with ASD, extracted from the SISAAP project, are:

1. Be predictable

- This means to plan and organise as much as possible the activities before and to let the participants know what they are going to do
- This means to structure the activity so that it is predictable and consistent throughout every lesson

2. Organise and structure time

- This means to plan the timing of the activity, and mark the time accordingly during the course, lesson, or specific task

3. Organise and structure context

- This means to have an organised space and workplace with as little distractions as possible

4. Clarity of roles

- Everybody should know what their and everyone else's role is

5. Clarity of the instructions

- Ensure the instructions are understood
- Communicate with images, use visual guides

6. Help with social interaction

- Be ready to explain social interactions and behaviours and to point out the best way to Communicate amongst one another

7. Respect safety rules and equipment

- If someone is injured, no one can enjoy the activity, so explain and respect safety measures
- If the equipment is broken, no one else can do the activity, so respect and care for it

8. Take care of your team

- A good program or a successful activity needs a well coordinated team that knows how to communicate well and be open to improving their work on a regular basis

9. Learn from others

- Try to find other enthusiastic professionals or experienced people around you in your community and ask them for feedback. It is easy to miss some good ideas when you are very focused on your day-to-day work.

10. Don't be too hard on yourself

- Every new beginning is hard, even when you are only expanding some program. Take one step at a time and focus on improving and growing.

This is, to date, the most similar project to the Sacree project and brings a very strong foundation to build upon. *This project is, however, only focused on the coach's experience and attitude.*



ASPTT Fédération Omnisports (FSASPTT)

The FSASPTT developed the “SOLIDARITÉ Autisme by ASPTT ” Label. The model was developed in 2016, in the ASPTT club of Montpellier (in the South of France). It was then deployed in other ASPTT clubs across France. Today, there are 20 ASPTT clubs and 130 children in this label who practice multisports, such as swimming, tennis, triathlon...The objective is to offer children with ASD from 1 to 18 years old the possibility to practice sporting activities within a group of neurotypical children with an individualised approach from a specialised educator. These clubs are examples that implementing such programs is both successful and sustainable.

The sport model of the FSASPTT is more based upon project logistics. The federation developed a whole program based on organising sport activities for people with ASD into existing sport organisations: why, what does it cost, what does it implies, and to fulfil what needs?

Their model emphasises the unique ties between the structure, the family, and all siblings of people with ASD. They establish several recommendations regarding the implementation of a sport project for ASD people in an existing structure: from communicating with press and institutions, to finding partners and funding for the educators, and to how to propagate the activity elsewhere, etc.

F. COMMENT SE LABELLISER SOLIDARITE AUTISME ?



S'approprier le guide de bonne pratique pour l'inclusion d'enfant autiste et la convention de labellisation

- Disponible sur Partageons (*Médiathèque – Labels ASPTT*)



Monter son projet avec l'appui du Responsable Régional

- Envoi de la convention signée par le responsable régional



Validation FSASPTT

- Retour par mail et mise à disposition des outils



Mise en place du label

- Respect des engagements et retour de bilan annuel
- Soutien fédéral

Picture depicting the process to obtain the label SOLIDARITE Autisme for an ASPTT club that wishes to target ASD populations within their business plan.

The model of the FSASPTT is interesting regarding the implementation of a sport program: costs, training of the coaches, how to motivate an organisation to promote sport toward people with ASD, etc. These aspects should not be neglected when it comes to implementing a sport program for people with ASD.

Inovar Autismo

Inovar Autismo has developed several inclusivity projects to raise awareness in the community for the inclusion and human rights of disabled persons, promoting their full insertion in sports activities. For sporting activities, the organisation supports:

- Children and adults with ASD alongside Inovar Autismo's project YMI-Mediators



- Young people and adults with the support of personal assistants (Centers for Independent Living)
- The tennis coaches who are trained to work with children and young people with autism in tennis clubs through the project "T enis4ALL"

This experience shows that people with ASD can practice different sports activities inclusively: tennis, surfing lessons, water activities, gym...



6. Summary of the pedagogical model Sport and Autism recommended around the world (including partner's models)

One approach that is commonly used to educate individuals with autism is called **Applied Behavioral Analysis** (ABA). This approach focuses on identifying specific behaviours that are problematic or challenging, and then using positive reinforcement techniques to increase the frequency of desired behaviours and decrease the frequency of problematic behaviours.

What is ABA (Applied Behaviour Analysis) ?

MEASURABLE:

All children's objectives can be observed and measured

SOCIALLY SIGNIFICANT:

Why is it important that they learn this skill? Is it important?

RESEARCH:

Only research-based teaching methods are used, so that children learn new skills quickly

DATA:

ABA is done on a 1:1 basis, which allows continuous monitoring of the children's progress

MEANINGFUL CHANGE:

A significant change: All children's goals are selected so that the skills they acquire will improve their lives

GENERALIZATION:

Family members learn strategies to help their children use new skills learned at home and in the community

Information from: <https://behaviorplace.com/tips/2016/11/7/what-is-aba>



The seven dimensions of ABA

Try the mnemonic **G.E.T. A. C.A.B.**:

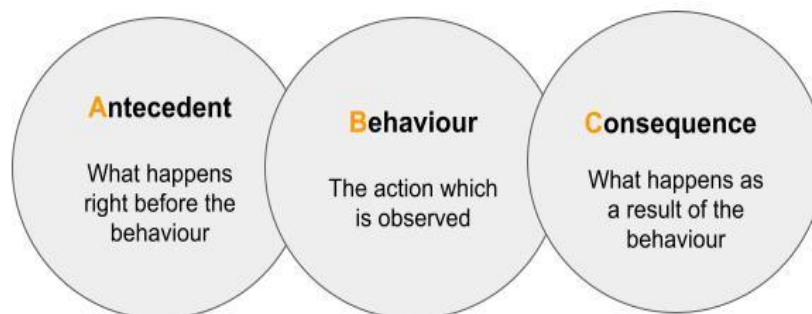
Baer, Wolf, Risley (1968)

- 1 **Generality:** Behavior change last across time, across settings and across people
- 2 **Effectiveness:** The desired behaviour change is significant enough and occurs in a timely fashion
- 3 **Technological:** Procedures can be replicated by others
- 4 **Applied:** Socially significant change in consumer behaviour
- 5 **Conceptually systematic:** Behaviour change procedures are based on the principles of the science of behaviour analysis
- 6 **Analytic:** Behaviour change is achieved by manipulating a functional relationship
- 7 **Behavioural:** Behaviour is defined in objective and measurable terms, in accordance with other natural sciences as physics, chemistry, etc.

Source: Baer, D.M., Wolf, M.M., & Risley, T.R (1968). Some current dimensions of applied behavior analysis. Journal of applied behavior analysis, 1(1), 91-97. doi:10.1901/jaba.1968.1-91

Information from: <https://aba.rocks/blog/7-dimensions-of-aba>

ABC model



Information from: <https://behaviortlc.com/blog/aba-101-positive-reinforcement/>

Another approach that is sometimes used to educate individuals with autism is called TEACCH, which stands for **Treatment and Education of Autistic and related Communication-handicapped Children**. TEACCH is an evidence-based program that emphasises structured teaching methods, such as the use of visual aids to help individuals with autism understand and navigate their environment.

TEACCH

Treatment and Education of Autistic and Communication-Handicapped Children

Another approach that is popular is called **Social Story Therapy**; a method designed by Carol Gray in 1991. It uses simple stories to teach specific social skills and helps children with autism understand and interpret social cues in their environment.

It is important to note that no single approach is the right one for every individual with autism, and different children may respond better to different types of intervention. It is also important that parents, teachers, and therapists work together to develop a customised education plan for each individual with autism that takes into account their unique strengths and needs.

Globally, here after is a summary of what is generally recommended when implementing physical activity for people with ASD, including this project's partners recommendations :

- **Structure and predictability:** Many individuals with ASD benefit from having a structured and predictable environment, with clear routines and expectations. It can be helpful to provide visual support, such as a schedule or a list of steps, to help the individual understand what to expect.

- **Incremental instructions:** Break new skills and concepts down into small, incremental steps, and provide explicit instruction and plenty of practice. It may be helpful to use visual supports, such as pictures or diagrams, to help the individual understand and retain new information. Use positive reinforcement, such as praise, rewards, or other forms of encouragement, to motivate and support the individual's learning and progress.

- **Sensory considerations:** Some individuals with ASD may be sensitive to certain sensory stimuli, such as loud noises, bright lights, or strong smells. It is important to consider the individual's sensory needs and preferences when choosing a sport or physical activity, and to provide a sensory-friendly environment if needed.



- **Social skills:** Encourage social interaction and teamwork, and provide support and guidance to help the individual develop social skills and relationships. This may involve using social stories or role-playing activities to teach social skills and behaviours, or providing a social skills coach or mentor to work with the individual.
- **Physical abilities:** Consider the individual's physical abilities when choosing a sport or physical activity, and be prepared to adapt or modify the activity as needed. This may involve providing assistive devices, such as adapted equipment or mobility aids, or working with a physical therapist to develop an individualised physical fitness plan.
- **Communication:** Consider the individual's communication abilities when teaching sports or physical activities. Some individuals with ASD may have difficulty understanding or expressing themselves, so it may be helpful to use visual supports, such as pictures or gestures, to facilitate communication.
- **Emotional support:** Many individuals with ASD may experience anxiety, frustration, or other emotional challenges when learning new skills or participating in sports or physical activities. It is important to provide emotional support and to be patient and understanding when working with individuals with ASD.
- **Inclusion:** Encourage and support the individual's participation in sports or physical activities alongside their typically developing peers. This can help to promote a sense of belonging and to build social skills and relationships.
- **The choice of a sport or physical activity:** Choose a sport or physical activity that is enjoyable and appropriate for the individual with ASD. It may be helpful to try a variety of activities to see what works best for the individual. Consider the individual's interests, abilities, and physical needs when choosing an activity.
- **Working with a coach or instructor:** Work with a coach or instructor who has experience working with individuals with ASD and who can provide support and guidance. It may be helpful to discuss the individual's needs and goals with the coach or instructor in advance, and to establish clear expectations and communication channels.
- **Safety:** Consider the individual's safety when participating in sports or physical activities. This may involve providing supervision, wearing protective gear, or taking other precautions as needed.
- **Building self-esteem:** Encourage the individual to take on challenges and to celebrate their accomplishments. This can help to build self-esteem and a sense of accomplishment.

Overall, it is important to be patient, supportive, and flexible when working with individuals with ASD to teach sports or physical activities. It may take time for the individual to develop new skills and to feel comfortable and confident participating in these activities. However, with the right approach and support, individuals with ASD can experience the many benefits of participating in sports activities including those listed below.



7. Presentation of some examples of sports recommended for people with ASD

There are many sports and physical activities that can be enjoyable and beneficial for individuals with autism spectrum disorder (ASD). Some options to consider include:

- **Swimming:** Swimming can be a great low-impact activity that allows individuals with ASD to exercise and have fun in a supportive and sensory-friendly environment. Swimming pools often have a calm and predictable atmosphere, and the buoyancy of the water can provide a sense of weightlessness and freedom of movement. Swimming can also help to improve coordination, balance, and strength.

Johnson NL, Bekhet AK, Karenke T, Garnier-Villarreal M. Swim Program Pilot for Children with Autism: Impact on Behaviours and Health. *West J Nurs Res* 43: 356–363, 2021.

- **Tennis:** Tennis can be a good choice for individuals with ASD who enjoy hand-eye coordination activities. The rules of the game are straightforward, and it can be played at various levels of intensity. Tennis can be an excellent way to improve coordination, endurance, and social skills.

Shanok NA, Sotelo M. A pilot tennis program for training fitness and social behaviours in individuals with autism spectrum disorder. *J Sports Med Phys Fitness* 62: 1118–1126, 2022.

- **Golf:** Golf can be a good choice for individuals with ASD who enjoy outdoor activities and activities that involve problem-solving. Golf courses often have a relaxed and supportive atmosphere, and the game can be played at various levels of intensity. Golf can help to improve coordination, balance, and concentration, and it can also provide an opportunity for social interaction.

Shanok NA, Sotelo M, Hong J. Brief Report: The Utility of a Golf Training Program for Individuals with Autism Spectrum Disorder. *J Autism Dev Disord* 49: 4691–4697, 2019.

- **Biking:** Biking can be a good choice for individuals with ASD who enjoy outdoor activities and activities that involve movement and coordination. Biking can be an excellent way to improve fitness and coordination, and it can be done at various levels of intensity. Biking can also be a great way to explore and experience the outdoors.

Hawks Z, Constantino JN, Weichselbaum C, Marrus N. Accelerating Motor Skill Acquisition for Bicycle Riding in Children with ASD: A Pilot Study. *J Autism Dev Disord* 50: 342–348, 2020.

- **Horseback riding:** Horseback riding can be a good choice for individuals with ASD who enjoy animals and activities that involve movement and coordination. Horseback riding can be an excellent way to improve balance, coordination, and social skills, and it can be done at various levels of intensity. Horseback riding can also provide an



opportunity to develop a relationship with a horse and to learn about animal care and behaviour.

Zhao M, Chen S, You Y, Wang Y, Zhang Y. Effects of a therapeutic horseback riding program on social interaction and communication in children with autism. *Int J Environ Res Public Health* 18: 1–11, 2021.

In general, it is recommended to start with a low-intensity activity and gradually increase the intensity as the individual becomes more comfortable and skilled. This chapter only depicts a handful of examples, since all those aspects will be further detailed and developed in the scientific review dedicated to this topic.

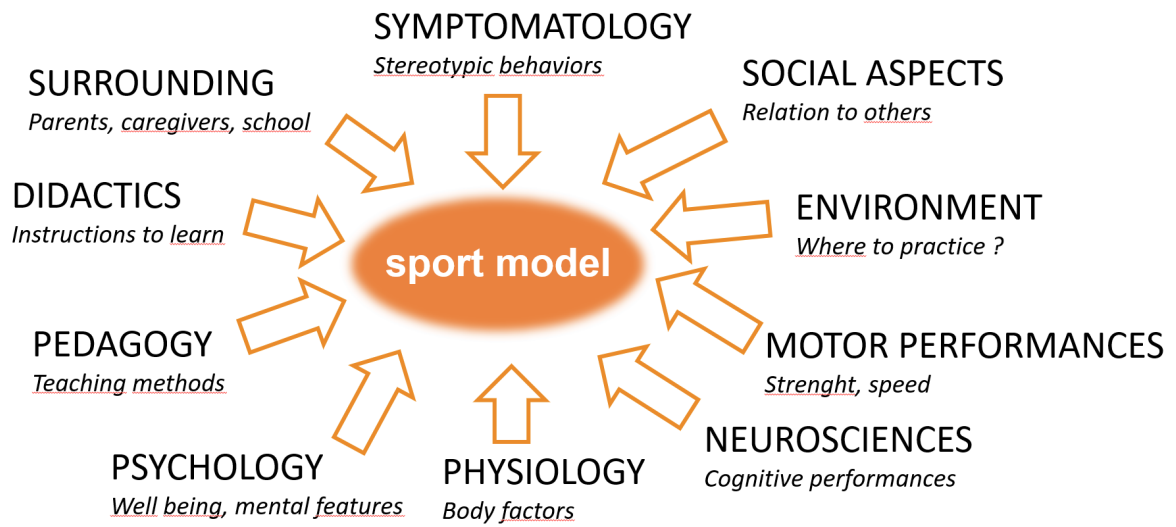
8. Path to improvement: important points, missing points...

It is important to note that building a sport program for people with ASD should take into account many variables which, unfortunately, are not gathered yet in a single and unique model. In the Sacree project, we aim to go beyond the simple “pedagogical model” and provide new recommendations. Indeed, while adapted pedagogy and teaching methods are already well documented in the existing models, there is much more to determine when it comes to set up a physical activity program.

For instance, the motor and cognitive aspects of sport programs are usually poorly developed in the existing models. However, the recent scientific literature highlights that ASD also impairs those factors. We know now that 87% of the ASD population presents motor impairments. Classically, stereotyped and repetitive movements (such as hand flapping and finger flicking) are recognized as core symptoms. Motor skill-related characteristics (as atypical gait and clumsiness) are currently described as associated features (but separate from the primary phenotype). It is mandatory to consider these aspects when implementing a sport program.

But more importantly and in a very practical way, the simple posology of sport for people with ASD remains to be determined. Usually, It is generally recommended that individuals participate in at least 150 minutes of moderate-intensity physical activity per week, or at least 75 minutes of vigorous-intensity physical activity per week, as recommended by the World Health Organization (WHO) for adults. However, it is important to note that the ideal dose of physical activity for individuals with ASD may vary depending on their age, abilities, and health status, and remains yet to be determined. The dose-effect response of sport is almost never addressed. This dose depends on training frequency (session per week), duration of sessions, number of sessions (weeks, and rest periods) or even internal and external workload (subjective and objective markers).

These shortcomings may come from the main scientific areas that first took interest first in the population with ASD. Indeed, while there is plenty of research in psychology and other related fields, physical, motor and neurological impairments due to ASD remain poorly investigated. Indeed, as it is for many pathologies that impair social interaction and behaviour, only the prism of psychology is grasped at first. Consequently, the Sacree project proposes to fill this gap by using knowledge from a broad range of scientific fields, including sport training sciences, neurosciences, physiology. For this, we propose a whole “sport ,odem” rather than solely a “pedagogical model”. Resultantly, the proposed model will develop a deep comprehension of the relation between SPORT and AUTISM, by including the following factors:





9. Conclusion

This document facilitates progress in our final objective : to co-construct an evidence-based pedagogical model, built on a scientific comparative study and field-tests carried out in different environments and countries.

We conclude this document with a summary of what is generally recommended when implementing physical activity for people with ASD, including what is recommended by the partners in this project:

- **Structure and predictability:** To provide visual support, such as a schedule or a list of steps, to help the individual understand what to expect
- **Incremental instructions:** To use visual supports, such as pictures or diagrams, to help the individual understand and retain new information and to use positive reinforcement, such as praise, rewards, or other forms of encouragement, to motivate and support the individual's learning and progress
- **Sensory considerations:** To consider the individual's sensory needs and preferences when choosing a sport or physical activity, and to provide a sensory-friendly environment if needed
- **Social skills:** To use social stories or role-playing activities to teach social skills and behaviours, or providing a social skills coach or mentor to work with the individual
- **Physical abilities:** To provide assistive devices, such as adapted equipment or mobility aids, or working with a physical therapist to develop an individualised physical fitness plan
- **Communication:** To use visual supports, such as pictures or gestures, to facilitate communication
- **Emotional support:** It is important to provide emotional support and to be patient and understanding when working with individuals with ASD
- **Inclusion:** To encourage and support the individual's participation in sports or physical activities alongside their typical-developing peers
- **The choice of a sport or physical activity:** To try a variety of activities to see what works best for the individual
- **Working with a coach or instructor:** To discuss the individual's needs and goals with the coach or instructor in advance, and to establish clear expectations and communication channels
- **Safety:** To consider the individual's safety when participating in sports or physical activities



- **Building self-esteem:** To encourage the individual to take on challenges and to celebrate their accomplishments