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SACREE
Autism & Sport

PEDAGOGICAL MODEL OF SPORT PROGRAM ADAPTED TO AUTISTIC PEOPLE

ASPTT FEDERATION OMNISPORTS
Culture Sport Santé Société
UFR STAPS UNIVERSITÉ DE FRANCHE-COMTÉ
AFC AUTISTIC FOOTBALL
CROATIAN UNION OF ASSOCIATIONS FOR AUTISM
inovarautismo.
Autism Europe

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SUMMARY

This document is the pedagogical model of sport program created in the framework of the Sacree project. This model gives readers the theoretical framework of what it takes to propose and implement sports programs for autistic people in Europe: identification of the needs of autistic people and of the knowledge useful for the sport sector.

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TABLE OF CONTENTS

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TABLE OF CONTENTS

PREAMBULE

In the autistic community and among the experts in the field, sports have been long regarded as a valuable part of the everyday life of autistic people. Indeed, those who had a chance to participate in inclusive and tailored sports activities have for a long time stated its numerous benefits regarding better physical well-being but also improvement of quality of life in general. These benefits are also confirmed by several scientific studies.

This operational pedagogical model offers any type of organisation the knowledge necessary to develop a sports activity adapted to autistic people: raising awareness of the needs and benefits of sport for this audience, methodology for setting up a sport and autism project, advice for leading a session and battery of tests that can be used. We are aware that it is difficult to present autism and the autism community in a single document, especially as each autistic person is a unique individual. Nevertheless, **this model gives readers the theoretical framework of what it takes to propose and implement sports programs for autistic people in Europe bringing together all the scientific and practical conclusions drawn from the 3 years of the project. This model can also serve as a starting point or key resource for other projects on sports and autism.**

To write this educational model, the Sacree project team:

- Studied existing sports programs adapted for autistic people in order to collect existing good practices,
- Reviewed the scientific literature,
- Conducted a quantitative (questionnaire) and qualitative (interviews) survey of autistic people and their families to collect information on their experiences and views on sports,
- Created a battery of tests and administered them to autistic people to gather data on their physical and cognitive profile, Collaborated with autistic people and their loved ones, organizations and professionals to create this program.

To facilitate the implementation of this model, it is declined into 2 guides and an e-learning program:

- **A guide for the sports sector** with advice on structuring the environment, the session, setting up a project and managing difficult situations.
- **A one-hour e-learning program** to raise awareness of autism, adapted from the guide for the sports sector,
- **A guide for autistic people and their relatives** to raise awareness of sport and help them find the right sport for them.

This document is therefore more theoretical, while the two guides are rather ready-to-use practical tools.

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We express our **deepest gratitude to all individuals who contributed to the creation of this document**: those who participated in our online questionnaire regarding the experiences of autistic individuals, those who generously shared their insights through interviews,those who dedicated their time to review our documents and provided valuable feedback through a questionnaire assessing its quality, and those who realised the tests. Your support and collaboration have been invaluable in shaping this document, and we extend our warmest thanks to each and every one of you.

This **model** has been **translated** into the languages of the Sacree project partners, including **English** (this document), **French**, **Croatian**, **Portuguese**, and **Italian**.These links direct you to the "**Documents to Download**" section on our website, https://sacree.eu/, where you can access all the translated documents.

The Sacree program aims at **improving the daily lives of autistic people** by **promoting the inclusive practice of sport activities**. Running for 36 months (June 2022 to June 2025), the project is funded by the European Commission's Erasmus+ Sport Programme.

Visit www.**sacree**.eu

PART 1:

OVERVIEW OF THE PEDAGOGICAL MODEL OF SPORT PROGRAM ADAPTED TO AUTISTIC PEOPLE

1.1 Summary of the project

The Sacree program aims at improving the daily lives of autistic people by promoting the practice of sports activities. Running for 3 years (from June 2022 to June 2025) the project is funded by the European Commission's Erasmus+ Sport Program.

In the European Union (EU), the prevalence of autism varies from one Member State to another but currently remains in the range of 1% to 2%, that is to say between 4.5 to 9 million European citizens. It's important to note that many adults, women, girls and certain minorities remain underdiagnosed due to certain barriers and biases in the diagnostic process. To understand the context of this project, it's important to note that, despite the number of persons concerned, there is a lack of solutions to improve the life of autistic people and their relatives. Of course, in the different EU member states, some actions are implemented for the inclusion of autistic people, but they are developed at a local scale, preventing the development of models and processes which would test common solutions that could be widely adopted. Thus, the ambition of this project is to develop a pedagogical model of sport program adapted to autistic people which can be used and duplicated in all the EU.

Moreover, this project is set in a context of a lack of scientific research. Indeed, the number of scientific publications about the research "Sport + Autism Spectrum Disorder" is only 411 and only 75 studies on the effect of physical activity on autistic people (state of the research at 01/10/2022). Moreover, the studied population is mostly children from 3 to 12 years old, who represent 82% of studies. The adolescents from 13 to 20 years old concern 13% of studies, and the adults only 5% of the studies. Although a few recent studies have looked into the impact of sport on autistic people, they 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 autism explicitly. Therefore, both the research on the impact of sport on autistic people and their concrete access to sport across Europe need to be improved.

Thus, Sacree project targets a better inclusion of autistic people 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 contributes to creating an inclusive model of sport program that can be replicated everywhere in Europe. It 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.

To meet these objectives partners have created a wide and innovative network, with 3 core characteristics: transnational, transdisciplinary, and cross-sectorial.

1. **Transnational**: Structures of 5 European Union countries (Belgium, France, Italy, Portugal, and Croatia) are cooperating, with different contexts regarding the inclusion of people with disabilities,
2. **Transdisciplinary**: Sacree project addresses topics in sports, autism, social sciences and health sciences,

Cross-sectorial: Sacree groups one French National Sport Federation (FSASPTT), one international association located in Belgium (Autism-Europe), one historical Italian football club (SS Romulea SSD arl), the University of Franche Comté (The laboratory C3S of the UFC), one union of Croatian associations for autism (CUAA), and one Portuguese association (Inovar Autismo).

1.2 Beneficiaries of this model

Associations, structures, organisations and people who work there (trainers, coaches, volunteers…):
The Sacree project primarily targets structures intending to establish sports programs accessible to autistic people, or those already engaged in such initiatives but seeking improvement or expansion, in order than where both neurotypical and autistic athletes can engage in sport together. The goal is to disseminate an accessible sports model for autistic people to all stakeholders interested in promoting sports activities within this community. This model provides:

- Information on the effects of sports on autistic people,
- Basic up-to-date knowledge on autism and its key aspects,
- Organisational strategies for developing accessible sports programs across various facilities,
- Guidance on structuring the environment,
- Recommendations for adapting session content,
- Strategies for providing personalised support and accommodation for autistic athletes in sports activities and environments.

We invite the sports sector to consult our guide for the sport sector (available on our website).

Autistic people and their relatives:

The Sacree project aims to improve the lives of autistic people by promoting tailored sports activities. It's inclusive, catering to individuals of all ages and support needs, whether they currently engage in sports or not.

Autistic people benefit from a sports program designed to meet their needs. By supporting the implementation of accessible sports activities, the Sacree project aims to increase the availability of such programs, providing more options for autistic people to participate in sports across the EU.

Implementation of such programs allows autistic people to experience the positive impacts of sports firsthand. Through scientific research, the project explores how sports can enhance cognitive, social, and physical aspects, encouraging autistic people to engage in sports and helping them choose suitable activities.

This project serves as an educational platform, raising awareness about the intersection of sports and autism. By shining a light on this topic, the initiative aims to increase visibility for autistic people and inspire future initiatives that support their needs.

Improving the quality of life of autistic people not only has positive effects on their families and relatives but also aims to support families in understanding and meeting the specific needs of their children regarding sports. This project strives to help families overcome fears, find appropriate sports programs, and access necessary support. This inclusive approach fosters stronger family bonds, promotes well-being, and encourages community engagement, ultimately creating a supportive environment where all individuals can thrive together.
We invite autistic people and their relatives to consult our guide for them (available on our website).

Medical practitioners or autism professionals:

Given the scarcity of research on the effects of sports on autistic people, this model offers invaluable insights, guidance, and examples of best practices to people who may interact with autistic people, such as medical practitioners, educators, and therapists. Indeed, some tips can be used or adapted in areas other than sport. Equipping them with knowledge and practical advice enables them to better support autistic people in accessing and benefiting from sports activities.

Moreover, the influence of people surrounding autistic people is significant in their decision to engage in sports activities. By providing information about the positive impacts of sports, this model may inspire more people to encourage autistic people to participate in sports. This collective effort to promote the benefits of sports for autistic people can lead to increased participation and enhanced well-being within the autistic community.

European, national or local authorities:

The Sacree project provides authorities with a valuable asset in their efforts to expand sports programs for autistic people across municipalities, cities, regions, or countries. It equips them with a comprehensive toolkit for crafting and executing new initiatives within their jurisdiction. Through the utilisation of this program, authorities can advance inclusivity and broaden access to sports programs for autistic people.

All people interested by the theme Sport & Autism:

This project invites all individuals interested in understanding the benefits of sports for autistic people and improving their access to sports programs. By fostering inclusivity and providing accurate information, it aims to break down stereotypes and promote acceptance. Additionally, it advocates for the creation of more inclusive sports environments, facilitates collaboration among stakeholders, and raises awareness about the positive impact of sports on the quality of life of autistic people.

1.3 Partners of this project

Created in 1898, the **ASPTT Fédération Omnisports (FSASPTT)** represents today 240 multi-sport clubs that propose 200 sports and cultural activities to 200 000 members. Recognised by the Ministry of Sports, and the CNOSF (French National Olympic and Sports Committee), the FSASPTT is an active member of the sporting world. It proposes sport activities to all audiences, regardless of age, physical abilities, and condition. Since 2016, the FSASPTT and its clubs has been running a sports project for the inclusion of autistic children.
Website: https://asptt.com/

Autism-Europe (AE) is an international association created in 1983 whose main objective is to advance the rights of autistic people and their families and to help them improve their quality of life. It ensures effective liaison among almost 90 member autism organisations from 40 European countries, governments and European and international institutions. It plays a key role in raising public awareness, and in influencing the European decision-makers on the rights of autistic people.
Website: https://www.autismeurope.org/

Inovar Autismo (IA) is an association for Citizenship and Inclusion founded in 2016 and has the status of IPSS and NGPD. The association defends the rights of autistic people, striving to empower society to embrace difference as something “normal”. To promote the full participation of autistic people in society, the association encourages the inclusion of all people, defending the maxim that it is not people who must adapt to contexts, but that contexts must be “rehabilitated” to include all human diversity.
Website: https://www.inovarautismo.pt/

The Croatian Union of Associations for Autism (CUAA) is a non-governmental organisation that unites 14 member organisations spread in Croatia, all dedicated to the shared goal of enhancing the lives of autistic individuals and their families. Their overarching goal is to promote the well-being and quality of life of autistic individuals while actively encouraging the establishment of a comprehensive network of services and support systems for autistic individuals throughout Croatia.
Website: https://www.autizam-suzah.hr/

SS Romulea (SSR) is a historic Italian football club located in Rome founded in 1922 for all youth categories (500 members from 5 to 19 years old, male and female). The club supports them into professional football, which through the Romulea Autistic Football Club promotes football also among young people and adults on the autism spectrum in an inclusive way with a mixed team composed of players on the autism spectrum and other players who also have support functions: volunteer educators, parents and friends.
Website: https://autisticfootball.club

The laboratory Culture, Sport, Health and Society (C3S) is a research unit (label EA4660) of the **University of Bourgogne-Franche-Comte (France)**. The team brings together researchers, including 20 Professors and Associate professors, and 30 doctoral multidisciplinary students around the study of physical activity and sport. Scientists dedicate their research on the effects of several types of sports activities and training modalities on psychomotor and physiological factors, sociological and psychological behaviours.
Website: http://laboratoire-c3s.fr/

1.4 How was the model created? Presentation of the steps of the project

This section outlines the methodology employed by Sacree partners to develop a model for sports programs tailored to autistic people. Spanning three years, the process is divided into five key steps.

Phase n°1: Research

Data was collected from the targeted countries involved and abroad. During this initial period of our project, we focused on:

1. Conducting an extensive review of the scientific literature to understand the current state of research,
2. Engaging in widespread investigations to gather input from the beneficiaries of the project, including the autistic population and their relatives, to align closely with their expectations regarding sports,
3. Employing a qualitative approach involving a targeted panel of representative actors from the autism and sports communities,
4. Implementing a scientific method based on a cross-over and multicentric protocol to test and validate our approach,
5. Disseminating the findings and conclusions of these studies widely.

From this stage, you can find the documents below in the Documents to download section of our website: https://sacree.eu/ :

- Analysis of existing sport programs
- Guide to choose the appropriate sporting activity,
- Comprehensive literature review on the effects of physical activity and sport on autism
- The results of our European survey on how autistic people practise sport

A scientific article on the results of the European survey is currently (March 2025) being published.

Phase n°2: Refinement and development of the model concept and design

Throughout this phase, we diligently refined and tested the structure of the model and of the guides through collaborative discussions and feedback from stakeholders. Drawing upon the collective expertise and insights gained during the research phase, we created the initial version of the model and of the guides.

These initial versions have been disseminated to various stakeholders, including sports clubs, autism associations, coaches, autistic people, families, relatives, and professionals. Concurrently, we conducted a comprehensive survey to assess the quality and effectiveness of the model, gathering valuable feedback from different stakeholders.

As phase two concludes, we have developed an improved Version 1.2 of the documents, informed by the insights gained and feedback received.

Phase n°3: Testing the model

The creation of the test battery and the administration of the field tests were carried out in France, Italy, Portugal, and Croatia.

The objective was to better understand the profile of autistic people, to create a battery of tests that could be used in other projects and to evaluate the effects of sport on autistic people. We have tested:

- Physical performances,
- Functional skills,
- Fine motor skills,
- Manual dexterity,
- Cognitive performances.

Phase n°4: Evaluation of the model

Following the completion of tests and the analysis of initial findings, phase 4 involved reviewing the model in light of recommendations and conclusions from the evaluation.. To achieve this, the model is declined into two guides and an e-learning tool: one of the guides is for autistic people and families, and the second guides and the e-learning are for sports structures. These tools are available in five languages (Croatian, English, French, Italian, Portuguese).

Phase 5: Dissemination of the model across the European Union

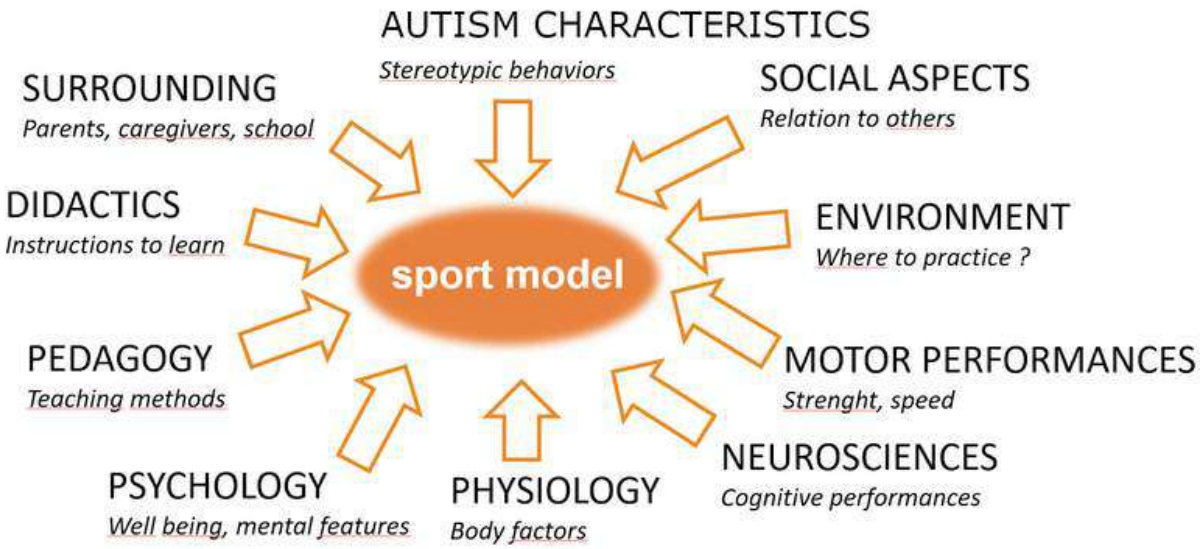
Upon completion of the project and finalisation of the Sacree program, we will embark on an extensive dissemination campaign throughout the European Union. This campaign will target associations, clubs, organisations, local, regional, national, and European authorities, stakeholders, professionals, and other relevant parties. Our goal is to ensure widespread awareness and adoption of the program across the EU, thereby maximising its impact and benefiting autistic people and their communities throughout the region.

PART 2:

THE SCIENTIFIC AND PRACTICAL BASIS OF THE SACREE MODEL

2.1 Factors including in the model

The proposed model develop a deep comprehension of the relation between Sport and Autism, by including the following factors:



Autism characteristics : Our model of sport program take into account the fact that it's frequent that autistic people have repetitive and stereotypical movements and the fact that the communication is a challenge for them (language may be absent or delayed, difficulties to interpret figurative language or deficits in non-verbal communicative behaviour). Thus, our model proposes a sport program which has beneficial effects on these characteristics.

Surrounding: Sport activity can depend on and act on the people surrounding an autistic person, depending on the place (home: parents; school: classmates, teacher). As well, the global atmosphere created in all the environments in which people evolve may have a huge influence on the effect of a sport activity. Thus, our model is based on guidelines to involve families, to foster collaboration and supportive relationships between the teammates and of course on guidelines to brief the sport professional.

Didactics: These factors refer to the form of the instructions given and the material used (content) to teach any sport activity. For instance, the use of pictures to explain how to perform a movement or an activity has been widely recommended with autistic persons. The didactic of the Sacree program is based on the augmentative and alternative communication and on the consistency and the structure of the sport sessions.

Pedagogy: This term refers to the method employed by the coach to teach the sport activity, during the session. The pedagogy of the Sacree model is based on a person-centred approach which understands the unique needs, characteristics and individual's preferences.

Psychology: The domain of psychology as we use it here refers to the factors that do not rely directly on the motor or cognitive performance but on the well-being of the practitioners. This includes stress, anxiety levels, but also factors like motivation and pleasure of practice. It's essential to include the psychological challenges in our model because once we go beyond them, the sport activity may permit the development and the well-being of autistic people.

Physiology (body characteristics): Autistic people may have differences in terms of body characteristics (for example the risk of obesity) and may encounter challenges in processing sensory signals related to their own bodies.composition (fat mass, hydration) or functioning (heart rate) .It's essential to adapt the sport program to these characteristics.

Neurosciences: Sports demand multitasking, posing unique challenges for autistic people.The characteristic "single focus" attention of autistic people may make it difficult to manage multiple tasks simultaneously during training sessions. Thus, our model proposes a strategy in order to adapt the session to their particularities.

Motor performances: Motor skill deficits are a significant and often under-recognized aspect of autism. These deficits are present in up to 87% of autistic people (Zampella et al., 2021). These performances can include a variety of physical qualities: speed, strength, coordination. Our model adapts to the motor differences of autistic people, with tips to help them to progress in this field.

Environment: Due to the differences of the sensory experience, the experience of sports and physical activity for autistic people can vary significantly. Thus, our model offers guidelines on the characteristics of the location of the sport activity and of its environment (indoor, outdoor, nature, urban place, material used, organisation of the space).

Social aspects: The area of social interaction is one context in which autistic people most often and clearly show challenges (Walker, 2021) but it's a key consideration of our model as sport activity, whether it is collective or individual, may have a significant impact on these skills.

Our model offers a description of sports according to some of the criteria that may be key. These sheets are made available to autistic people and their families in the Sacree guide intended for them. A similar tool, more focused on points of vigilance for sports supervisors, is available in part 3.3 of this model.

For each sport, you can check information on the following criteria:

1. Interior or exterior: Does the activity is mostly played outside (natural environment) or insight (e.e gymnasium)?
2. Opposing Sport: Does the activity involve a direct confrontation to one or several opponents?
3. Required Equipment: Does the activity require you to manipulate a tool during the whole activity?
4. Level of motor skill required in the sport (coordination, agility, body control): Low, medium or high?
5. Effect on the senses (such as loud noises, light, crowd): How the sport affects the senses (loud noises, light, crowd).
6. Requirement for concentration, strategy, or thinking : Complexity and number of information to manage, requirement for concentration, strategy, or thinking.
7. Impact on emotional regulation : Presence of potentially stressful or anxiety generating situations (examples stress, frustration management).
8. Level of social interaction required: Low, medium or high?
9. Advantages for autistic people: Skills and areas developed through this sport

Finally, Don't forget that the main criteria is the personal preferences!

SWIMMING

Interior or exterior?	Interior
Opposing sport?	No
Required Equipment?	Yes (swimsuit, goggles, cap)
Level of motor skill of the sport	Medium
Effect on the senses (loud noises, light, crowd)	Medium
Requirement for concentration, strategy, or thinking	Low
Impact on emotional regulation (stress):	Low
Level of social interaction required:	Low
Advantages for autistic people:	Coordination, motor skills, balance, stress management

CYCLING

Interior or exterior?	Exterior
Opposing sport?	No
Required Equipment?	Yes (Bike)
Level of motor skill of the sport	Medium
Effect on the senses (loud noises, light, crowd)	Low
Requirement for concentration, strategy, or thinking	Low
Impact on emotional regulation (stress):	Low
Level of social interaction required:	Low
Advantages for autistic people:	Coordination, motor skills, endurance, balance

RUNNING

Interior or exterior?	Exterior
Opposing sport?	No
Required Equipment?	No (shoes)
Level of motor skill of the sport	Low
Effect on the senses (loud noises, light, crowd)	Low
Requirement for concentration, strategy, or thinking	Low
Impact on emotional regulation (stress):	Low
Level of social interaction required:	Low
Advantages for autistic people:	Endurance, cardio, motor skills, stress management

HIKING

Interior or exterior?	Exterior
Opposing sport?	No
Required Equipment?	No (Shoes, backpack)
Level of motor skill of the sport	Low
Effect on the senses (loud noises, light, crowd)	Low
Requirement for concentration, strategy, or thinking	Low
Impact on emotional regulation (stress):	Low
Level of social interaction required:	Low
Advantages for autistic people:	Endurance, balance, motor skills, stress management

YOGA

Interior or exterior?	Interior
Opposing sport?	No
Required Equipment?	No (mat)
Level of motor skill of the sport	Low
Effect on the senses (loud noises, light, crowd)	Low
Requirement for concentration, strategy, or thinking	Low
Impact on emotional regulation (stress):	Low
Level of social interaction required:	Level of social interaction required
Advantages for autistic people:	Balance, stress management, coordination, flexibility

GYMNASTICS

Interior or exterior?	Interior
Opposing sport?	No
Required Equipment?	Yes (bars, mats)
Level of motor skill of the sport	Hight
Effect on the senses (loud noises, light, crowd)	Low
Requirement for concentration, strategy, or thinking	Medium
Impact on emotional regulation (stress):	Medium
Level of social interaction required:	Low
Advantages for autistic people:	Coordination, flexibility, balance, motor skills

ARCHERY

Interior or exterior?	Interior or exterior
Opposing sport?	No
Required Equipment?	Yes (bow, arrows)
Level of motor skill of the sport	Hight
Effect on the senses (loud noises, light, crowd)	Low
Requirement for concentration, strategy, or thinking	Medium
Impact on emotional regulation (stress):	Medium
Level of social interaction required:	Low
Advantages for autistic people:	Concentration, dexterity, patience, coordination

CLIMBING

Interior or exterior?	Interior or exterior
Opposing sport?	No
Required Equipment?	Yes (shoes, harness)
Level of motor skill of the sport	Hight
Effect on the senses (loud noises, light, crowd)	Medium
Requirement for concentration, strategy, or thinking	Medium
Impact on emotional regulation (stress):	Hight
Level of social interaction required:	Medium
Advantages for autistic people:	Coordination, dexterity, concentration, self-confidence

PARKOUR

Interior or exterior?	Interior or exterior
Opposing sport?	No
Required Equipment?	No
Level of motor skill of the sport	Hight
Effect on the senses (loud noises, light, crowd)	Low
Requirement for concentration, strategy, or thinking	Medium
Impact on emotional regulation (stress):	Hight
Level of social interaction required:	Low
Advantages for autistic people:	Coordination, flexibility, balance, motor skills, cardio,

DANCE

Interior or exterior?	Interior
Opposing sport?	No
Required Equipment?	No
Level of motor skill of the sport	Medium
Effect on the senses (loud noises, light, crowd)	Medium
Requirement for concentration, strategy, or thinking	Medium
Impact on emotional regulation (stress):	Low
Level of social interaction required:	Medium
Advantages for autistic people:	Coordination, flexibility, creativity, social skills

HORSE RIDING

Interior or exterior?	Interior
Opposing sport?	No
Required Equipment?	Yes (saddle, bridle)
Level of motor skill of the sport	Low
Effect on the senses (loud noises, light, crowd)	Medium
Requirement for concentration, strategy, or thinking	Low
Impact on emotional regulation (stress):	Medium
Level of social interaction required:	Medium
Advantages for autistic people:	Balance, social, self-confidence, concentration

SOCCER

Interior or exterior?	Exterior
Opposing sport?	Yes
Required Equipment?	Yes (ball, shoes)
Level of motor skill of the sport	High
Effect on the senses (loud noises, light, crowd)	Medium
Requirement for concentration, strategy, or thinking	High
Impact on emotional regulation (stress):	Medium
Level of social interaction required:	High
Advantages for autistic people:	Coordination, social skills, endurance, motor skills

FIGHTING SPORTS

Interior or exterior?	Interior
Opposing sport?	Yes
Required Equipment?	No
Level of motor skill of the sport	Medium
Effect on the senses (loud noises, light, crowd)	High
Requirement for concentration, strategy, or thinking	High
Impact on emotional regulation (stress):	High
Level of social interaction required:	Medium
Advantages for autistic people:	Coordination, dexterity, self-confidence, stress management, aggression management

HANDBALL

Interior or exterior?	Interior
Opposing sport?	Yes
Required Equipment?	Yes (ball)
Level of motor skill of the sport	Medium
Effect on the senses (loud noises, light, crowd)	Medium
Requirement for concentration, strategy, or thinking	High
Impact on emotional regulation (stress):	High
Level of social interaction required:	High
Advantages for autistic people:	Coordination, social skills, motor skills, cardio

GOLF

Interior or exterior?	Exterior
Opposing sport?	No
Required Equipment?	Yes (clubs, balls)
Level of motor skill of the sport	High
Effect on the senses (loud noises, light, crowd)	Low
Requirement for concentration, strategy, or thinking	Medium
Impact on emotional regulation (stress):	Low
Level of social interaction required:	Low
Advantages for autistic people:	Coordination, concentration, patience, motor skills

TENNIS

Interior or exterior?	Interior or exterior
Opposing sport?	Yes
Required Equipment?	Yes (racket, balls)
Level of motor skill of the sport	High
Effect on the senses (loud noises, light, crowd)	Low
Requirement for concentration, strategy, or thinking	High
Impact on emotional regulation (stress):	High
Level of social interaction required:	Medium
Advantages for autistic people:	Coordination, dexterity, concentration, motor skills

TABLE TENNIS

Interior or exterior?	Interior
Opposing sport?	Yes
Required Equipment?	Yes (racket, balls)
Level of motor skill of the sport	High
Effect on the senses (loud noises, light, crowd)	Low
Requirement for concentration, strategy, or thinking	High
Impact on emotional regulation (stress):	Medium
Level of social interaction required:	Medium
Advantages for autistic people:	Concentration, dextérité, patience, coordination

BADMINTON

Interior or exterior?	Interior
Opposing sport?	Yes
Required Equipment?	Yes (racket, shuttlecock)
Level of motor skill of the sport	High
Effect on the senses (loud noises, light, crowd)	Low
Requirement for concentration, strategy, or thinking	High
Impact on emotional regulation (stress):	Medium
Level of social interaction required:	Low
Advantages for autistic people:	Coordination, motor skills, reflexes, social skills

2.2 Scientific studies at the origin of this model of sport program

Our model is based on studies which explain that sport has beneficial effects for autistic people.

2.2.1 General benefits of the sport in general

Firstly, sport and physical activity help fight against a sedentary lifestyle and offer lifelong preventive and therapeutic benefits for all individuals, including autistic people.

For chronic diseases, sport and physical activity decreased relative risk by:

- 29-41% for premature mortality (ANSES, 2016; INSERM, 2018),
- 20-30% for Type 2 Diabetes in targeted populations (Gill and Cooper, 2008),
- 25% for colon cancer (Wollin, 2009) and breast cancer (INSERM, 2018),
- 45% for Alzheimer's disease and 18% for Parkinson's disease (Hamer and Chida, 2009).

Sports also play a role in preventing complications, reducing relapses, and managing decline:

- In coronary diseases, the relative risk for death decreases by 16% (for example from 60 minutes a day of physical activity, Loprinzi and Addoh, 2016),
- For cancer, physical activity improves treatment outcomes and fatigue tolerance, and reduces the relative risk of relapses (for example by 20% with 2 hours a week of physical activity, INSERM, 2018),
- In mental health, the relative risk of depression relapse decreases by 51% (Babyak et al., 2000),
- For neurodegenerative diseases, physical activity slows sensorimotor and cognitive declines, optimising quality of life (Mahalakshmi et al., 2020).

2.2.2 Beneficial effects of sport on autistic people

In the framework of the Sacree project, a literature review on the effect of sport on autistic people was written by the laboratory C3S of the University of Franche Comté., published in the journal Sports Medicine. The article is based on the study of 92 articles which implement complete sport programs with pre-to-post analyses. The findings indicate that autistic people can benefit from sports across a wide range of physical, psychological and social factors. Thus, sport has effect on:

- **On characteristics of autism**: The potential impact of sports participation on autistic characteristics is remarkable, with reported reductions in composite autism scores of up to 25% after 3 months of regular practice (Tabeshian, Roza and al., 2022).

- **On social aspects**: A diverse array of sports activities has demonstrated efficacy in enhancing social and communication skills. Moreover, the benefits of regular sports participation on social skills may extend beyond the sports arena. For example, research by Duan G, Han Q, Yao M, Li R indicates that a rhythmic gymnastics program showed improved classroom engagement and attention in research (study conducted on a limited scale).

- **On motor or physical performances:** Autistic adults have demonstrated improvements in gross motor functions, physical fitness, and body composition following physical activity programs, regardless of the severity of autism characteristics. Additionally, changes in body composition, including reductions in fat mass, have been observed in autistic children following relatively short training durations, such as after a mixed aerobic-neuromuscular exercises training program or a mixed coordination-strength program. Engaging in sports also influences daily physical activity, as evidenced by increased activity levels (monitored through actimetry) observed even after short-duration sports participation.

- **On cognitive performances:** Sports training can induce significant physiological changes in the brain: working memory, cognitive flexibility, sensory processing, and reaction times.

- **On psychological factors:** Engaging in sports activities can yield significant benefits, as physical exercise is well-established for its potential in alleviating symptoms of depression. Sports participation can also influence other psychological factors, such as improvements in self-esteem and self-efficacy (defined as an individual's perception of their own competence).

- **On family and caregivers:** While research in this area is not very extensive, there are notable findings in the literature showing the potential influence of sports activities on the well-being of autistic people's families and caregivers.

To read the complete article:

- Click here to read it in English
- Click here to read it in French

2.3 A model constructed thanks to a quantitative and qualitative inquiry on the relationship of autistic people with physical activity

Our model was constructed in collaboration with the principal beneficiaries of the project: autistic people and their relatives and people from the sport sector. To create a program adapted to their needs, it's essential to have a better understanding of the relationship that autistic people have with sport and to take into account their points of view, needs and experiences.

2.3.1 Campaign of survey and of interviews

A survey of 20 questions on physical activity (if yes: type, frequency, duration, if no: reason for lack of activity) and on the barriers to/levers of physical activity was distributed in european countries (translation into the language of the project, that's to say Croatian, English, French, Italian and Portuguese) from March to September 2023. This survey targeted autistic people and their relatives.

A total of 540 answers were received, with 71% of respondents indicating that they regularly practised a physical activity, compared with 29% who did not. The most frequently reported physical activity was once a week, lasting an average of 60 minutes. This frequency is higher among the over 40s (2 times a week), and the duration of sessions the lowest among 3-10 years old (45 minutes). Of those who take part, 56% say they do it in a club, the rest in specialised facilities or on their own. The choice of activity depends on personal preference (55,4%), ease of access (19,6%), or because friends or family also do it (12,2%). Aquatic activities are the most popular. Whether or not respondents practised sport, most of them (74%) said that sport was not enough accessible to autistic people.

With regard to the "dose" of APA, there is disparity between what is recommended in the literature and the responses to the questionnaires. For example, while most studies recommend programmes of 3 sessions a week, many exercisers actually only do one. The choice of the activity remains largely dictated by the user's personal preference, which becomes the main criterion. Finally, these results highlight the difficulty that autistic people have finding a suitable programme close to home and the lack of information from facilities on how to accommodate and adapt their practices to such a public.

The qualitative inquiry was released in Belgium, Croatia, France, Italy and Portugal at the same period as the survey, from March to September 2023, thanks to interviews. Each partner had the same interview grid, available in the appendix. As for the survey, the objective was to understand the relationship between sports of autistic people thanks to an exchange with questions such as “why this choice of activity”, “why is it important for you” if the person practices, “have you ever done any sport?“, “What don’t you like about sport?” if the person does not practice.Questions as “How can we ameliorate the access to the sport for autistic people?” “ or “what are the main obstacles/barriers to sport for autistic people?” have been asked to all the people interrogated. In total, 38 interviews were conducted (10 autistic children, 21 autistic adults and 4 coaches).

2.3.2 Selection of some feedbacks

> "It's important because he needs to expend an enormous amount of physical energy compared with other children. And there are lots of other reasons, it's important for inclusion, for his enjoyment, for the fact that he sleeps at night because when he does sport during the day he sleeps at night". Mother of a french non-speaking autistic child and president of an autism association.

> “Since I was a child, I really wanted to do karate, but in the area where I lived there was no karate. (...) I was told and encouraged to try taekwondo and, if I didn't like it, I could leave it at that. But after the first lesson, I became very interested and stayed”. Although he didn't know he was autistic at the time, one young Portuguese adult said he loved practising taekwondo and only stopped because he got injured.

> “Surpass myself by forgetting my difficulties and always improving”. A 62-year-old autistic person from France about the sports he practises - pétanque, table tennis, archery, mountain biking, hiking.

> "I see sports as a form of distraction (...) it helps in self-esteem". He goes to the gym and considers that he subscribes to the saying "Healthy mind, healthy body". Autistic Portuguese adult.

> “I love practising outdoor sports throughout the year, both individual and team sports, participating in competitions too, my quality of life has increased, starting with my physical and psychological well-being; I do it regularly and more often now as an adult than when I was young because at the time I was unaware of my condition and faced inclusion difficulties”. 52 old man on the autism spectrum from Italy.

" I'm only interested in two things: realising what limitations he has and what potential he has. In other words, the limitations... I can try to go there to see if it's possible to 'move' anything; if I realise that it's not possible to 'move', forget it. And the abilities he has, I'll try to make the most of them". Handball and swimming coach from Portugal.

"In hiking, I like the fact that you can go at your own pace, and the discovery of new landscapes, I love nature. In boxing, I like the release that this sport provides, and it helps me feel stronger and more combative on a daily basis,I have little self-confidence." An 13-year-old autistic woman from France.

"They [autistic children] love it [sport] so it actually allows us to make them learn things without them realising it, because with good instructions they learn to wait, they learn to follow instructions, they learn to imitate. It's endless, we can really put in good programs and make them really progress and not just on gross motor skills, on all points". Mother of a 10-year-old autistic child from France and president of an association for autism.

"We have a few tips that we learnt from Inovar as well, but it's very much a matter of 'getting to know them', seeing how they react to this or that and understanding how we can deal with each of them, because each of them has their own characteristics and each has their own way of dealing with people". Surf instructor from Portugal.

"I began to feel that although the students were prepared to integrate the autistic student into the lessons and help him as much as possible, as time went by, they themselves also began to get a little tired of having to wait a long time, in other words, they felt that they were being harmed by the fact that the lesson couldn't have a 'normal' dynamic, like the others, when the autistic colleague was there. I began to feel this difficulty over time".
[Despite this difficulty, he recognises that in the case of one youngster he worked with as part of an Inovar Autismo project, there was progress when the training was one-to-one:] "(...) in a more individual context of one-to-one work, this doesn't happen any more, it's closer work, you notice faster progress". However, autism is a spectrum and what works for one youngster is different for others, as was the case with two autistic youngsters who preferred to train together: "(...) they started off individually and then ended up working together (...). They had more or less the same 'limitations' for practice and had similar needs in terms of what the development of the practice would be. I ended up putting them together and it worked out very well! (...) when one of them couldn't go and only the other one went, it was much more difficult without the colleague. They wanted to do it with their colleague (...)". Tennis coach from Portugal, who already has experience working with autistic youngsters.

2.4 A model constructed thanks to tests on the field

2.4.1 General information

Objectives:

This protocol regroups a list of tests conducted in the framework of the Sacree project in order to put our sport program footing through field tests. The results of these tests make it possible to:

- Gain a better understanding of the skills/abilities/challenges of autistic people (for facilities that carry out the tests once),
- Evaluate the effects of sport on autistic people: test T0, then 12 weeks of sport intervention, and then test T1,
- Compare the physical condition of autistic people with those of neurotypical people.

Method:

A document with the materials necessary, the presentation of the tests, the instructions, and some tips was diffused to the structures that conducted the tests. For the materials, they told us their needs, and, depending on our budget, we bought missing materials. We also distributed to them the consent form, an observation notebook to write the results, and the annexes necessary. All these documents are in the appendix of this document.

The scientific team was in contact with the people who administered the test to brief them.

Some of the tests were omitted when they were not suitable for certain autistic people or certain structures.

Places:

Tests were conducted in Croatia, France, Italy and Portugal.

Date:

Tests were conducted between February 2024 and January 2025, depending on the possibility of the structures. Structures were able to decide to do all the tests during one session or they can decide to do the tests on several sessions to not overload the persons.

2.4.2 Composition of the tests

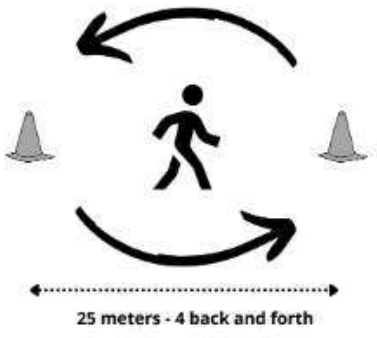
General information on the people tested was collected: gender, age, height in centimeters, weight in kilograms, number of minutes per week of physical activity, sports practiced, if they are right-handed or left-handed, if they have a vision with correction, or without correction and if there are disorders associated with autism. The protocol is composed of tests to measure:

- Physical and motor conditions: The physical condition is “the general capacity to adapt and respond positively to the physical effort” (HAS, 2022). It includes anthropometric data, cardiorespiratory capacities with endurance, muscular capacity with strength, neuromuscular capacity with balance and flexibility.
- Cognitive conditions: It’s the mental processes that enable us to interact with our environment: attention, perception, reasoning.
- The psychological conditions: It’s a mental condition in which the qualities of a state are relatively constant even though the state itself may be dynamic.

A) Tests to measure the physical and motor condition:

HAND-GRIP FORCE

The Hand-Grip is a clamping test that measures grip strength based on muscular force or the maximum force/tension generated by the forearm muscles. It can also be used to measure upper-body and overall strength. To do this, standing with arms at the sides of the body, the user performs a maximum contraction to squeeze the handle dynamometer. The measurement requires a minimum of two attempts per hand, with 30 seconds' rest in between. It is advisable to alternate sides to limit muscle fatigue. The best score, expressed in kilograms (kg), is used.



200-METRE FAST WALK TEST

The 200-metre Fast Walk Test was developed to test aerobic endurance. It involves walking as fast as possible over a distance of 200 metres. Poles are placed 25 metres apart to delimit the course. After a standardised warm-up and explanation of the instructions, the person performs the test. The total time taken is recorded. During the test, you should be encouraged to go as far and as fast as possible

STANDING BROAD JUMP

This test measures the explosive power of the lower limbs. After a standardised warm-up and explanation of the instructions, the athlete attempts to jump as far as possible, landing on both feet without falling backwards. To do this, they must propel themselves and land on both feet, swinging their arms and bending their knees to ensure forward thrust. A marker is placed on the ground where the test begins (take-off line). Another marker is placed on the back of the heel as the person lands. If the person falls or takes a step backwards, the landing marker is placed at this point. The distance between the start and finish points is measured and counted using a tape measure. The longest distance jumped among the three permitted trials is recorded. Take care to perform this test on non-slippery ground. To make this test easier, you can use a jumping mat.

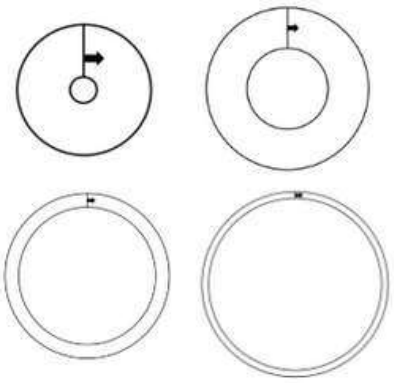
BALANCE TEST

This test measures the explosive power of the lower limbs. After a standardised warm-up and explanation of the instructions, the athlete attempts to jump as far as possible, landing on both feet without falling backwards. To do this, they must propel themselves and land on both feet, swinging their arms and bending their knees to ensure forward thrust. A marker is placed on the ground where the test begins (take-off line). Another marker is placed on the back of the heel as the person lands. If the person falls or takes a step backwards, the landing marker is placed at this point. The distance between the start and finish points is measured and counted using a tape measure. The longest distance jumped among the three permitted trials is recorded. Take care to perform this test on non-slippery ground. To make this test easier, you can use a jumping mat.

B) Tests to measure the cognitive conditions

FITTS' LAW TASK

Fitts' law states that the time required to aim at a target is a function of the distance to the target divided by the size of the target. The greater the distance and the smaller the target, the longer the time required to aim at the target. Movement time increases linearly with the difficulty index. In our test, using a pencil, the person has to go around the circle as quickly as possible without going beyond the delimited area. This task has 4 difficulty levels. The time and number of errors (each time the pencil is touched or the edges of the circle are crossed) per difficulty index are taken into account.

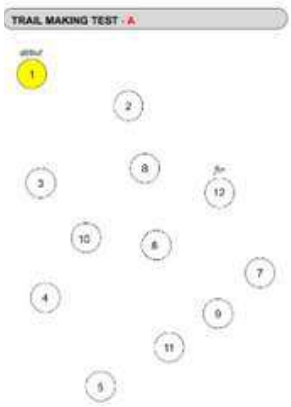


BOX AND BLOCK TEST

The Box and Block Test measures unilateral global manual dexterity. It is a quick, simple and inexpensive test. The test consists of a wooden box (53.7 cm x 25.4 cm x 8.5 cm) divided into two compartments (25.4 cm each) by a partition and 150 blocks (2.5 cm cubes). The person must move, one by one, a maximum number of cubes from one compartment of the box to the other for 60 seconds. The box should be positioned lengthwise, on the person's midline. The test can be performed once with one hand and a second time with the other. The person must take care to pass his fingertips over the partition and not pick up any blocks that might fall out of the box. Each side can be tried for 15 seconds. Scoring is based on the number of blocks transferred from one compartment to another. Better manual skills correlate with higher scores.

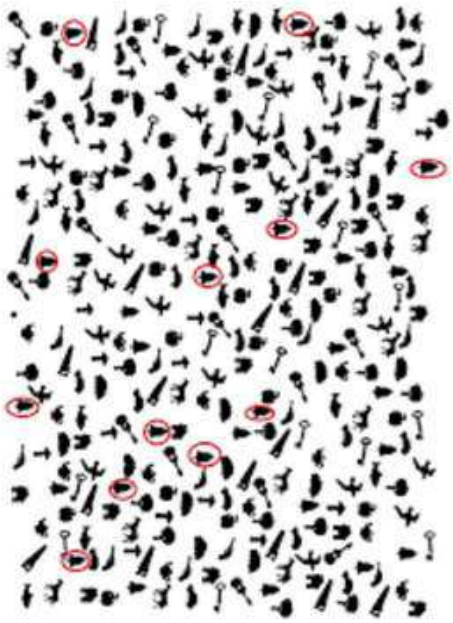
TRAIL MAKING TEST (TMT)

The Trail Making Test is a test of flexibility, visual scanning and working memory. It is divided into two parts: Part A (TMT-A) for working memory and Part B (TMT-B) for executive functions. They can be used together or independently. In each part, the person must draw a line between 12 consecutive circles arranged at random on a page measuring 21.6 cm x 27.9 cm (A4 format). TMT-A uses a sequence of numbers, while TMT-B alternates between numbers and letters. In the latter, the person has to link alternating numbers and letters in ascending order (1, A, 2, B, 3, C, ...). The time required (in seconds) and the number of errors made in completing each part are recorded for comparison with standards.



THE BELLS TEST

The Bells Test is an instrument to identify targets (bells) among distractors. It assesses selective and focused visual attention, visual perception and visuo-motor processing speed. Using a pencil, the participant circles 35 bells mixed with 280 distracting elements (trees, birds, fish) in black on a 216 x 279 mm (A4 format) page. The drawings appear to be randomly distributed, but are in fact precisely arranged in 7 columns comprising 5 bells and 40 distracting elements. The black dot at the bottom of the page indicates the direction in which the page is facing. In this configuration, of the 7 columns, 3 are to the person's left and 3 to their right. The number of bells circled, the time taken to complete the test and the number of errors (other than bells) are counted. An omission of 6 or more bells on either side indicates unilateral spatial neglect. The severity of the visual neglect and the side affected is determined by the number of bells omitted from the spatial distribution.

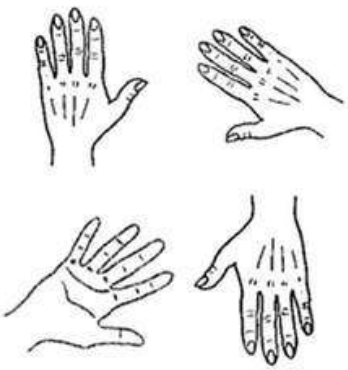


GO-NO GO TEST

The Go-NoGo Test is a simple test for assessing inhibitory control. It assesses reaction time and inhibition capacity. The person is asked to respond as quickly as possible to a certain stimulus (Go) and not to respond to other stimuli (No Go). For example, the person must press a button when the black circle turns green and not press it when it turns red. Reaction time for Go trials, commission for NoGo trials and omission for Go trials are recorded.

LATERALITY JUDGEMENT TASK (MENTAL ROTATION)

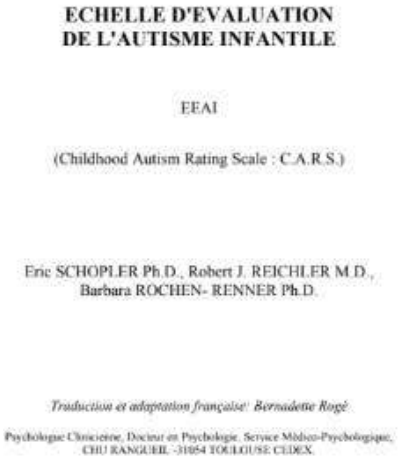
The Laterality Judgement Task (LJT) assesses the ability to make implicit mental representations. With this test, the participant mentally manipulates the hand stimulus to determine if he sees a right hand or a left hand. The assessment takes into account reaction time to different difficulty cues and the accuracy of responses.



C) Tests to measure the psychological conditions

CHILDHOOD AUTISM RATING SCALE (CARS)

The Childhood Autism Rating Scale is a tool to evaluate the comportments associated with autism for children. It measures the different aspects of the social comportment, of the communication comportment, of the repetitive and stereotyped comportment, and other symptoms linked to autism. The scale gives a quantitative evaluation which helps health professionals to diagnose autism and to evaluate its intensity for children. The test is not translated in all languages so it was not administered in all the countries.



ECHELLE D'EVALUATION
DE L'AUTISME INFANTILE

EEAI

(Childhood Autism Rating Scale : C.A.R.S.)

Eric SCHOPLER Ph.D., Robert J. REICHLER M.D.,
Barbara ROCHEN- RENNER Ph.D.

Traduction et adaptation française: Bernadette Rogé

Psychologue Clinicienne, Docteur en Psychologie, Service Médico-Psychologique,
CHU RANGUEIL -31054 TOULOUSE CEDEX.

QUESTIONNAIRE SUR LA QUALITÉ DE VIE DE McGILL
Révisé

MCGILL QUALITY OF LIFE - REVISITED (MQOL-R)

It's a multidimensional tool of evaluation to measure the subjective quality of life of people around 4 main domains: physical, psychological, relational and environmental. The test is frequently used in health research to evaluate the impact of interventions on the quality of life of people. The test is not translated in all languages so it was not administered in all the countries.

2.4.3 Materials used

This chart presents the material used for these tests. Globally, in this battery of tests, many of them require little equipment and are not expensive.

	ASPTT	C3S	IA	SSR	SUZAH
ALL TESTS	A **pen** and the **notebook** (in the appendix) to write the results of the test				
TREATMENT OF THE DATA	-Data was analysed thanks to Excel, Jamovi and R Studio, -The normality of the variables and the equality of variances were verify thanks to the Shapiro-Wilk test and to the Levene test, dent test and the Mann-Whitney U test were used to compare the results of the group composed to autistic persons with the results of the group composed of neurotypical persons.				
HANDGRIP TEST	**Dynamometer** (Kuptone Electronic hand dynamometer 90 kg / 200 lbs Grip capacity)	Takein **Hand Grip Dynamometer** (HaB direct, Warwickshire, United Kingdom)	Electronic Hand **Dynamometer** /EH 101 90 kg/ 198 lb Grip Capacity	Camry digital Hand **Dynamometer**/ Grip strength tester 198 lb - 90 kg	**Hand Grip Dynamometer** "Basic" / 75 kg grip capacity
STANDING BROAD JUMP	-**Floor Markers** (Socobeta Marker Kit) ; -**Tape measure** (Stanley 1-30-697 - Bi-material Tylon Tape Measure 5m X 19mm Anti-Corrosion Tape - Tape Lock - Real Zero Position - Class Ii - Belt Hook)	-**Carpet** ATREQ Standing Long Jump Mat (carpet ATREQ Standing Long Jump Mat, Dewsbury, England) -**Markers** (2871718, Decathlon Pro, France) - Triple **decameter measuring tape** - 30 metres (DECA3, Training, Ecole-Valentin, France)		- Flexible plastic **tape measure** - **Demarcation line** of the soccer field	- **Jumping mat with markings for distance**

BALANCE TEST	**Chronometer** (Vicloon LCD Digital Chronometer,Portable Sports Timer with Stainless Steel Whistle,Applied to Running Football Basketball Swimming and Other Sports) OR chronometer already owned by the clubs	**Chronometer** 1 line (TR_CHRO34, Training, Ecole Valentin, France)	Mobile chronometer	- **Chronometer** - plastic **step platform**	- **Chronometer**
200m FWT	-**Chronometer** -**Floor markers** or Plots (already owned by the clubs)	-**Chronometer** 1 line (TR_CHRO34, Training, Ecole Valentin, France) -**Plots**	-Mobile **chronometer** - **Demarcation cones**	- **Chronometer** - **Demarcation cones** *(we used Mini Cooper test instead 200m FWT)*	- **Mobile chronometer** - **Demarcation cones**
FITTS' LAW TASK	-**Chronometer** -**A4 sheets** with the test inside (in appendix) -Pens, Table & Chair (already owned by the clubs)	-**Chronometer** -**A4 sheets** with the test inside (in appendix) -Pens, Table & Chair	-**Chronometer** -**A4 sheets** with the test inside (in appendix) -Pens	- **Chronometer mobile app** - **A4 sheets** with the test inside (in appendix) - **Pens, Table & Chair** (already owned by the clubs)	-**Chronometer mobile app** - **A4 sheets** with the test inside (in appendix) - **Pens, Table & Chair** (already owned by the clubs)
BOX AND BLOCK TEST	-**Chronometer** -**Blocks** (Learning Resources 2.5 cm coloured wooden cubes (set of 102) and **Box** (Jive Dekobox Set of 3 10l storage boxes with lid, Plastic (recycled	-**Chronometer** -**Box and Blocks boxes** of the brand "BASERGO" (French Company) -Table & chair	- **Chronometer** -**Legos adapted** (all the same size)	- **Chronometer mobile app** - **Blocks** (Learning Resources 2.5 cm red/white coloured wooden cubes (set of 15) and **Box** (double	Was not applicable to the tested population

	PP), 10l (37.5 x 27.8 x 13.5 cm) -Table & chair (already owned by the clubs)			cardboard box, 35.5 x 25.5 x 12.7 cm each one) - **Pens, Table & Chair** (already owned by the clubs)	
TRAIL MAKING TEST	-**Chronometer** -**A4 sheets** with the test inside (in appendix) - **Pens, Table & Chair** (already owned by the clubs)	-**Chronometer** -**A4 sheets** with the test inside (in appendix) - **Pens, Table & Chair**	-**Chronometer** -**A4 sheets** with the test inside (in appendix)	- **Chronometer mobile app** - **A4 sheets** with the test inside (in appendix) - **Pens, Table & Chair** (already owned by the clubs)	-**Chronometer mobile app** - **A4 sheets** with the test inside (in appendix)
BELLS TEST	-**Chronometer** -**A4 sheets** with the test inside (in appendix) - **Pens, Table & Chair** (already owned by the clubs)	-**Chronometer** -**A4 sheets** with the test inside (in appendix) - **Pens, Table & Chair**	- **Chro-A4 sheets** with the test inside (in appendix) - **Pens, Table & Chairnometer**	- **Chronometer mobile app** - **A4 sheets** with the test inside (in appendix) - **Pens, Table & Chair** (already owned by the clubs)	-**Chronometer** -**A4 sheets** with the test inside (in appendix) - **Pens, Table & Chair**
GO-NOGO TEST	-**Computer** (already owned by the clubs) -**Table & Chair** (already owned by the clubs)	-**Computer** (DELL, Laboratory's property) -**Table & Chair**	-	- **Computer** (owned by staff member) - **Table & Chair** (already owned by the clubs)	- **Computer** (bought from project resources)
LATERALITY JUDGEMENT TASK	-**Computer** (already owned by the clubs) -**Table & Chair** (already owned by the clubs)	-**Computer** (DELL, Laboratory's property) -**Table & Chair**	-	- **Computer** (owned by staff member) - **Table & Chair** (already owned by the clubs)	Was not applicable to the tested population

2.4.4 Results of the tests

To date (March 2025), the C3S laboratory at the University of Burgundy Franche Comté is in the process of writing a scientific article on the results of the tests. We'll let you know when it's published on our website.

In the meantime, we invite you to consult the Conclusion Report appended to this document, where you will find the first part of the analysis of the test results.

2.4.5 Feedbacks on the battery of tests

Tests	Remarks
Hand-Grip Force	Test to keep - Easy to administrate
Standing broad jump	Test to keep - Few difficulties to make it clear the instruction: some of them would like to jump high rather than long.
200-metre Fast Walk Test	Test to keep - Some difficulties to make it clear the instruction: some of them wanted to run and some of them wanted to stop before the end of the 200 metre.
Balance test	Test not to be kept in its current state - difficulty level too low
Fitts' law task	Test to keep - Easy pen-and-paper test
Box and Block Test	Test to keep
Trail Making Test (TMT)	Test to keep - Easy pen-and-paper test To note: A prerequisite is the ability to read and count
The Bells Test	Test to keep - Easy pen-and-paper test
Go-No Go Test	Test on a computer software, need more familiarization than expected, for participants as well as for instructors
Laterality Judgement Task (Mental rotation)	Test on a computer software, need more familiarization than expected, for participants as well as for instructors

PART 3:

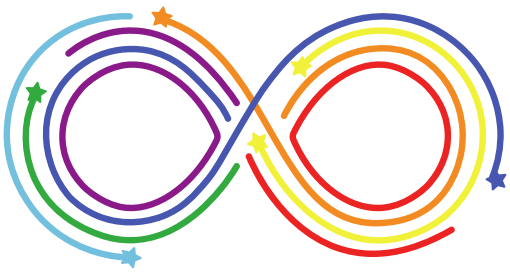
METHODOLOGY TO SET UP A SPORT PROJECT FOR AUTISTIC PEOPLE

3.1 Understanding autism

3.1.1 A spectrum condition

While common characteristics are shared among autistic people, each person's experience is inherently unique (Garratt & Abreu, 2023), so there is not just one way for a person to be autistic. Because autism is a spectrum, autistic people will have a wide variety of support needs in different areas such as communication, executive functions, social interaction, sensory processing and perception. For example, certain autistic people can speak and some of them communicate in other ways, some of them have intellectual disabilities and some of them do not, some of them need a lot of help in everyday life, while others just need a little support. The perception of autism as a linear scale, ranging from "mildly autistic" individuals with minor challenges to those significantly impacted in various aspects of life, doesn't capture the full complexity of the autism spectrum. The autism spectrum signifies the diverse ways autism manifests.

Autism is sometimes combined with other disabilities and conditions that need to be taken into account such as attention deficit disorder with or without hyperactivity (ADHAD), Down syndrome, epilepsy, Rett syndrome, tuberous sclerosis, anxiety, digestive disorders, sleep disorders, intellectual disabilities, learning disability, being overweight, Tics, OCD (Obsessive compulsive disorder), schizophrenia, immunological problems (asthma, diabetes type 1,allergies).



It is also important to keep in mind that focused attention is a characteristic of many autistic people and can have a significant impact on participation and engagement (Webster, 2018). Flexible thinking greatly influences life, affecting the ability to predict behaviors and cope with changes.

3.1.2 The misconceptions that need to be deconstructed about autism

We are aware that misconceptions, myths, and stereotypes about autism prevail, often leading to stigmatisation, discrimination, and violence against autistic people and their families. It's imperative to debunk these stereotypes and promote an inclusive society that respects neurodiversity. Our program aims to deconstruct the following preconceived ideas:

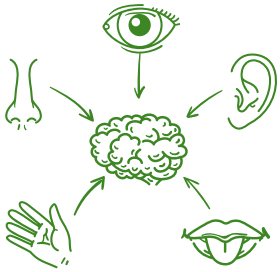
- Autism is not a disease: It's a neurodevelopmental condition. Unlike a disease, autism cannot be transmitted or cured, but there are ways to improve quality of life and manage certain challenging aspects of this condition.

- There is no causal link between styles of parenting and the development of autism. The causes of autism are genetic and environmental. Not all autistic people have an intellectual disability, and conversely, not all individuals with an intellectual disability are autistic.
- Not all the autistic people have an intellectual disability and not all people with an intellectual disability are autistic. Many autistic people have an intellectual development similar to the average, and sometimes superior.
- Autistic people may experience crises, which are not acts of caprice but often their way of expressing discomfort in response to overwhelming situations.
- Just because an autistic person is non-speaking does not imply a lack of intelligence or the inability to communicate.
- While autism may impact learning, it is not synonymous with a learning disability.
- No sport is off-limits for autistic people, although each sport offers specific benefits and may require adaptations. The suitability of an activity varies from person to person.

3.1.3 Sensory differences

In any learning environment, individuals depend on their senses to comprehend the surroundings and effectively engage or function within it. This process is termed sensory integration (Stevenson, 2008) and revolves around the commonly recognized five senses: hearing, vision, touch, smell, and taste. Additionally, it encompasses other equally vital sensory systems essential for normal functioning, including the proprioceptive system (perception of the position of different parts of the body) and vestibular system (contributes to a sense of movement and balance) (NAT, 2019).

Autistic people may face challenges in processing everyday sensory information. Any of their senses may be over-sensitive or under-sensitive or both, at different times. Sensory features are often described as constellating into distinctive behavioural constructs or sensory response patterns across modalities, including: hypo-sensitivity (slow or lack of response); hyper-sensitivity (exaggerated or avoidant response); sensory seeking behaviours; and enhanced perception (Ausderau et al., 2014).



These sensory differences significantly influence their feelings and behaviours, impacting their daily lives (NAT, 2021). These challenges can also intensify anxiety, stress, hinder community participation, and at times, even cause discomfort (Lemmi et al., 2017). Sometimes, the sensory differences may generate behaviours that may be perceived as challenging, disruptive, aggressive, or impolite by others (Stevenson, 2008).

Prolonged exposure to stress and sensory overload may lead to a condition known as autistic burnout. This syndrome emerges from chronic life stress and excessive expectations surpassing a person's capacity to manage (Raymaker et al., 2020). It is marked by extreme exhaustion, regression in previously acquired skills (self-care, speech), heightened sensitivity to sensory stimuli, impaired executive function regulation, attention, emotions, negative effects on mental health, and potentially, thoughts of self-harm (Mantzalas et al., 2022).

Finally, to calm down or concentrate, autistic people, as well as the general population, may engage in self-stimulating behaviours, commonly referred to as "stimming" (stereotypies). In the autistic community, stimming is more prevalent and pronounced. It is a natural behaviour that is neither inherently negative nor positive but serves as a form of self-regulation, either amplifying or dampening sensory inputs from the body and surroundings. Stimming typically manifests as repetitive body movements (examples include hand flapping, finger tapping, hair pulling, toe tapping, spinning) and vocalisations (such as muttering, grumbling, stuttering, whistling, singing). These actions often increase during stressful periods or when engaged in demanding activities (Kapp et al., 2019).

Due to the differences of the sensory experience, the experience of sports and physical activity for autistic people can vary significantly.

3.1.4 Communication differences

Language and communication development are fundamental components of a person's overall growth, intricately interlinked with cognition, social development, and the comprehension of the world. Acquiring communication skills and language presents one of the most complex challenges, particularly for autistic people (Vuksan and Stošić, 2018). In the context of sports, proficient communication is an essential pillar for the comprehensive growth and overall well-being of autistic people. It is therefore important to have the knowledge below:

- Autistic people communicate in diverse and varied ways. When working with autistic people, it's crucial to identify their specific communication needs to facilitate task completion. Communicating with autistic people may necessitate practitioners to acquire new skills and adopt alternative methods (Stevenson, 2008).

- They may have difficulty understanding the implicit, the second degree or metaphors, as they generally interpret words literally. Interpreting jokes, which are often based on sarcasm or innuendo, is therefore a complex task. They may also have difficulty with non-verbal communication, particularly the interpretation of facial expressions, body language and nuances in tone of voice. They may therefore avoid eye contact and have difficulty understanding social cues, maintaining conversations or gesturing to reinforce the meaning of their speech. This can be interpreted as rudeness or disinterest (Greaves-Lord et al., 2022) and hinder the feeling of being understood or listened to in conversational contexts (Webster, 2018).

- They may have a central coherence deficit, which refers to a difficulty in processing a situation or information as a whole by focusing on details (to the detriment of a general vision).

- Autistic people often face communication difficulties with delayed language development or loss of language skills (Carlsson, 2019). Verbal language may be absent.

- Many autistic people develop speech and language skills but not to a typical level, and progress tends to be uneven.
- While they may rapidly acquire a rich vocabulary in particular areas of interest, comprehension might lag.
- They may have a good memory for heard or seen information, reading words at an early age but not understanding their meaning.
- They might not respond to others' speech or their own names, leading to misconceptions of hearing difficulties (NIDCD, 2020).
- Autistic people may exhibit repetitive speech that lacks relevance to ongoing conversations. They may repeat phrases they've heard before – a condition called echolalia. This can manifest in immediate echolalia (repeating words just spoken) or delayed echolalia (repeating words heard at an earlier time).
- They may speak in a high-pitched or sing-song voice, use robot-like speech, or employ stock phrases to initiate conversations.
- They may showcase highly specialised interests, allowing them to deliver detailed monologues on specific topics of interest, yet may struggle with reciprocal conversations on the same subject (Greaves-Lord et al., 2022).
- Augmentative and alternative communication (AAC) can be introduced as a valuable solution. AAC encompasses a variety of modalities, including gestures, sign language, images, photographs, objects, videos, and written words. Indeed, communication tools, whether in physical or electronic formats (such as mobile phones, tablets, or computers), are often employed. The adoption of AAC strategies holds the potential to foster social interaction and facilitate a deeper comprehension (Hyman et al., 2020).
- In sport activity, small talk serves as a gateway to social bonding and establishing connections among teammates, but some autistic people find difficulty in engaging in small talks, sometimes viewing it as irrelevant to their specific interests. This struggle to initiate or participate in casual conversations can inadvertently lead to misunderstandings, as the absence of small talk may be misinterpreted as disinterest or rudeness.
- In general, it is recommended that only one channel of communication (oral or visual) be used, depending on the understanding indicated by the person themselves or by those close to them.

3.1.5 Social interaction

Autistic people demonstrate unique strengths and challenges in the field realm of social interaction. While they may encounter obstacles, they also possess remarkable capabilities and potential for growth in this area. Successful engagement with others involves the gradual development of diverse skills over time. Autistic people have the opportunity to enhance their ability to pay attention to social cues, understand social situations, problem-solve, and offer appropriate responses.

Recognizing the interconnectedness of communication and social interaction, we can leverage this relationship to create supportive environments that facilitate meaningful connections and social skill development. By considering the insights provided in the previous section on communication differences, we can tailor our approaches to better suit individual needs and preferences. Through encouragement, patience, and collaborative efforts, we can empower autistic people to navigate social interactions with confidence and positivity. Our program is based on the following knowledge:

- Social skills differences among autistic people can manifest diversely based on language abilities, developmental stage, and age. These may include challenges in initiating, sustaining, and concluding interactions, difficulty comprehending and using verbal and nonverbal cues, such as eye contact and gestures, and struggling to grasp unspoken social conventions in a given setting (Hyman et al., 2020).

- They may have a latency between the moment information is given and the moment it is processed.
- Engaging in social interaction may provoke anxiety in some autistic people.

- Autistic people demonstrate loyalty, care, and honesty in friendships, yet encounter persistent challenges initiating, understanding, and maintaining social connections due to communication and interaction issues. These difficulties encompass initiating friendships, differentiating between casual friendliness and genuine connections, identifying sincere friendships to prevent exploitation, and sustaining these relationships (NAT, 2019).

- ”The double empathy problem” theory (Milton, 2012): communication challenges between autistic and non-autistic people stem from reciprocal differences in communication styles and understanding.

- Contrary to the misconception that autistic people do not seek social interaction or friendship, recent research indicates that autistic people often find greater ease and enjoyment in interacting with fellow autistic people. Studies show that these interactions are marked by alignment, enthusiasm, and shared affect, highlighting the significance of similar thinking and interests in fostering strong social connections among autistic people (Crompton et al., 2020; Williams et al., 2021). These findings challenge the traditional notion of autistic people lacking social skills or a desire to socialise, emphasising that differences in neurotypes can impact the quality of relationships and communication (Crompton et al., 2020).

- It's crucial to recognise that individuals on the autism spectrum are more likely to be victims of violence rather than being the ones displaying aggressive behaviour (Holingue et al., 2021). As autistic people are frequently victims of bullying and aggressions are a really frequent case, the coach has to take action against this harassment. Including an autistic person in a sports group doesn't just mean behaving in a specific way towards that person, it really means changing the way the whole group is coached.

- Fairplay is an essential component in sport, basically autistic athletes already tend to faithfully abide by the rules and avoid foul play, but they need guidance in offering help to a falling opponent player and generally interact socially during the game.

3.1.6 Motor skills

Motor skill deficits are a significant and often under-recognized aspect of autism. These deficits are present in up to **87% of autistic people** (Zampella et al., 2021). Our program is based on the following knowledge:

- It’s frequent that autistic people have repetitive and stereotypical movements. Stereotyped and repetitive movements like rocking or hand flapping are recognized as core symptoms, and atypical gait and clumsiness are regarded as “associated features”, co-occurring but separate from the primary autism phenotype (APA, 2013).

- Specific motor skill domains such as praxis, object manipulation, and postural stability could be selectively impaired in autistic people (Zampella et al., 2021). These motor challenges can extend to areas like gait, postural control, and motor planning.

- Specific motor activities such as ball throwing and catching, using stairs, jumping, and bicycling can be particularly challenging for autistic people (Pusponegoro et al., 2016). These difficulties may stem from deficits in perception-action strategies, especially in tasks requiring anticipatory control, such as catching a ball in motion (Whyatt & Craig, 2011).

- The impact of motor coordination challenges can extend beyond physical limitations. For autistic people, keeping up with their peers in physical activities can be frustrating, leading to potential social and emotional consequences as they may fall behind in group activities due to the competition (Menear & Neumeier, 2015).

- Research indicates that gross motor skills, especially object control/aiming and catching skills like ball throwing and kicking, may be related to social skills in autistic children (Ohara et al., 2019). Children facing gross motor impairments tend to exhibit lower socialisation skills compared to those without such impairments (MacDonald et al., 2014; Pusponegoro et al., 2016).

3.1.7 Psychological and cognitive differences

The domain of psychology here refers to the well-being of the practitioners. This includes stress, anxiety levels, but also factors like motivation and pleasure of practice. It's essential to include the psychological challenges in our model because once we go beyond them, the sport activity may permit the development and the well-being of autistic people. Here is the information to have:

- Autistic people may develop a high risk of depression because of their deficits in emotion regulation, anxiety and consequently social isolation. They also may experience high stress and anxiety in response to unexpected changes, emphasising the need for structure and advance notice to manage these challenges (Webster, 2018).

- As evocated above, a prolonged exposure to stress and sensory overload may lead to a condition known as autistic burnout (Raymaker et al., 2020).

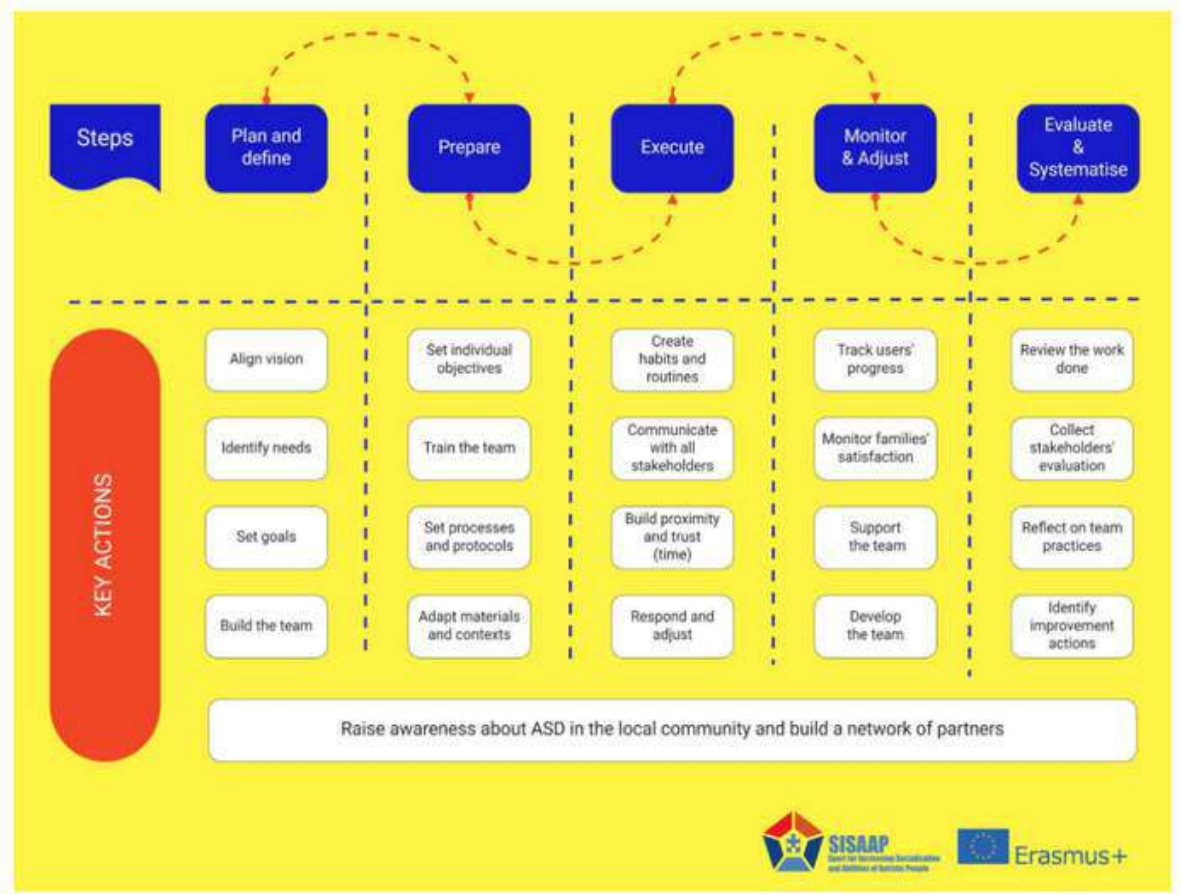
- When an autistic person feels completely overwhelmed, they may experience a "meltdown". These behaviors always have a reason and appear to communicate something, they respond to a need, a lack, a frustration. How these reactions manifest themselves varies from person to person. They can involve verbal outbursts such as shouting or crying, physical actions such as kicking or hitting, or a complete withdrawal and shutdown, known as a "shutdown". The key is to identify solutions in the environment.

3.2 Steps to follow to develop a sport program for autistic people

3.2.1 Steps

This section draws upon insights from The Beginners Guide on Sport on the Spectrum, a handbook developed by the partners of the SISAAP project. While this serves as a summary, for more in-depth information, we encourage you to explore the full handbook of the SISAAP project.

According to the guide of the SISAAP project, to set up a sports program for autistic people there are 5 steps:



Each step is composed of different key actions:

Step 1: Plan and define

1. **Needs' Analysis**
   - Speak to all the relevant people: users, users' families, relevant stakeholders
   - Analyse the resources available both in the organisation and in the local community
   - Review the legal framework and the associated policies

2. **Set goals**
   - Define the professional profiles you are looking for
   - Identify the benefits of your initiative

3. **Draft communication plan**
   - Design an awareness raising campaign towards civil society
   - Involve users and reference persons
   - Involve media (Social networks, web, TV)
   - Improve communication

4. **Prepare a budget, build a Business Plan**
   - Identify possible sources of income
     - Public funds
     - Private donations
     - Sponsorships
     - Partnerships
     - Non-monetary contributions (equipment, infrastructures)

5. **Assign a team to the project (Human Resources)**
   - Define the competences of the team (Skills, Knowledge, Attitudes

Step 2: Prepare

1. **Needs' Analysis**
   - Stakeholders' needs' analysis
   - Structure individual objectives for each participant

2. **Train the team**
   - Professionals
   - Volunteers (short trainings and workshops)
   - Onboarding for newcomers

3. **Create processes and protocols**
   - Organisation chart with clear roles and responsibilities
   - Have a specific methodology to progress gradually in the activities (propaedeutic)
   - Group protocol - specific group/activity briefing
   - Team programme to monitor the team itself and the activities.

4. **Adapt materials and context**

5. **Communication and dissemination**
   - Meet the family in the context
   - Offer trial lessons
   - Organise an "open day"
   - Name a communications manager to plan a communication strategy
   - Have an updated website / social media channels

Step 3: Execute

1

Coordination

- Good coordination is key
- A good team has experience, motivation and technical knowledge
- Involve families at every step
- Create opportunities for social gathering

2

Communication

- Keep a smooth and continuous communication with everyone involved (partners, families, supporters, sponsors)
- Promote project visibility (Media, TV) and dissemination

3

Deliver

- Respect the timing of actions
- Prepare different briefings for different users
- Give a test run of the activity to the users
- Respect the rules of your local/national administration
- Monitor the activities constantly
- Be flexible

Step 4: Monitor and Ajust

1

Users' progress and fulfilment

- Basic observation of the skills that are targeted by the activities
- Importance to set individual objectives for each participant to measure her/his progress

2

Family satisfaction

- Simple satisfaction questionnaires
- Involve and communicate frequently with families

3

Teamwork and team wellbeing

- Individual feedback from the leader every three months
- Questionnaires about the wellbeing of the team and activities
- Offer psychological supervision
- Expert or structured team meetings open to all topics
- Team-building activity twice a year (leaders, experts, staff, volunteers)
- Emphasise open communication in the team with the goal of having good feedback and adjust the program
- Provide autism trainings with experts on Autism at least twice a year

Step 5: Evaluate and systematize

1

Review the work done

- Assess the results achieved in light of the achieved objectives
- Collect stakeholders' feedback:
  - Users
  - Users' families
  - Partner organisations
  - Sponsors
- Identify adjustments and improvements needed
- Celebrate the achievements as a team

2

Reflect on the work done

- Focus on transversal competences and teamwork
- Identify opportunities for individual and team training and development
- Identify possible changes and innovation in team organisation and management
- Identify improvements in the service

3

Plan the new initiative / Project

- Include improvement actions into the design of the new project
- Design a strategy to maintain the connection with stakeholders and keep the network alive

3.2.2 Focus on the communication

For the launch of the project:

The press conference:

- The invitation:
  - Study the media to see who the various contacts are in the sections that interest you and create a press list ;
  - Send the invite it between at least 1 month before the press conference ;
  - Indicate clearly the date, place and time of the press conference ;
  - Don't forget to put the phone number of the (press) contact of the responsible ;
  - Precise the relevant section "for the sports and society sections" ;
  - Present the subject of the press conference and some highlights to spark arouse the interest of journalists with some figures: the amount of money invested in the project, number of autistic people who can be accommodated ;
  - Send your invited to: the redaction or the section concerned + to the journalists + to the editor in chief ;
  - 10 days before the press conference,contact each journalist on your list to remind them of the event and ensure its presence.

- The choice of the date and of the time:
  - Organise it between 7 and 10 days before the launch of the activity ;
  - Between the tuesday and the friday ;
  - Choose a day without another major event ;
  - Preferably in the morning ;
  - Avoid summer (July-August).

- The conference:
  - Make sure you have an attendance list when you welcome your guests ;
  - 20-30 minutes maximum + time for interviews/questions and for the demonstration of the activity ;
  - Present the speakers ;
  - The objective is to announce your new sport and autism project and to present it in preview: how the project was born, some information on the situation of autistic people on your territory, which activities will be available.

Press release:

- The aim is to notify the media of your new project and to help him to write it's article ;
- Send it just after the press conference ;
- 1 page maximum ;
- For the redaction, use the rules of the 5 W: Who, Why, Where, When, What, to explain your project.
- Consider using the inverted pyramid technique, where you start with the most important aspects and end with the least important aspects. Journalists don't have much time and easily discard your press release if they don't see the news value right away.

For the launch of the project and the progress of the project in general:

Social networks :

- Communicate regularly on your social networks ;
- Put the icons of your social networks on your website ;
- Include photos in your posts, while taking care to respect copyright ;
- Adapt your posts to the particularities of each network:
  - Facebook: publication format: 1080 x 1080 px (à privilégier) or 1080 x 1350 px
  - X (formerly twitter) : 280-character limit
  - Instagram: publication format: 1080x1350 px (to be preferred) or 1080 x 1080 px
- Adapt your schedule to the particularities of each network:
  - Facebook: weekdays from 6am to 9am or from 12pm to 3pm; weekends from 12pm to 1pm
  - X: weekdays before 9am, from 11am to 1pm or after 5pm
  - Instagram: weekdays from 10am to 12pm and from 2pm to 4pm; weekends from 4pm to 8pm
  - Linkedin: weekdays from 7am to 9am, to 12pm and from 5pm to 6pm (avoid Friday afternoons/evenings)

Website:

- Make sure you have updated the calendar feature on your website with the event details of any events that come up within the project
- Post a news release on the project
- Consider posting a visual with the project timeline and the most important milestones
- Post regular blogs or interviews with people involved in the project
- Think about your SEO and do some research into the best keywords to use to promote your project

3.3 The choice of the sport and of the modalities

This section aims to help the sports sector select the sports to be set up and the most suitable configuration, thanks to:

- A table showing the different configurations (individual, group, outdoor, indoor) with the skills they promote, the benefits for participants and the points to watch out for supervisors.
- A list of sports, detailing their main characteristics, the skills they aim to develop and their degree of adaptability.
- A table outlining the different types of group composition possible, presenting the advantages and points of vigilance for autistic people and supervisors.
- Recommendations on the frequency and duration of sessions, to ensure that the pace is adapted to participants' needs.
- Examples of sessions adapted to autistic people.

3.3.1 Choice of sport

First and foremost, no sport is contraindicated for autistic people, although each sport offers specific advantages and may require adaptation. A survey conducted as part of the Sacree project, for example, asked autistic people about the sports they practiced, and these were varied: swimming, fitness, multisports, soccer, walking, cycling, martial arts, climbing, running, riding, rugby, athletics, basketball, dance, yoga, tennis, fencing, table tennis, golf, handball, volleyball, archery, badminton, boxing, surfing or parkour, etc.

The field of possibilities is therefore open to structures in terms of choice of activities, and the tables below are intended to guide you in this selection.

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	Description	Examples of sports	Skills developed	Advantages	Point of vigilance
Individual	Can be done alone, in a group or not	Swimming, Cycling, Golf, Archery, Yoga, Fitness, Surfing, Climbing, Dance , Tennis, Martial arts	Coordination, fine and gross motor skills, endurance, self-confidence.	Autonomy, personal management of sport at your own pace. Develop a taste for sport.	Isolation, lack of social stimulation. Odor and noise
Collective	Requires at least one partner to be successful	Football, Tennis, Basket-ball, Danse, Rugby, Golf, Handball, Volley-ball, Baseball	Social skills, cooperation, communication, coordination, empathy, and cooperation.	Learning social skills, managing interpersonal relationships.	Difficulties in managing a large number of participants, sensory overload, managing wins and losses, understanding the rules
Outdoor	Takes place mainly outdoors	Hiking, Cycling, Golf, Football, Tennis, Horse riding, Yoga, Surfing, Walking, Running, Skiing, Parkour, Climbing.	Endurance, balance, autonomy, management of the natural environment.	Stress reduction, better anxiety management thanks to the natural environment, adventure side	Unforeseen events, weather management and environmental changes.
Indoor	Mainly used indoors	Swimming, Gymnastics, Boxing, Multisports, Martial arts, Judo, Tennis, Table tennis, Badminton, Yoga, Parkour, e-sport, Dance	Coordination, fine motor skills, flexibility, concentration.	More predictable, stable environment, reduced external stimuli.	Feeling of confinement, risk of boredom.
Tool/Material	Permanent use of a tool (racket, ball)	Tennis, Table tennis, Golf, Badminton, Archery, Horse riding.	Development of precision and fine motor skills.	Dexterity, precision, coordination, concentration.	Difficulty mastering the tool, frustration in handling it

	Description	Examples of sports	Skills developed	Advantages	Point of vigilance
Opposition, face to face	Direct confrontation with one or more opponents	Opposition: Judo, Boxing, Rugby, Football. One-on-one: Tennis, Fencing, Archery, Boxing.	Learning stress management and resilience. Strategy development and competition management.	Stress management, endurance, responsiveness, decision-making. Concentration, strategy, reactivity, decision-making.	Risk of anxiety due to direct confrontation, high pressure. Difficulty managing emotions during confrontation, sensory overload.
Open	Uncertain environment and/or type of actions to be performed	Football, Rugby, Course, Danse, Parkour.	Development of adaptability, rapid decision-making.	Adaptability, quick decision-making, stress management.	Difficulty adapting to the unexpected, stress linked to uncertainty.
Outdoor	Takes place mainly outdoors	Hiking, Cycling, Golf, Football, Tennis, Horse riding, Yoga, Surfing, Walking, Running, Skiing, Parkour, Climbing.	Endurance, balance, autonomy, management of the natural environment.	Stress reduction, better anxiety management thanks to the natural environment, adventure side	Unforeseen events, weather management and environmental changes.
Closed	Stable, predictable (closed) environment and actions designed for sport.	Archery, Golf, Badminton, Fencing.	Stability, environmental control, predictability of actions.	Precision, concentration, repetition management.	Risk of loss of motivation, lack of challenge.

Co-funded by the European Union

Sport	Individual / Collective	Indoor / Outdoor	Skills covered:	Point of vigilance	Possibility of adapting the sport to the needs of the participants (modification of rules, level, etc.).
Gymnastics	Individual/Collective	Indoor	Coordination, flexibility, balance, motor skills	Risk of injury Difficulties to understand the instructions	Low
Hiking	Individual	Outdoor	Endurance, balance, motor skills, stress management	Dealing with the unexpected outdoors.	Low
Archery	Individual	Indoor or Outdoor	Concentration, dexterity, patience, coordination	Risk of injury Patience management	Low
Cycling	Individual	Outdoor	Coordination, motor skills, endurance, balance	Risk of injury, dealing with the unexpected outdoors.	Medium
Running	Individual	Outdoor	Endurance, cardio, motor skills, stress management	Dealing with the unexpected outdoors.	Medium
Climbing	Individual	Indoor or Outdoor	Coordination, dexterity, concentration, self-confidence	Risk of injury Stress of height	Medium
Danse	Individual	Indoor	Coordination, flexibility, creativity, social skills	Sensory overload with music Difficulty following the rhythm of the choreography	Medium

B) Activity directory

Sport	Individual / Collective	Indoor / Outdoor	Skills covered:	Point of vigilance	Possibility of adapting the sport to the needs of the participants (modification of rules, level, etc.).
Horse riding	Individual	Outdoor	Balance, social skills, self-confidence, concentration	Risk of injury (for the animal and for the person) Necessity of a good relation between the person and the horse	Medium
Yoga	Individual	Indoor	Balance, stress management, coordination, flexibility	Difficulty staying focused	High
Swimming	Individual	Indoor	Coordination, motor skills, balance, stress management	Noise, crowds and chlorine smell	High
Parkour	Individual	Indoor or Outdoor	Coordination, flexibility, balance, motor skills, cardio,	Risk of injury Difficulties to understand the instructions	High
Soccer	Collective	Outdoor	Coordination, social skills, endurance, motor skills	Managing victory and defeat Physical contact Difficulties to understand the instructions	High
Fighting sports	Collective	Indoor	Coordination, dexterity, self-confidence, stress management, aggression management	Risk of injury Managing victory and defeat Physical contact	High

B) Activity directory

Sport	Individual / Collective	Indoor / Outdoor	Skills covered:	Point of vigilance	Possibility of adapting the sport to the needs of the participants (modification of rules, level, etc.).
Handball	Collective	Indoor	Coordination, social skills, motor skills, cardio	Managing victory and defeat Difficulties to understand the instructions	High
Golf	Collective	Outdoor	Coordination, concentration, patience, motor skills	Managing victory and defeat Patience management	Low
Tennis	Collective	Indoor or Outdoor	Coordination, dexterity, concentration, motor skills	Managing victory and defeat Difficulties to understand the instructions	High
Table tennis	Collective	Indoor	Concentration, dextérité, patience, coordination	Managing victory and defeat	High
Badminton	Collective	Indoor	Coordination, motor skills, reflexes, social skills	Difficulties to understand the instruction	High

3.3.1.3 Composition of the group

Mixed group of autistic and neurotypical people

Benefits	• Promotes inclusion and the development of social and cooperative skills for autistic people • Creates an inclusive learning environment • Benefits for neurotypical people
Points to watch out for	• Potential sensory overload and integration difficulties for autistic people • Maintaining a balanced dynamic between all participants • Adaptations need to be prepared.

An autistic person in a neurotypical group, with an additional specialized educator.

Benefits	• Supervised inclusion, social skills development with direct support. • Creation of an inclusive learning environment • Benefits for neurotypical individuals • Reduced workload for the primary educator
Points to watch out for	• Integration difficulties for autistic people • Establishing a relationship of trust. • Additional cost for the specialized educator • Manage logistics to coordinate the specialized educator and the group educator.

Group made up of autistic people only.

Benefits	• Developing the social and cooperative skills of autistic people • The pedagogical approach can be facilitated because it is specific to the needs of autistic people.
Points to watch out for	• High level of training required • Possibility of sensory overload, integration difficulties • Keep everyone involved. • Be vigilant to each person's specific needs and safety.

Individual lesson

Benefits	• Personalized attention and support tailored to needs. • Improves the self-confidence of the autistic person. • Simplified logistics
Points to watch out for	• Limits the autistic person's opportunities for socialization. • Create a relationship of trust. • Lower profitability for the structure

Group involving the participation of family members or close friends

Benefits	• Reinforced family ties, direct emotional support, secure environment. Stimulates their interest in sport. • Improves the mental health of loved ones. • Eases the burden on the coach. • Can lead to more members.
Points to watch out for	• Possible confusion between family and educational roles • Maintaining a balanced dynamic between all participants

Activity involving an animal

Benefits	• Reducing stress, improving emotional management, developing self-confidence for autistic people
Points to watch out for	• Risk of isolation. • Be vigilant about safety • High cost of activity (animal care, feeding).

3.3.2.2 Examples of sessions

This section contains examples of sports sessions adapted for autistic people, implemented by some of the Sacre project partners. You'll find:

- Some exercises to develop motor skills.
- An “Athletic games” session from ASPTT Caen,
- A “Ball games” session from ASPTT Caen,
- A “Gymnastic games” session from ASPTT Caen,
- A soccer training session by Romulea Autistic Football club,
- A surfing session by Inovar Autismo,

Examples of activities to develop motor skills (for children and adults):

For children and adults	For children
• Catching balls in flight • Dance • Jumping on a trampoline • Climbing • Crawling through tunnels • Catch and fight games • Dribbling with a ball • Riding a tricycle or bicycle • Balancing on one leg • Rolling on mats	• Catching bubbles • Gesture rhymes and songs (head, shoulders, knees, toes) • Stillness games (1,2,3,Soleil; the king of silence, the stone statue) • Imitate animal movements (galloping, waddling, jumping)

Session No. 1 for Kids by ASPTT Caen - Theme: "Athletic Games"

Warm-up: 10 minutes

Instructions:

- Implement the first barrier gesture: Hand washing (30 seconds).
- Free running in a predefined space with the child. Gradually increase the pace to raise the heart rate and body temperature (2 minutes).
- Upper body mobilization: pass a ball or object above, around, and below the body without dropping it on the floor. To do this, the ball must be passed from one hand to the other. Do several rounds (3 minutes).
- Lower body mobilization: Move in different ways: crawling, duck walk, small crouched jumps, walking, walking on tiptoes, walking on heels, knee raises, butt kicks, jumps with feet together, bell-foot jumps (3 minutes).
- Transition: Clap hands while in a squat position, then jump to a standing position with arms stretched toward the sky: "Jumping Jack Kids" (2 minutes).

Simplification / Complexity: The distance, duration of the warm-up (maxi 15 min), and intensity can be adjusted.

Animal Game: 10 to 15 minutes

Instructions: Move from point A to point B while imitating an animal: do the crab, frog, bird (flap wings), sardine (jump with feet together), etc. You can use pictograms to make it clearer.
Objectives: Successfully move from point A to point B without stopping, performing complex movements.
Simplifications: do the course multiple times, do the movements with the child.
Complexifications: Increase speed, change animals before reaching point B.

Motor Skills Course: 10 minutes - Everyday objects to create the course

Instructions: Based on the space you have at home, create a motor skills course. No need for much equipment: use bottles for slalom, sprint between two points, crawl under a broomstick placed on two chairs, throw a ball while jumping, do a roll on a mat (you can involve the child to encourage creativity).
Objectives: Complete the motor course several times. Do 2 sets of 4-minute courses with 2 minutes of rest to catch your breath and/or drink water.
Simplifications: Reduce the time on the course, slow down.
Complexifications: Increase speed, safely.

Cool-down: 10 minutes - With or without a mat and soft music

Instructions:

- Stretching in a seated position: try to touch your feet by reaching with your arms, keeping your legs straight. Then do stretches while lying on your back, gently bringing your knees toward your chest with the help of your arms (2 sets of 30 seconds for each position with 30 seconds of relaxation between positions).
- Relaxation and breathing time with soft music: in a seated or lying position, place your hands on your stomach and gently inflate your belly by breathing in through your nose, then deflate it by breathing out through your mouth. Once the action is mastered, repeat with your eyes closed (3 to 5 seconds depending on participation, and this can evolve over the sessions).
- Full stretch by pointing your toes and extending your arms above your head to lengthen your body (2x 30 seconds with 30 seconds of relaxation).

Session No. 2 for Kids by ASPTT Caen - Theme: Ball Games

Warm-up: 10 minutes

Instructions:

- Implement the first barrier gesture: Hand washing (30 seconds).
- Free running in a predefined space with the child. Gradually increase the pace to raise the heart rate and body temperature (2 minutes).
- Upper body mobilization: pass a ball or object above, around, and below the body without dropping it on the floor. To do this, the ball must be passed from one hand to the other. Do several rounds (3 minutes).
- Lower body mobilization: Move in different ways: crawling, duck walk, small crouched jumps, walking, walking on tiptoes, walking on heels, knee raises, butt kicks, jumps with feet together, bell-foot jumps (3 minutes).
- Transition: Clap hands while in a squat position, then jump to a standing position with arms stretched toward the sky: "Jumping Jack Kids" (2 minutes).

Simplification / Complexity: The distance, duration of the warm-up (maxi 15 min), and intensity can be adjusted.

Pass-Pass 10 to 15 minutes

Option to use something else if no ball (socks rolled into balls, etc.)

Instructions: Pass the ball to a friend using several methods: rolling the ball, throwing the ball in an arc, throwing from a crouched position, throwing over a chair, etc.

Objectives: Master basic throwing techniques and try as many ways as possible in 10 minutes.

Simplifications: Throw by hand and stick to simple methods for the child.

Complexifications: Make passes while moving (walking, side-stepping, etc.). Make passes with the foot.

Knock-Down Game - 10 to 15 minutes

Balls and everyday targets

Instructions: Throw the ball accurately at one or more objects. Throw into a hoop placed against a wall, knock over cones, bottles, etc.

Objectives: Master precision throwing and throwing strongly with a ball.

Simplification: Reduce the distance to the target.

Complexifications: Increase the distance to the target. Increase the frequency of throws

Cool-down: 10 minutes - With or without a mat and soft music

Instructions:

- Stretching in a seated position: try to touch your feet by reaching with your arms, keeping your legs straight. Then do stretches while lying on your back, gently bringing your knees toward your chest with the help of your arms (2 sets of 30 seconds for each position with 30 seconds of relaxation between positions).
- Relaxation and breathing time with soft music: in a seated or lying position, place your hands on your stomach and gently inflate your belly by breathing in through your nose, then deflate it by breathing out through your mouth. Once the action is mastered, repeat with your eyes closed (3 to 5 seconds depending on participation, and this can evolve over the sessions).
- Full stretch by pointing your toes and extending your arms above your head to lengthen your body (2x 30 seconds with 30 seconds of relaxation).

Co-funded by the European Union

Session No. 3 for Kids by ASPTT Caen - Theme: Gymnastics Games

Warm-up: 10 minutes

Instructions:

- Implement the first barrier gesture: Hand washing (30 seconds).
- Free running in a predefined space with the child. Gradually increase the pace to raise the heart rate and body temperature (2 minutes).
- Upper body mobilization: pass a ball or object above, around, and below the body without dropping it on the floor. To do this, the ball must be passed from one hand to the other. Do several rounds (3 minutes).
- Lower body mobilization: Move in different ways: crawling, duck walk, small crouched jumps, walking, walking on tiptoes, walking on heels, knee raises, butt kicks, jumps with feet together, bell-foot jumps (3 minutes).
- Transition: Clap hands while in a squat position, then jump to a standing position with arms stretched toward the sky: "Jumping Jack Kids" (2 minutes).

Simplification / Complexity: The distance, duration of the warm-up (maxi 15 min), and intensity can be adjusted.

Crocodile Pond - 15 minutes

Instructions: Depending on the space available, create a gymnastics course. You don't need a lot of equipment: ropes on the floor to simulate a narrow passage, crawl under a broomstick placed on two chairs, move from one dishcloth to the next to vary step size, jump over an obstacle, perform a roll on a mat (you can involve the child to encourage creativity when designing the course).

Objectives: Complete the entire motor course multiple times, stepping as little as possible outside the defined areas to avoid being "eaten by the crocodiles."

Simplifications: Do the course in several tries, move with the child.

Complications: Go faster, add more obstacles.

Créa'choré - 10 to 15 minutes

Instructions: Create a small choreography combining various movements (walking, jumping, leaping, backward, etc.) and imposed positions (balance on one leg for 3 seconds, then on the other, seated on the floor, on all fours followed by some movements, jump high in place with arms in the air) in a defined space. Repeat this choreography 2 to 3 times.

Objectives: Repeat the choreography as closely as possible each time, respecting the imposed positions and using as much space as possible.

Simplifications: Shorten the choreography time, reduce the space, reduce the number of imposed positions.

Complications: Increase speed while ensuring safety and add new static holding positions.

Cool-down: 10 minutes - With or without a mat and soft music

Instructions:

- Stretching in a seated position: try to touch your feet by reaching with your arms, keeping your legs straight. Then do stretches while lying on your back, gently bringing your knees toward your chest with the help of your arms (2 sets of 30 seconds for each position with 30 seconds of relaxation between positions).
- Relaxation and breathing time with soft music: in a seated or lying position, place your hands on your stomach and gently inflate your belly by breathing in through your nose, then deflate it by breathing out through your mouth. Once the action is mastered, repeat with your eyes closed (3 to 5 seconds depending on participation, and this can evolve over the sessions).
- Full stretch by pointing your toes and extending your arms above your head to lengthen your body (2x 30 seconds with 30 seconds of relaxation).

ROMULEA AUTISTIC FOOTBALL CLUB TRAINING SESSION TYPICAL SINGLE-WEEKLY PROPOSAL

Premise

As part of the inclusive sports project of the Romulea Autistic Football Club, the training session plays a pivotal role in developing the progressive awareness of the means and abilities that distinguish each student in his psychophysical and social uniqueness.

Developed within a private annual program of containers of objectives to be achieved, the session collects the same in a randomised system guided by the observation of the answers provided by the athletes.

The team group is made up of people on the autism spectrum and neurotypical athletes and players without distinction of gender and age, grouping together young people from 16 years old to people up to over 50 years old.

The session takes place on Mondays from 7:30 pm to 9:00 pm in one half of an 11-a-side football pitch, using balls and technical equipment such as cones, field markers, poles, movable goals, small goals of different sizes, speed ladders, proprioceptive jellyfish, wooden walls and coloured jerseys.

Goals

The objectives of a training session of an inclusive soccer team partly coincide with those of any neurotypical competitive or amateur team, where obviously the social component plays the primary role. The awareness of the objectives achieved, even if with extended time frames, help to improve the self-esteem of the athletes, generating a sense of self-esteem that must be maintained and cultivated.
The main objectives are the following:

1. ANALYSIS AND DEVELOPMENT OF COORDINATIVE MOTOR SKILLS
2. IMPROVING TECHNICAL AND TACTICAL SKILLS AND COMPETENCES
3. IMPROVEMENT OF RELATIONAL AND SOCIAL QUALITIES
4. IMPROVED SELF-ESTEEM AND MOTIVATION TO ACHIEVE INDIVIDUAL AND SHARED GOALS

Approach Modes

The session is proposed and developed in the days preceding it, through discussion between the members of the staff, which includes a UEFA B and FIGC-certified Paralympic Coach, a Goalkeeping Coach, a second FIGC-certified Paralympic coach, a Technical Collaborator and two IUSM Motor Trainers.

The training must consider a heterogeneous group in terms of sex, age, and aptitude; the variable of attendance can vary from 20 to 40 athletes.
To facilitate management, it was decided to divide the session into three distinct phases that are also easily understandable by the athletes, who can thus manage the **times** more calmly, where it could be a cause of stress and pressure.

In addition to the temporal point of view, the session also includes a spatial division of the exercises, with the aim of creating familiar and familiar environments, also here to avoid tension accumulating unnecessarily, compromising the success of the exercise.

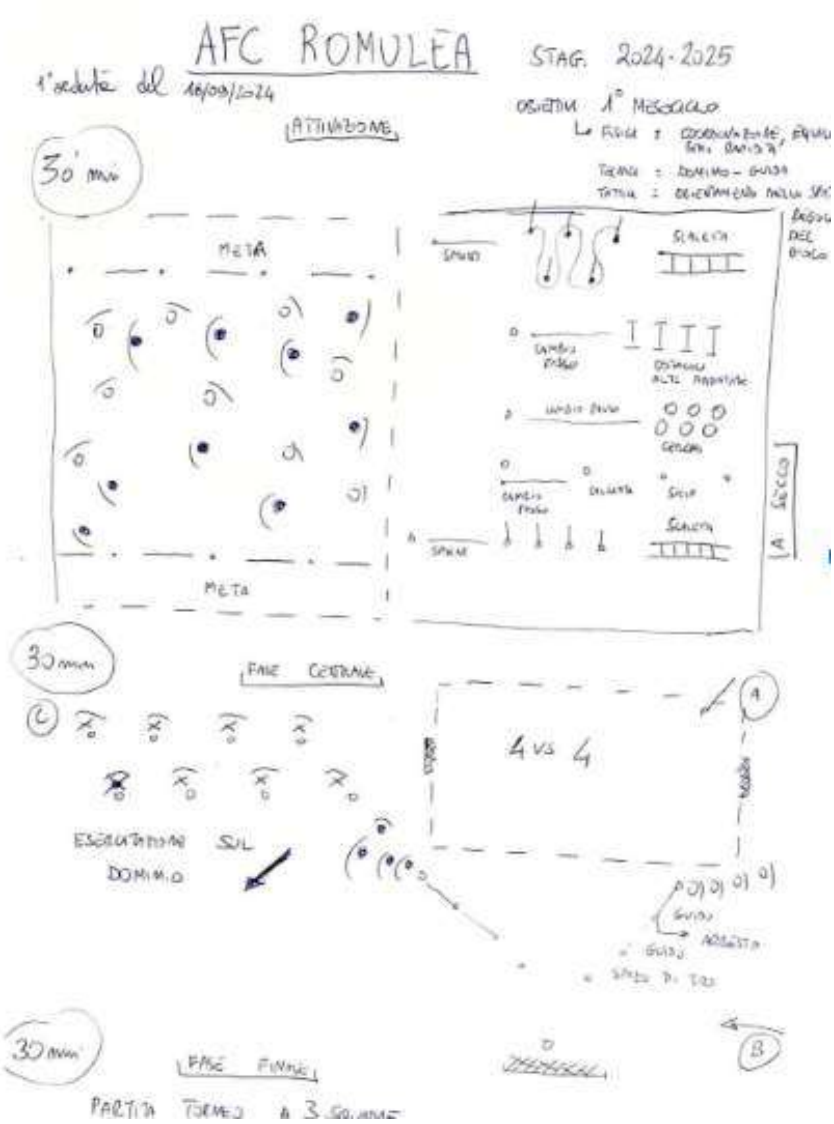
The methodical approach alternates between the deductive type , where the indications are given in a directive manner and where the execution method is indicated through examples and demonstrations and the player is asked to reproduce it in the exercises, and the inductive type , which encourages discovery and makes the athlete aware of even the smallest technical and tactical achievements with the aim of improving their self-esteem and motivation.

In our socio-sports experiment, the methods used were integrated into a sort of adaptability of the person involved. Each of our students responded differently to the prompts and requests made, which were calibrated “ad personam”, precisely so as not to emotionally overload the individual if we continued to use a method that was not suitable for them.

We chose to intervene with a 1 to 1 ratio, correcting the individual always speaking to them and never in front of the team context, to facilitate the ability to understand and eliminate any distracting elements.
In some purely analytical exercises, the deductive method was preferred to facilitate understanding and try to accelerate the learning process.

The session

The training includes an initial welcoming phase, in which the athletes socialise in the clubhouse and are then accompanied by the staff to the changing rooms.
Once on the field, the athletes participate in a short initial briefing, where the exercises they will be carrying out are illustrated and shown, placed in space and time.



The session is divided as follows:

ACTIVATION PHASE: lasting approximately 20/30 minutes , in which we work on the basic individual technique and therefore on DOMINATION, CONTROL, GUIDANCE OF THE BALL, AWARENESS , through analytical exercises, often combined with coordination or motor proposals.

CENTRAL PHASE: lasting about 40 minutes, organized with station exercises, each of which has a different objective. In one, a technical circuit is almost always created where the repetition of technical gestures combined with agility exercises are planned , often with the finalization of SHOOTING. In a second station the objective is of a technical or analytical nature with TRANSMISSION AND RECEPTION, while in a third wildcard station , depending on the session, SITUATIONAL exercises of 1vs1, 2vs1 and 2vs2 alternate with proposals of a MOTOR COORDINATIVE type.

FINAL PHASE: lasting about 30 minutes of game and match activities, partly constrained and partly free, with themed match proposals and hints of ROLE-BASED PLAY. This moment of the session was used to teach the RULES of the game of football, and introduce concepts of INDIVIDUAL AND COLLECTIVE TACTICS.
Rome, January 31, 2025

www.autisticfootball.club
www.sacree.eu

Inclusive Surf Program - Inovar Autismo

Warm-up:

10 Minutes Activity: Movements on the Sand

1. Walk barefoot on the sand to improve sensory awareness.
2. Do simple stretches: touch your toes, raise your arms to the sky, and move your upper body from side to side.
3. 3. Split into small groups for games like tag to increase the heart rate.
4. Practice basic balance moves, like standing on one foot or pretending to stand on a surfboard.

Main Activity:

Duration: 30 Minutes

On the Board (One-by-One Activity):

1. Lie on the surfboard and practice paddling with the instructor holding the board steady.
2. Simulate catching a wave by having the instructor gently push the board in shallow water.
3. Practice standing up on the board with the instructor's help, using hands or verbal guidance.

Goals:

- Build confidence in the water.
- Learn basic surfing movements.
- Improve coordination and balance.

Adaptations: Simplification:

- Allow participants to stay seated or lying on the board the entire time.
- Use extra floats to make the board more stable.
- Practice the movements on the sand instead of the water.

Cool-Down:

Duration: 10 Minutes

Activity: Relaxation on the Beach

1. Gentle stretches with the instructor's help: touch your toes, stretch your arms up, and lean side to side.
2. Practice slow and calm breathing exercises

3.4 The financial part: find a support

IN FRANCE:

In France, there are various ways of raising funds for your sports programs. We recommend that you create a monitoring table with links to the sites you want to monitor, such as:

Public funding:

- Departmental grants
- Regional grants
- National grants
- European grants

Private funding:

- Foundations, particularly company foundations
- Associations

There are a number of sites that list existing grants (public and private) and are very useful in helping you to keep an eye on them:

- Aides et territoires
- Subventions.fr
- Sport en commun
- Territoires solidaires
- Appelàprojets.org

For example, to finance its SOLIDARITÉ autisme by ASPTT programme, the ASPTT Fédération Omnisports has received grants from the Orange Foundation, the AG2R La Mondiale Foundation and the Fondation Initiative Autisme.

Finally, in parallel with the financial support, in France we advise you to make contact with the autism resource centres (CRA) of your region from the very start of your project. They are the key actors in the field of autism in France and can help you with your project. They are organised at regional level and work in coordination with professionals and autistic people. You can find the contact for each region here and the Groupement National des Centres de Ressources Autisme (GNCRA) website here

IN ITALY:

In Italy, there is currently no aggregator for funds and financing dedicated to sports activities for autistic people. However, there are several annual project funding opportunities offered by private foundations and public entities that allow individuals to submit their sports project and receive non-repayable funding, in addition to direct support from private families associations and volunteer organisations. We are not currently aware of specific websites that list existing contributions, except for some public administrations, such as the City of Rome, which lists agreements and available bonuses on their website to ensure disadvantaged citizens have access to sports activities.

Some of these include:

Public funding:

- National contributions
- Regional contributions
- City administrations

Private funding:

- Vodafone OSO, Ogni sport oltre
- Tim Foundation
- Baroni Foundation
- Con il Sud Foundation
- National and regional associations

It should be noted that these mentioned lists are not exhaustive and primarily include options, websites and funding used by SS Romulea. For example, in previous years, SS Romulea has used contributions provided by the Baroni Foundation to finance the implementation of the Autistic Football Club sports program and donation of a regional association of families of autistic people.

In Italy, the majority of sports programs and projects for autism are promoted by private associations, informal groups, or small local entities primarily funded by the registration fees of the athletes themselves and only to a small extent by public or private grants, with the support of local volunteers. There are still very few sports clubs that have developed specialised programs and made adjustments to their facilities, as they cannot benefit from direct support from the national government, local administrations, or large sports federations.

Finally, in addition to financial support, we recommend contacting the main private volunteer organisations promoting the rights of people on the autism spectrum in Italy with regional offices: Gruppo Asperger, Angsa, Anffas. They are key players in the field of autism in Italy and can support new projects on national and regional level, working in coordination with associations of professionals and individuals on the autism spectrum.

Here are the contacts for the national offices

- Gruppo Asperger onlus
- Angsa aps onlus
- ANFFAS ets-aps

To date, unfortunately, there are still few projects that involve autism and sports. However, thanks to the support of the **Lega Calcio a 8** (8-a-side Football League) and the **Lega Nazionale Dilettanti** (National Amateur League) and in collaboration with other dedicated football organisations (Insuperabili, Meraki APS Empoli FS, Albano Primavera, SS Lazio, AS Roma FS Meta Coop), SS Romulea has managed to implement an ambitious project in the 2023/2024 sports season; an entire league and first championship dedicated to inclusive and integrated teams, with autistic and not autistic players, with and without intellectual disabilities, the championship **Lega Calcio a 8 Unica**.

IN CROATIA:

In Croatia, sports programs and projects catering to autistic people generally fall into two main categories.

The first category comprises programs developed and managed by NGOs specialising in autism. These initiatives are typically funded by small grants from local government bodies and receive substantial support from local volunteers and the community. Funding for these programs is often a combination of small local grants, agreements allowing free use of local sports facilities, and modest membership fees from participants and their families.

In the second category are sports clubs that have established specialised programs and made necessary adjustments to their facilities. While these clubs may receive some support from national and local governments as well as sports associations, the bulk of their funding comes from membership fees.

Currently, there is no centralised website or government office providing comprehensive information on funding for sports and autism programs in Croatia.

IN PORTUGAL:

There are still not many projects that involve autism and sport. However, Inovar Autismo managed to implement a project in 2021, through a partnership with a Portuguese tennis club, which was funded by the Portuguese Institute for Sport and Youth - IPDJ, as part of a program run by this institute called the "National Sport for All Program".

As far as the national theme is concerned, presenting project proposals to local councils, in particular to councillors responsible for sport and social rights, is not only a way of publicising the need for projects in the field of inclusive sport but also to find out about possible ways of requesting funding from local councils.

The legal nature is very important in Portugal: for example, a federation that wants to apply for funding from the “Sport for All Program” mentioned above, must ensure that it meets the requirements of the beneficiaries of this source of funding, i.e. that is a federation with a public sporting utility. Another alternative is for sports clubs to look for associations that are developing programs in the field of sport and inclusion. As long as these associations (such as Private Institutions of Social Solidarity - IPSS) are financed by funds that are looking for IPSS projects in the area of sports.

3.5 Focus on the training

This guide provides the basic knowledge needed to set up a sports activity accessible to autistic people. However, to enhance the quality of the offer and to facilitate the activity of the staff, it is important to follow one or more training courses.
Staff members should possess knowledge about autism, particularly understanding difficulties that environments generate and the kinds of support, changes and precautions that may be necessary. Supporting autistic people is a specialised role that can be challenging, and as such, staff members should receive thorough training and ongoing support. This training should cover essential areas such as (NAT, 2019):

- Understanding and empathising with the day-to-day needs of autistic people.
- Practical communication techniques for interacting with autistic people and supporting their communication.
- Assisting in decision-making with autistic people and promoting their autonomy.
- Recognising sensory needs and learning how to meet them effectively.
- Preparing and supporting autistic people in coping with change and transitions.
- Understanding, preventing, and responding to distress, including behaviours caused by challenging situations.

Compensation for their work should reflect the significance of their role (NAT, 2019).

IN FRANCE:

Autisme Info Service website:
This site has a Training section which includes professional training courses as well as free training courses. We advise you to browse their website to find the training course that suits your profile and your needs, availability, prices, and so on.

National Group of Autism Resource Centers (GNCRA):
The autism resource centers (CRA) are key players in the field of autism in France. They are organised at regional level and work in coordination with professionals, the people concerned, etc. They offer training courses and E-learning tools.

Trans'Formation, the national training organization of the FFSA (Fédération Française du Sport Adapté):
This organization offers professionalizing and qualifying courses in the field of adapted sports: DEJEPS state diploma in “adapted physical and sports activities”, federal diplomas in adapted sports: motor activity initiator and “sport and autism” federal certificate, etc

IN ITALY:

In Italy, there is the **Osservatorio Nazionale Autismo** (National Autism Observatory) that promotes training activities dedicated to professionals in the healthcare, social and educational sectors, and collaborates with university institutions and professionals with documented experience in autism. It also has a platform dedicated to distance learning, **EDUISS** of the ISS, **Istituto Superiore di Sanità** (Higher Institute of Health). ISS publishes National Guidelines about autism with recommendations based on scientific evidence.

Additionally, almost all Italian public and private universities offer autism training courses, first and second level masters, conferences on specific topics, and study days with professionals from the international panorama. They also set up observation, research, and training laboratories on social and cognitive neuroscience. Similar trainings are organised by private volunteer organisations promoting the rights of people on the autism spectrum too.

Finally, Edizioni Centro Studi Erickson, a renowned publishing house and disability training centre in Italy, offers training and updating activities for teachers, school principals, pedagogues, professional educators, social workers, psychologists, psychotherapists, speech therapists, and other social and healthcare operators. They are accredited by the Ministry of Education, University and Research for school personnel training, by the Ministry of Health as an ECM (Continuing Education in Medicine) provider, and by the National Council of Social Workers (CNOAS).

IN PORTUGAL:

There are some resources such as a course manual for sports coaches drawn up by the Portuguese Federation of Sport for People with Disabilities available on the internet and in this case published by the Portuguese Institute for Sport and Youth, although it doesn't focus exclusively on autism. This manual includes tips such as: "See the person and not their disability"; "Listen to the athletes, as they are experts in their disability and know what the best adaptations are for them".

Concerning training, Inovar trained tennis coaches and the training modules were:

- Human Rights, Disability and Inclusion - a new approach;
- Barriers to participation and inclusion - how to deal with them;
- Emotional Intelligence and Communication;
- Mediation for Inclusion;
- Autism.

These themes proved crucial for gaining a better understanding of autism and inclusion and, above all, for preparing the coaches to work with autistic people, since they realised the main characteristics, difficulties and strategies for including them. For their part, the coaches also helped the trainers realise what the main challenges are in the context of sports.

IN EU IN GENERAL:

IPA, Autism - training for inclusion: The IPA+ project has developed and trialled two online trainings to cover the educational requirements of professionals with different levels of experience and know-how:

- Module 1: Introduction
  - Module 2: Definition and conceptualization of ASD & Aetiology of autism and associated conditions
  - Module 3: Basic principles and strategies of intervention & Specific support and intervention programs
- Module 4: Intervention models of reference & Strategies to design and evaluate the Personal Development Plans
- Module 5: Specific knowledge of the concrete characteristics of each autistic people
- Module 6: Characteristics and needs in different contexts and stages of life
- Module 7: Competences and professional profile

SISAAP - The beginners guide on Sport on the Spectrum: This guide/handbook has been developed with an intention to provide an easy to use tool that can be a starting point for developing sports programs, showing some important steps and factors in this journey. In two years that this resource was developed they met to discuss their experiences in this field and to exchange ideas and knowledge.

We also invite you to discover the analysis of existing sports programs drawn up as part of this project, so that you can find out more about existing sports models and the different learning methods that can be used with autistic people.

3.6 Practical insights

3.6.1 ASPTT Fédération Omnisports experience (FSASPTT)

TIn 2016, the ASPTT of Montpellier (200 volunteers and 25 employees) set up a sport project for the inclusion of autistic children. This project was born from an observation: autistic children are often excluded from sports and practising sport enables people to improve their self-esteem, relationships with other people and the development of coordination and motor skills. Thereby, the ASPTT club of Montpellier created a program based on inclusion and on the 1 to 1 approach: one autistic child is included to exercise in a group of neurotypical children with the support of an educator specialised in Adapted Physical Activity.

The ASPTT club of Montpellier developed this project with the financial support of a corporate foundation: the Orange Foundation (Fondation Orange). Quickly, in the same year, the ASPTT Federation Omnisports (FSASPTT) signed a convention with the French National Olympic and Sports Committee (CNOSF) and the Orange Foundation to share this pilot project in other ASPTT clubs around France, allowing autistic children to exercise with neurotypical children. It's the start of the program SOLIDARITE autisme by ASPTT. In 2024, this program is available in 20 ASPTT clubs around France, which represents 192 children (versus 27 in 2016). ASPTT Brest also shares this program in Africa (Dakar, Cape Verde, Gambia and Morocco), thus allowing more than a hundred autistic people to play inclusive sport.

To diffuse the program, the ASPTT Fédération Omnisports (FSASPTT) support financially supports the ASPTT clubs. For that, the FSASPTT searches for grants. Some structures have helped us to finance this program,for example: the Foundation Initiative Autisme, the Foundation AG2R la Mondiale, the Orange Foundation etc. The ASPTT Fédération Omnisports also helps the clubs to set up the project with different tools.

To summarise, the ASPTT club must be voluntary to set up the program. The project has to be validated during the club management committee. Upon validation, an Adapted Physical Activity educator is hired. There are two possibilities: either work with an educator of the club who already has this qualification and in this case there is an adaptation of their employment contract, or to employ an educator with the support of the Profession Sport and Leisure federation or the French society of professionals in adapted physical activity. It's also possible to obtain support from the State by the intermediary of an Employment support contract (Contrat d'Accompagnement à l'Emploi, CUI-CAE). Then, the educator employed and the project manager are trained by the ASPTT Fédération Omnisports (FSASPTT). We recommend a basic training in autism for the educational team and a more specific training for the supervisor who will welcome the child in its group.

The success of this program is also due to the tools made available by the ASPTT Fédération Omnisports (FSASPTT). Some of the tools are available in chapter 5 of this program.

Website: https://asptt.com/
Email: contact@asptt.com

3.6.2 SS Romulea – Romulea Autistic Football Club's experience

The team was originally founded during the World Autism Awareness Day (WAAD) tournament in 2015 with the support of:

- Gruppo Asperger Lazio (volunteer organisation of families and persons on the autism spectrum)
- Giuliaparla onlus (cooperative providing services)
- Cooperativa Garibaldi (a cooperative of workers on the autism spectrum)

We created the Autistic Football Club because despite the existence of several important football and disability-related sporting events many exclude much of the autism spectrum:

- Paralympic Games: football is for blind or players with cerebral palsy.
- Special Olympics: Intellectual disability requirement.
- Special federations of integrated football teams: with modified FIFA rules that are not fully inclusive and intellectual disability requirement.

We know that only one third of people on the autism spectrum have an intellectual disability. Even players on the autism spectrum without an intellectual disability face difficulties in inclusion and sports practice.

In 2018, the Autistic Football Club became an official team of SS Romulea (SSR), which is a historic Italian football club, founded in 1922, for all youth categories accompanying them into professional football.

SSR now fosters social inclusion through sport at four levels:

1. Through the Romulea Autistic Football Club where 2/3 of players are young adults and adults on the autism spectrum who play in ordinary championships together with other players, who also have additional support functions: volunteer educators, parents and friends.
2. Children on the autism spectrum are playing in the mainstream football teams of SSR, including the summer camp, in the context of "Elite Football School", collaborating with the cooperative of professionals Giuliaparla.
3. Players on the autism spectrum included in Romulea eSports: electronic sports practised at a competitive and organised level (the new Olympic discipline), collaborating with MCES Academy Roma;
4. A traineeship for workers on the autism spectrum as part of our staff.

At SSR, inclusive football aims to improve social inclusion and psycho-motor skills through a structured sports activity, tailoring interventions to the characteristics and needs of each individual, including motor profiles, while fostering inclusive social interactions and events.

The game is inclusive because it strictly adopts FIFA rules, unlike other special projects that modify the rules of the game and are limited to a separate special sport context, involving only special teams (the so-called integrated football). In contrast, in inclusive football all players have to follow the same rules of the game and play a genuine competitive game against any team, but teammates help each other to understand and follow the rules of the game, as well as social rules.

The captain of Romulea Autistic Football Club, Pietro Cirrincione, says: "*In my life I practised sport since childhood, but always facing difficulties of accessibility and inclusion, now I can finally play sport removing all barriers and with the feeling of being at ease, enjoying to be a part of a social context*".

Website: https://autisticfootball.club/en/
Email: calcioinclusivo@ssromulea.it

PART 4:

GUIDELINES TO IMPLEMENT THE PROJECT

4.1 Basis of the Sacree model

4.1.1 Didactic strategies

The **didactic** refers to the form of the instructions given and the material used to teach any sport activity. The didactic of our model is based on:

1 **An effective communication:**

- Ask the athlete (or his relatives) for information on his or her mode of communication (verbal - words, phrases or non-verbal - tablet, sign language, pictograms) at the start of the sporting season. You can adapt and use sheet no. 2, created by the ASPTT, to help you understand the athlete's mode of communication (available in the appendix).
- Use simple, unambiguous language without undertones, metaphors, or jargon, considering the central coherence deficit common in autistic people.
- Frame instructions affirmatively (i.e say “Continue” rather than “Don’t stop”) and personalise interactions by addressing the individual by name to establish rapport.
- Solicit the athlete by asking the person to perform a simple task, such as touching their nose, before giving them instructions to redirect their attention.
- Present instructions sequentially.
- Physically demonstrate each step of the activity or task to provide a visual reference for the individual.
- Avoid double instructions.
- Be flexible with time: be patient and allow enough time for the individual to assimilate the information and be aware that some people need to repeat instructions aloud in order to memorise them. The guide for sports coaches and clubs of the National Autistic Society advises to leave 6 seconds between each instruction to allow time for it to sink in.
- Respect eye contact: avoid insisting on eye contact during communication because some individuals may find it uncomfortable.
- Create an environment that encourages questions, and actively inquire if the individual comprehends the instructions, fostering a mutual understanding of the task at hand.

2 Visual aids:

- Using Augmentative and Alternative Communication, including images, symbols, objects, digital apps, sensory tools, and written or text-based methods. To find pictograms you can for example visit the website https://arasaac.org/pictograms/search. To use the pictograms, respect the condition of use, notably the logo of ARASAAC and the citation: The pictographic symbols used are the property of the Government of Aragon and were created by Sergio Palao for ARASAAC (http://www.arasaac.org), which distributes them under a Creative Commons BY-NC-SA Licence.
- If you use pictograms to communicate, ask the autistic person or someone close to them to find out which image bank they use, so you can refer to it.
- Employ visual support and layouts with images, symbols, and colours to represent various activities, this helps people to better understand and follow instructions (such as 'walk', 'jump', 'run' or 'drink').
- Let people know where they are in the session by displaying a timetable or visual cue.
- Use a visual aid to indicate that the activity is over: a gesture or a waving flag.
- Supply a written/visual schedule for your practice and review it with the group at the beginning and between activities.
- Designate waiting areas, provide guidelines for equipment storage, and specify the placement of equipment or props.
- Visually reinforce rules of expected behaviour, both during training sessions and before/after training, promoting consistency and understanding.

3 The use of materials:

- Create sensory stations with tactile materials like textured balls, squishy toys, or sensory bins filled with rice or beans. Allow individuals to explore these stations to regulate sensory input and reduce stress.
- Just in case, prepare some noise-cancelling headphones or earplugs.
- Just in case, prepare some sunglasses.
- Utilise modified equipment to suit individual needs.
- Use physical dividers or markers in the room, such as screens, movable walls, self-adhesive tapes, cones, flags, or chalk, to establish distinct visual boundaries between activity areas

4.1.2 Pedagogical strategies

The **pedagogy** refers to the method employed by the coach to teach the sport activity during the session and to manage the group. As it's about sports for autistic people, our model must imply other dimensions than teaching and learning, such as health care, cognitive and physical improvement or injury prevention. Thus, our model is a mix of different pedagogical methods:

1 A caring pedagogy:

- Caring, empathy, positive attitude, respect, valorisation, encouragement and attention are the basis of our model.
- To motivate the learner, it's crucial to foster motivation and to celebrate progress.

2 Demonstration, repetition and feedbacks:

- Physically demonstrate each step of the activity or task to provide a visual reference for the individual.
- Repeat the different sequences of the exercise sufficiently in sequence.
- Make regular, diverse, and constructive feedback as athletes learn new skills, acknowledging and positively reinforcing each step they take in their progress.
- Use praise as verbal encouragement, smiles, clapping, thumbs up, or high-fives, tailored to the individual's preferences and comfort.
- Using physical guidance to enable a movement to be carried out when this is useful and physical contact is accepted by the autistic person.
- Help athletes in establishing individualised, attainable goals that allow frequent opportunities for success and growth across various timeframes (training sessions, weeks, months, and years…).
- Encourage the expansion of mastered skills to maintain motivation for further development. For instance, if an athlete adeptly handles a basketball, encourage them to practise with their non-dominant hand.
- Offer opportunities for athletes to take on added responsibilities, such as serving as "assistant coaches" demonstrating exercises, setting up equipment, encouraging peers, or even teaching others new skills, not exclusively related to sports.
- You can adapt and use the sheet 4 and/or sheet 5 used by the ASPTT available in the appendix.
- Simplify instructions by breaking down the task into successive sequences.

- Employ visual support and layouts with images, symbols, and colours to represent various activities, this helps people to better understand and follow instructions.

- Provide extra time as needed. Avoid rushing your students allowing them the necessary time to adapt and process the transitions and the changes.

- Offer ample space and support for athletes to attempt new activities from the sidelines or in private settings if they initially feel uncertain about performing in a group environment.

3 An individual approach:

- Allow each autistic person to tell you what language they prefer to use to talk about autism: “person with autism”, “person on the autism spectrum” or “person with autism”.

- Ask each autistic person if they know their body and determine their physical skills: if they know how to run, climb, stretch out their arms and/or legs, and bend their legs.

- Collect information about what he likes, what he knows and what he doesn't like and doesn't know.

- For these first 3rd points we recommend that you distribute a form at the start of the sports season that includes a section on motor characteristics to help you understand the profile of the autistic person (cf the sheet in the appendix).

- Let participants select from various options, such as activity sequences, repetitions, team roles, colours, equipment, formation of pairs or team partnerships (pair or team) , or break times.

- Enable your target audience to take breaks whenever necessary to recharge or regroup, encouraging a healthy balance between engagement and rest.

- Ensure each training session includes at least one activity in which the athlete finds success and enjoyment, promoting positive experiences.

- Tailor activities to match the athlete's interests by introducing themed elements, such as animals, superheroes, characters from various media, or favourite toys.

- Encourage autistic people to explore new experiences that align with their preferences and interests, without restricting them to their current comfort zone. It’s important to promote a balance between familiarity and new opportunities that can enrich their lives and help them grow.

- Promote creativity by allowing athletes to explore skills in their unique way. If an athlete wants to attempt a skill differently, permit them to experiment before gently guiding them back to the task.

- Promote a balance between familiarity and new opportunities that can enrich their lives and help them grow.

4 An adapted approach:

Introduce more structured formats, reducing complexity, increasing the likelihood of positive involvement, and modifying game rules for structured play. However, adaptation should not be the first intention because it's important to not stigmatise autistic people. In general, we recommend doing a little collective adaptation (which concerns everybody in the session) to have an activity that is really inclusive. So, the following tips can be applied to all the teammates of the session (autistic people and neurotypical people), and, when it's really necessary, an adaptation only for the autistic people.

- Zoning the game: it can ensure that autistic people have designated spaces for receiving, dribbling, and passing the ball; it avoids overcrowding and invasion of personal space.
- Ease athletes into activities gradually, whether by observing others participate, visiting the training area, or starting with individual tasks before integrating into group activities.
- Offer different levels of programmes (beginner/intermediate recreational/advanced) enabling athletes to progress from foundational skills to more advanced ones. These levels should align with an individual's skills and abilities rather than solely considering age.
- If an athlete shows disinterest in a specific activity, provide alternative but similar tasks that target the same skill set.
- Modifying game sequences can offer a clearer structure, for example by implementing a specific number of passes before shooting in a basketball-style game.
- Structuring games as a series of one-on-one challenges provides a high degree of organisation.
- Modified Activity: in this type of activity, the same task is carried out, but with adjustments to the rules, space, or equipment to ensure everyone can take part. For example, during a throwing and catching activity, participants are allowed to choose the type of ball they are comfortable with (an autistic participant might prefer a ripple ball for better grip due to proprioceptive differences).
- Utilise modified equipment or activity variations to suit individual needs.
- Parallel Activity: participants engage in the same activity but at varying levels suitable for their skills. For instance, in a netball game, while the majority play the standard game, a participant uncomfortable with larger groups may benefit from one-on-one coaching to practise essential skills.
- Alternate/Separate Activity: some individuals may need separate activities. For instance, an individual sensitive to loud noises might require a personalised program combining sensory integration activities and physical exercises, such as rocking activities or specific gripping exercises with specialised equipment.

- Disability Sport/Reverse Integration: this activity involves non-disabled individuals participating in disability sports like boccia, wheelchair basketball, goalball, or table cricket. This approach not only fosters participation among disabled individuals but also encourages non-disabled participants to learn new skills.

- Adapt the activity lengths to suit individual attention spans, especially for those with shorter attention spans. Frequent changes in activities help sustain motivation, while overly prolonged tasks may lead to boredom and disengagement.

5 A method based on routine, predictability and structure:

For any person engaging in an activity, a structure and routine aids learning. With autistic people, this structure needs to be more elaborate and well-defined. Providing them with precise expectations and consistency in their routine helps them to orientate themselves in the environment and in the task, which reinforces their concentration (Stevenson, 2008).

- Ensure that training sessions follow a predictable pattern, including an introduction, the main part of the session, and a conclusion. Indeed, to structure activities with well-defined beginnings and endings creates predictability and facilitates transitions within the training environment. For example, you can use timers to signal the start and conclusion of specific tasks.

- Give the group transition cues, with a timer to see how much time is passing and with a sound cue, a transition picture that shows the next activity or verbal support such as “two more minutes, then we'll move on to the next activity”.

- Offer advance preparation and information for upcoming events through a combination of written and visual materials in addition to verbal communication.

- Supply a written/visual schedule for your practice and review it with the group at the beginning and between activities.

- Remove unnecessary clutter and organise materials to minimise visual distractions.

- Label individual activities, areas, and equipment with visual markers to enhance clarity and facilitate navigation.

- Use physical dividers or markers in the room, such as screens, movable walls, self-adhesive tapes, cones, flags, or chalk, to establish distinct visual boundaries between activity areas.

- Maintain consistent routines and structure between workouts.

- Provide a consistent and specific area for changing, you can for example mark it with a personal item or image that resonates with the individual.

- They may not be used to share an area with others to store clothes, so it is very likely that they mix one's own clothes with those of others or that they forget an item of clothing, it is important to remind them to write one's initials on clothing labels, not to leave their clothes on the benches but to enclose them in their bags and place the bag on the rack, so as to leave the bench free for another athlete.
- Designate waiting areas, provide guidelines for equipment storage, and specify the placement of equipment or props.
- Visually reinforce rules of expected behaviour, both during training sessions and before/after training, promoting consistency and understanding.
- Implement visual cues or pathways to guide individuals from one activity to another, offering visual aids for transitions.
- Give a map of the building in an accessible format.
- Ideally, have familiar individuals in proximity during changing times.
- Minimise staff rotation and aim to align staff with autistic people based on shared interests and mutual compatibility whenever feasible.
- Move away from the windows to keep away from outside distractions.
- Avoid multi-sports halls with many different lines on the floor, which can be very distracting.

6 Relation between the group:

- Determine with the autistic person if they want to talk about their diagnosis to the group and how they would like to do it (if they prefer that the coach talks about it instead of themselves, do they want to be present or not).
- Involve the participants in the process of choosing a team name, this encourages a sense of ownership and unity within the group.
- Respect an individual's desire to spend time alone.
- Demonstrating cooperative behaviour and working harmoniously with others can set a positive example for the participants.
-
- Discourage comparisons between athletes.
- Promote positive encouragement and celebration of both individual and team achievements.

- Remain vigilant for any signs of violence or bullying, addressing such behaviour promptly and firmly. Don't hesitate to intervene and reframe exclusionary actions or aggression, whether verbal or physical. Mockery should never be tolerated, regardless of its guise as "humour".
- Ensure that all participants have the opportunity to contribute to the team's success.
- Explicitly instruct athletes on effective teamwork strategies, emphasising the importance of working collectively towards a shared goal.
- Foster cooperation and communication skills through group-based games and exercises.
- Foster connections by pairing athletes with similar abilities, interests, and communication styles.
- Educate athletes on appropriate behavioural responses in challenging scenarios, such as telling them to demonstrate sportsmanship by recognizing opponents' successes and handling defeat gracefully without arguing with referees.
- Introduce a gradual integration method when involving participants in larger groups. You can for example initiate activities in a one-to-one setting, potentially with the aid of a support worker or assistant to ensure a comfortable transition.
- Emphasise that each team member has their unique strengths and contributions, fostering an environment free from unnecessary competition or comparisons.
- Provide team t-shirts or jerseys to instil a sense of belonging and unity among the participants. It helps them feel like an integral part of the team.
- Personal narratives can inspire and connect, emphasising the value of participation. So encourage participants to tell anecdotes about the place of sport in their lives.

7 Involve relatives of the autistic people:

Involvement and support of parents towards sports significantly influence the active engagement of their autistic children in sports. The positive approach adopted by parents, coupled with their active participation in these activities, contributes to the increased involvement of autistic children in sports. This involvement not only encourages participation but also creates a supportive and conducive environment for the development and enjoyment of sports among autistic youth. Engaging a close family member can facilitate the transfer of skills learned in sessions to real-life scenarios.

Thus, our program is based on establishing a relationship of trust with parents and we recommend the following advice:

- Ask relatives or friends for useful information. Parents often possess valuable knowledge about their child's preferences, strengths, and challenges. This information can help in tailoring approaches. For example, you can adapt and use the information sheet available in the appendix.

- Communicate clearly and directly. Avoid complex or technical language and explain the information in a simple and accessible way.

- Establish a routine of regular communication with parents. This includes regular meetings, and messages via email or phone or even a messaging group to keep parents informed about events and activities.

- **Use a notebook to record information** so you don´t talk in front of the autistic person about the situations that occurred. These notebooks can be double-sided: parents record useful information to give to the coach before training and the coach reports the most important information and passes it on to parents after training. It can be a paper or a digital notebook or just in the form of an email exchange.

- Complete and provide the parents with a sheet on how the session went. The sheet 4 in the appendix is an example of a sheet used by the ASPTT that you can adapt.

- Set clear expectations: ask them what they expect from their child's participation in the activity, and state your expectations as well, including times, behaviour expected and objectives.

- Be available to promptly respond to any concerns or questions parents may have. This helps to reassure parents and maintain open communication.

- Be willing to adapt communication to the specific needs of the family.

- Offer constructive feedback: provide constructive feedback on the autistic´s person's performance in a balanced way, highlighting strengths and identifying areas for improvement. Share what is working and not only the problems. You can adapt and use the sheet 4 and/or sheet 5 used by the ASPTT available in the appendix.

- Encourage parents to actively participate in sports activities with their children. This could include being a volunteer assistant, organising events or providing support during activities.

- To ease anxiety about new situations and meeting new people, consider an approach involving family members in the first couple of sessions.

4.2 The management of the environment

As explained before, in part 3.1 of this document, it's essential to take into account the challenge of autistic people in processing sensory information. In any learning environment, individuals depend on their senses to comprehend the surroundings and effectively engage or function within it. This process is termed sensory integration (Stevenson, 2008) and revolves around the commonly recognized five senses: hearing, vision, touch, smell, and taste. Additionally, it encompasses other equally vital sensory systems essential for normal functioning, including the proprioceptive system (perception of the position of different parts of the body) and vestibular system (contributes to a sense of movement and balance) (NAT, 2019). Our model is based on the following guidelines:

1. Knowing the sensory needs of autistic people:

To have these information, it's possible to distribute a form at the start of the sports season that includes a section on sensory characteristics to have information on:

- The profile: Hypo-sensitivities, Hyper-sensitives or neutral
- Light sensitivity: Hight, variable or indifferent
- Noise sensitivity: Hight, variable or indifferent
- Touch sensitivity: Hight, variable or indifferent
- Specific textures or materials that cause discomfort

2. Creating a calm auditory environment:

- If you put music on, verify that it's not a problem.
- Just in case, prepare some noise-cancelling headphones or earplugs.
- Avoid using sharp or startling sounds like whistles or shouting that might overwhelm individuals with sensory sensitivities.
- For indoor activities, reduce noise using curtains on walls, carpets on floor, high or sound-absorbing ceilings, close the doors if outside there is noise.
- To hide the offensive sound by masking it with "white noise", a randomly generated tone that combines all sound frequencies simultaneously, it can be used to cover up unwanted noise by saturating the hearing system.
- Have a calm place if the person needs to be alone for a moment.
- If the activity is outdoors, be careful of bikes and cars in the area.
- Avoid overcrowded settings.
- Be aware of noises such as clocks ticking, humming from lights, road noises, building/gardening work in the distance. The slightest inconspicuous sound can be irritating and distracting (Simpson, 2016).

3. Mindful lighting considerations:

- Regularly clean and maintain sports equipment, mats, and other surfaces to prevent the buildup of odours.
- Ensure proper ventilation prior to each session.
- Consider using odour-neutralising products (air fresheners or diffusers with neutral scents).
- Consider implementing scent-free policies.

4. Managing smells in sports environments:

- Regularly clean and maintain sports equipment, mats, and other surfaces to prevent the buildup of odours.
- Ensure proper ventilation prior to each session.
- Consider using odour-neutralising products (air fresheners or diffusers with neutral scents).
- Consider implementing scent-free policies.

5. Using relaxation strategies to dealing with the environment:

- Begin each session with a few minutes of deep breathing exercises. Practice slow inhales through the nose and gentle exhales through the mouth to promote relaxation.
- Incorporate gentle stretching exercises into warm-ups. Engage in movements that release tension in the muscles, such as reaching for the sky, touching toes, and stretching arms and legs.
- Allow your guests to participate in silent ball games, such as rolling or throwing soft balls. These discreet activities encourage coordination and social interaction, without causing sensory overload.
- Create sensory stations with tactile materials like textured balls, squishy toys, or sensory bins filled with rice or beans. Allow individuals to explore these stations to regulate sensory input and reduce stress.
- Nature breaks: take sports activities outdoors and incorporate nature walks or outdoor games. Connect with the natural environment and enjoy the calming effects of fresh air and natural surroundings.
- Form small groups and practise simple massage techniques on each other's shoulders, arms, and hands. Enjoy the calming effects of touch and positive social interaction.
- Blow bubbles during breaks or cool-down periods. Engage in the soothing sensory experience of blowing bubbles and watch them float away.
- Relaxation techniques: experiment with incorporating elements of yoga, meditation, and progressive muscle relaxation into sports activities. These techniques have been shown to have relaxing effects for some individuals.

4.3 Security and challenging situations

Our model is based on safety measures. First, great vigilance and attention are very important because some autistic people do not manifest the pain as neurotypical people and may continue to take part without realising that they have suffered an injury, and as they are more prone to being victims of violence rather than being the ones displaying aggressive behaviour (Holingue et al., 2021). Moreover, a reinforcement of the rules and the explain of the safety rules to be sure they understand

Our model is also based on guidelines to manage challenging situations. When working with autistic people, there are sometimes instances that may lead to high-stress levels, especially when they engage in distressed, self-harming or aggressive behaviour that evokes fear or concern. These situations are often multifaceted and challenging for us to fully understand. It's crucial to approach such “challenging” situations with a focus on identifying and removing environmental and other addressing unmet and not expressed urgent needs.

When an autistic person feels completely overwhelmed, they may experience a “meltdown”. These behaviors always have a reason and appear to communicate something, they respond to a need, a lack, a frustration. How these reactions manifest themselves varies from person to person. They can involve verbal outbursts such as shouting or crying, physical actions such as kicking or hitting, or a complete withdrawal and shutdown, known as a “shutdown”. The key is to identify solutions in the environment.

Moreover, prolonged exposure to stress and sensory overload may lead to a condition known as autistic burnout (Raymaker et al., 2020). It is marked by extreme exhaustion, regression in previously acquired skills (such as self-care, speech), heightened sensitivity to sensory stimuli, impaired executive functions regulation, attention, emotions, negative effects on mental health, and potentially, thoughts of self-harm (Mantzalas et al., 2022).

Autistic people may also develop a high risk of depression because of their deficits in emotion regulation, anxiety and consequently social isolation. They also may experience high stress and anxiety in response to unexpected changes, emphasising the need for structure and advance notice to manage these challenges (Webster, 2018).

Autistic people can exhibit risky behaviors such as:

- Aggression: This can take many forms. It can be towards others (shouting, scratching, biting, hitting, jostling), towards objects and materials (destruction or deterioration) and towards oneself (self-mutilation, scratching, hitting).
- Withdrawal: This can take the form of isolating oneself, refusing interaction, or refusing to take part in an activity.
- Escape: This manifests itself in physical flight from the activity, interaction or place.

The causes of these behaviours can be generated by different factors:

- One or more sensory difficulties
- Difficulty communicating or making oneself understood
- Pain
- A reaction to the unexpected
- Frustration

In case of a challenging situation, it's important to recognise when behaviour is linked to unmet needs and take steps to address those needs and the best way to reduce such behaviours is to ensure that you understand why it is happening in the first place (NAT, 2019). Assess factors that may increase the risk of challenging situations, including (NICE, 2013):

- Communication barriers: difficulties in understanding situations or expressing needs,
- Associated conditions: pain, gastrointestinal disorders, anxiety, depression, or neurodevelopmental issues like ADHD (Attention Deficit Hyperactivity Disorder),
- Physical environment and sensory factors: sensory overload, discomfort, or an unsuitable environment,
- Social environment: issues at home, school, work, or leisure settings,
- Change in routines and lack of predictability: sudden changes or lack of structure can cause distress,
- Change related to development: transitional periods, such as puberty, physical, or hormonal changes,
- Abuse: experiencing exploitation or abuse.

To ensure safety and manage challenging situations, the Sacree model recommends to follow these tips:

1. Taking care of the safety rules:

- Keep an eye out for injuries, as some autistic people may continue to take part without realising that they have suffered an injury.
- Being particularly vigilant about the aggressions suffered by and, above all, systematically and firmly reframing any exclusionary behaviour or aggression (verbal or physical) that you witness. Not letting mockery go unchallenged (even under the guise of "humour") and setting a good example of a caring attitude that values all differences, whatever they may be.
- Enable your target audience to **take breaks whenever necessary** to recharge or regroup, encouraging a healthy balance between engagement and rest.
- If there are stairs, mark them with contrasting coloured non-slip strips.

2. Anticipating and prevent difficult situations:

- Beware of emotional and sensory overload, and be sure to identify signs of stress early on, so you can react immediately by offering a break or another activity.
- Talk about the meltdown with autistic people before with simple questions: "What do you want me to do if you have a meltdown?" "What makes you feel better?
- Encourage self-stimulatory behaviours (commonly referred to as “stimming”), intervening only if the individual experiences distress or harm. For recall, these behaviours serve a purpose and, if they don't cause harm or discomfort, allowing individuals to self-regulate is crucial.
- Provide a designated withdrawal room or area where individuals can retreat or access as needed.
- Provide a quiet corner in the gym with a few items such as stress balls, sensory toys, etc.

3. Managing difficult situations and resorting calm:

- Avoid crowding around the person in crisis: the fewer people around, the better.
- If the person has a comfort item or other objects that reassure them, give it to them.
- Don't touch the person if they haven't asked you to (not even a hand on the shoulder to comfort them).
- If the person is aggressive, stay at a distance to give them space (except in the case of self-mutilation).
- Once the person has calmed down, take note of what happened to help you understand and anticipate future crises (behaviors observed, possible triggers, actions that were effective and those that were ineffective).
- Stay calm and make sure that your verbal behavior (tone of voice, words used, speaking softly) and non-verbal behavior (body language) are reassuring. “I'm here to help you, don't worry, you'll be fine”.
- Do not insist on re-establishing a verbal conversation and use visual or written aids (such as pictures, emotion maps and pictograms).
- A common practice, which often works well, is to communicate with the person by text message (or to write a short message on a word processing application and show the person your phone): the written word is generally more effective than the spoken word.
- In the event of self-injury, intervene quickly, being gentle but firm. If an object is used, remove it and replace it with a non-threatening, relaxing object, such as an anti-stress ball or sensory object.
- Once they have calmed down, don't punish them. Ask them how they are feeling and what can help them continue to feel better.Once the stim is detected, it’s important to observe the environment to search for the source of stress and eliminate this source of stress.
- Engage in conversations and discussions rather than resorting to public punishment, singling out, or criticism, which can adversely affect trust and self-esteem.
- In the event of an escape, don't block him firmly: let him be on the move while trying to guide him to a quiet place.

PART 5:

CONCLUSION AND RESOURCES

5.1 Conclusion and the impact of the project

This document is the final version of our model, the fruit of 3 years of reflection, research and collaboration with various players in the sport and autism sector. We hope that this model will represent a valuable tool for organizations wishing to design innovative, inclusive sports programs adapted to the needs of autistic people. In fact, we hope that the Sacree model will encourage action and enable research projects and sports projects to come into being in order to create an inclusive sports environment for autistic people.Indeed, we hope that the Sacree model will inspire action, research and sports projects to create an inclusive sports environment for people with autism.

The development of this model is based on a wide range of resources from various fields: scientific studies, feedback from sport and autism professionals, field studies and field experiences from autistic people themselves. The development of this model is based on a wide range of resources from various fields: scientific studies, feedback from autistic people and professionals working in the field of sport and autism, and field tests.

We hope that this model will serve as a basis for future developments and adaptations. Aware that each context is unique, and that the needs of autistic people and sports structures may evolve, we encourage a process of continuous re-evaluation and sharing of experience in order to perpetuate and improve these initiatives. This model, while an important step, should be seen as a contribution to a collective and ongoing effort to improve the sporting inclusion of autistic people.

Finally, we invite you to consult the other resources created as part of this project:

- A guide to help the sports sector welcome autistic people,
- A one hour 1h30 e-learning program to raise awareness of autism in the sports sector, (adaptation of the guide for the sports sector),
- A guide to raising autistic people's awareness of sport and helping them choose the right sport for them.












5.2 Resources

5.2.1 Internal tools

Tools Sacree:

- Analysis of existing sport programmes
- Guide to choose the appropriate activity
- Sacree website
- Literature review being submitted to a scientific journal
- Review of the literature on the effects of sport on autistic people
- Information sheets for structures (in appendix)

Tool developed by SUZAH and its partners:

- Handbook SISAAP

Tool developed by Inovar Autismo and its partners:

- European Guide for the inclusion of persons on the autism spectrum.

Tools created and used by the ASPTT Fédération Omnisports (FSASPTT):

- Sheet n°1: First contact
- Sheet n°2: General presentation of the child
- Sheet n°3: Motor skills
- Sheet n°4: Evaluation of the session
- Sheet n°5: End of season update

5.2.2 External tools

- Pictograms: https://arasaac.org/pictograms/search. To use the pictograms, respect the condition of use, notably the logo of ARASAAC and the citation: *The pictographic symbols used are the property of the Government of Aragon and were created by Sergio Palao for ARASAAC (http://www.arasaac.org), which distributes them under a Creative Commons BY-NC-SA Licence.*
- See below in our bibliography and list of website links the sources used to write this model.

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APPENDIX

- Annex 1: Conclusion report
- Annex 2: Forms for structures
- Annex 3: Sheets used by the ASPTT Fédération Omnisports

APPENDIX

- Annex 1: Conclusion report

Co-funded by the European Union

SACREE
Autism & Sport

Conclusion report

2022-2025

Project Name: Sport and Autism, from a scientific diagnosis to the CREation of a pedagogical European model (SACREE)

Date: November, 2024

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Summary

To put the Sacree program on a scientific footing, field tests were administered. This document presents the tests that took place, the results, and our first conclusions. These results will be used to create our sport program adapted to autistic people.

Disclaimer

Table of contents

PART 1: PRESENTATION OF THE TESTS

1.1 General information

Objectives:

This protocol regroups a list of tests conducted in the framework of the Sacree project in order to put our sport program footing through field tests. The results of these tests will make it possible to:

- Gain a better understanding of the skills/abilities/deficits of autistic people (for facilities that will only carry out the tests once),
- Evaluate the effects of sport on autistic people: test T0, then 12 weeks of sport intervention, and then test T1,
- Compare the physical condition of autistic people with those of neurotypical people.

Places:

Tests were conducted in Croatia, France, Italy and Portugal.

Method:

A document with the materials necessary, the presentation of the tests, the instructions, and some tips was diffused to the structures that conducted the tests. For the materials, they told us their needs, and, depending on our budget, we bought missing materials. We also diffused to them the consent form, an observation notebook to write the results, and the annex necessary. All these documents are in the appendix of this document.

The scientific team was in contact with the people who administered the test to brief them.

Some of the tests were omitted when they were not suitable for certain autistic people or certain structures.

Date:

Tests presented in this report were conducted between February 2024 and October 2024, depending on the possibility of the structures. Structures can decide to do all the tests during one session or they can decide to do the tests on several sessions to not overload the persons who do the test. To have more data, tests will continue until the end of December 2024.

1.2 Composition of the tests

General information on the person tested was collected: gender, age, height in centimeters, weight in kilograms, number of minutes per week of physical activity, sport(s) practiced, if he/she is right-handed or left-handed, if he/she has a vision with correction, or without correction and if there are disorders associated with autism. The protocol is composed of tests to measure:

- **Physical and motor conditions**: the physical condition is “the general capacity to adapt and respond positively to the physical effort” (HAS, 2022). It includes anthropometric data, cardiorespiratory capacities with endurance, muscular capacity with strength, neuromuscular capacity with balance and flexibility, etc.
- **Cognitive conditions**: it’s the mental processes that enable us to interact with our environment: attention, perception, reasoning, etc.
- **The psychological conditions**: it’s a mental condition in which the qualities of a state are relatively constant even though the state itself may be dynamic.

1.2.1 Tests to measure the physical and motor condition

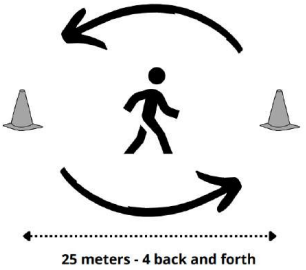
Hand-Grip Force

The Hand-Grip is a clamping test that measures grip strength based on muscular force or the maximum force/tension generated by the forearm muscles. It can also be used to measure upper-body and overall strength. To do this, standing with arms at the sides of the body, the user performs a maximum contraction to squeeze the handle dynamometer. The measurement requires a minimum of two attempts per hand, with 30 seconds' rest in between. It is advisable to alternate sides to limit muscle fatigue. The best score, expressed in kilograms (kg), is used.

Standing broad jump

This test measures the explosive power of the lower limbs. After a standardised warm-up and explanation of the instructions, the athlete attempts to jump as far as possible, landing on both feet without falling backwards. To do this, they must propel themselves and land on both feet, swinging their arms and bending their knees to ensure forward thrust. A marker is placed on the ground where the test begins (take-off line). Another marker is placed on the back of the heel as the person lands. If the person falls or takes a step backwards, the landing marker is placed at this point. The distance between the start and finish points is measured and counted using a tape measure. The longest distance jumped among the three permitted trials is recorded. Take care to perform this test on non-slippery ground. To make this test easier, you can use a jumping mat.

200-metre Fast Walk Test



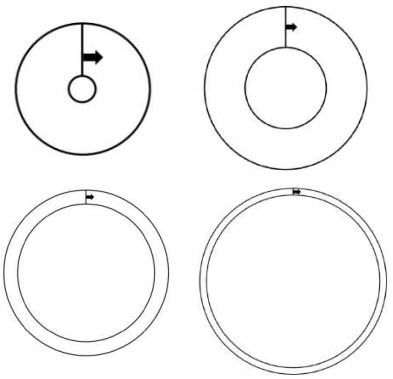
The 200-metre Fast Walk Test was developed to test aerobic endurance. It involves walking as fast as possible over a distance of 200 metres. Poles are placed 25 metres apart to delimit the course. After a standardised warm-up and explanation of the instructions, the person performs the test. The total time taken is recorded. During the test, you should be encouraged to go as far and as fast as possible

Balance test

In this test, the person must maintain balance in three different positions: standing with feet together, in semi-tandem (one foot slightly in front of the other) and in tandem (one foot directly in front of the other). The time taken to maintain the position is taken into account in the evaluation. For each of the three positions, the person is encouraged to stand for 10 seconds without moving their feet or holding on to anything. For the first and second positions (feet together and semi-tandem), the person scores a point for holding the position for more than 10 seconds (greater than 10.1 seconds). No points are awarded if the position is held for less than 10 seconds. For the third position (feet: “Tandem”), the person scores one point for holding the position between 3 and 9.99 seconds, and two points for more than 10 seconds. No points are awarded for holding the position for less than 3 seconds. Better balancing skills are correlated with higher scores.

1.2.2 Tests to measure the cognitive conditions

Fitts' law task

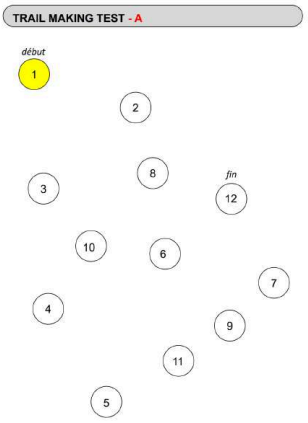


Fitts' law states that the time required to aim at a target is a function of the distance to the target divided by the size of the target. The greater the distance and the smaller the target, the longer the time required to aim at the target. Movement time increases linearly with the difficulty index. In our test, using a pencil, the person has to go around the circle as quickly as possible without going beyond the delimited area. This task has 4 difficulty levels. The time and number of errors (each time the pencil is touched or the edges of the circle are crossed) per difficulty index are taken into account.

Box and Block Test

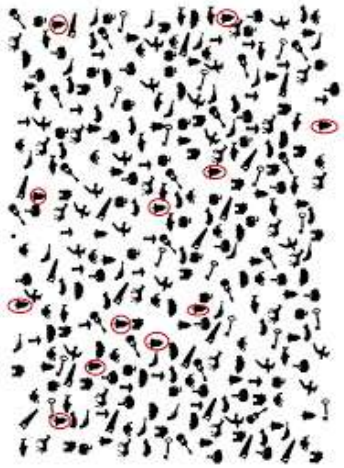
The Box and Block Test measures unilateral global manual dexterity. It is a quick, simple and inexpensive test. The test consists of a wooden box (53.7 cm x 25.4 cm x 8.5 cm) divided into two compartments (25.4 cm each) by a partition and 150 blocks (2.5 cm cubes). The person must move, one by one, a maximum number of cubes from one compartment of the box to the other for 60 seconds. The box should be positioned lengthwise, on the person's midline. The test can be performed once with one hand and a second time with the other. The person must take care to pass his fingertips over the partition and not pick up any blocks that might fall out of the box. Each side can be tried for 15 seconds. Scoring is based on the number of blocks transferred from one compartment to another. Better manual skills correlate with higher scores.

Trail Making Test (TMT)



The Trail Making Test is a test of flexibility, visual scanning and working memory. It is divided into two parts: Part A (TMT-A) for working memory and Part B (TMT-B) for executive functions. They can be used together or independently. In each part, the person must draw a line between 12 consecutive circles arranged at random on a page measuring 21.6 cm x 27.9 cm (A4 format). TMT-A uses a sequence of numbers, while TMT-B alternates between numbers and letters. In the latter, the person has to link alternating numbers and letters in ascending order (e.g.: 1, A, 2, B, 3, C, ...). The time required (in seconds) and the number of errors made in completing each part are recorded for comparison with standards.

The Bells Test



The Bells Test is an instrument to identify targets (bells) among distractors. It assesses selective and focused visual attention, visual perception and visuo-motor processing speed. Using a pencil, the participant circles 35 bells mixed with 280 distracting elements (trees, birds, fish, etc.) in black on a 216 x 279 mm (A4 format) page. The drawings appear to be randomly distributed, but are in fact precisely arranged in 7 columns comprising 5 bells and 40 distracting elements. The black dot at the bottom of the page indicates the direction in which the page is facing. In this configuration, of the 7 columns, 3 are to the person's left and 3 to their right. The number of bells circled, the time taken to complete the test and the number of errors (other than bells) are counted. An omission of 6 or more bells on either side indicates unilateral spatial neglect. The severity of the visual neglect and the side affected is determined by the number of bells omitted from the spatial distribution.

Go-No Go Test

The Go-NoGo Test is a simple test for assessing inhibitory control. It assesses reaction time and inhibition capacity. The person is asked to respond as quickly as possible to a certain stimulus (Go) and not to respond to other stimuli (No Go). For example, the person must press a button when the black circle turns green and not press it when it turns red. Reaction time for Go trials, commission for NoGo trials and omission for Go trials are recorded.

Laterality Judgement Task (Mental rotation)

The Laterality Judgement Task (LJT) assesses the ability to make implicit mental representations. With this test, the participant mentally manipulates the hand stimulus to determine if he sees a right hand or a left hand. The assessment takes into account reaction time to different difficulty cues and the accuracy of responses.

1.2.3 Tests to measure the psychological conditions

Childhood Autism Rating Scale (CARS)


ECHELLE D'EVALUATION DE L'AUTISME INFANTILE

EEAI

(Childhood Autism Rating Scale : C.A.R.S.)

Eric SCHOPLER Ph.D., Robert J. REICHLER M.D., Barbara ROCHEN- RENNER Ph.D.

Traduction et adaptation françaises: Bernadette Rogé

Psychologue Clinicienne. Docteur en Psychologie. Service Médico-Psychologique. CHU RANGUEIL -31054 TOULOUSE CEDEX.

The Childhood Autism Rating Scale is a tool to evaluate the comportments associated with autism for children. It measures the different aspects of the social comportment, of the communication comportment, of the repetitive and stereotyped comportment, and other symptoms linked to autism. The scale gives a quantitative evaluation which helps health professionals to diagnose autism and to evaluate its intensity for children. The test is not translated in all languages so it was not administered in all the countries.

McGill Quality of Life - Revisited (MQOL-R)


QUESTIONNAIRE SUR LA QUALITÉ DE VIE DE McGILL Révisé©

It's a multidimensional tool of evaluation to measure the subjective quality of life of people around 4 main domains: physical, psychological, relational and environmental. The test is frequently used in health research to evaluate the impact of interventions on the quality of life of people. The test is not translated in all languages so it was not administered in all the countries.

1.3 Materials used

This chart presents the material used for these tests. Globally, in this battery of tests, many of them require little equipment and are not expensive. We supplied the necessary equipment to the structures carrying out the tests

	ASPTT	C3S	IA	SSR	SUZAH
ALL TESTS	A **pen** and the **notebook** (in the appendix) to write the results of the test				
TREATMENT OF THE DATA	-Data was analysed thanks to Excel, Jamovi and R Studio, -The normality of the variables and the equality of variances were verify thanks to the Shapiro-Wilk test and to the Levene test, -The student test and the Mann-Whitney U test were used to compare the results of the group composed to autistic persons with the results of the group composed of neurotypical persons.				
HANDGRIP TEST	**Dynamometer** (Kuptone Electronic hand dynamometer 90 kg / 200 lbs Grip capacity)	Takein **Hand Grip Dynamometer** (HaB direct, Warwickshire, United Kingdom)	Electronic Hand **Dynamometer** /EH 101 90 kg/ 198 lb Grip Capacity	Camry digital Hand **Dynamometer** / Grip strength tester 198 lb - 90 kg	**Hand Grip Dynamometer** "Basic" / 75 kg grip capacity
STANDING BROAD JUMP	-**Floor Markers** (Socobeta Marker Kit) ; -**Tape measure** (Stanley 1-30-697 - Bi-material Tylon Tape Measure 5m X 19mm Anti-Corrosion Tape - Tape Lock - Real Zero Position - Class Ii - Belt Hook)	-**Carpet** ATREQ Standing Long Jump Mat (carpet ATREQ Standing Long Jump Mat, Dewsbury, England) -**Markers** (2871718, Decathlon Pro, France) - Triple d**ecameter measuring tape** - 30 metres (DECA3, Training, Ecole-Valentin, France)		- Flexible plastic **tape measure** - **Demarcation line** of the soccer field	- **Jumping mat with markings for distance**
BALANCE TEST	**Chronometer** (Vicloon LCD Digital Chronometer,Portable Sports Timer with	**Chronometer** 1 line (TR_CHRO34, Training, Ecole Valentin, France)	Mobile chronometer	- **Chronometer** - plastic **step platform**	- **Chronometer**

	Stainless Steel Whistle,Applied to Running Football Basketball Swimming and Other Sports) OR chronometer already owned by the clubs				
200m FWT	-**Chronometer** -**Floor markers** or Plots (already owned by the clubs)	-**Chronometer** 1 line (TR_CHRO34, Training, Ecole Valentin, France) -**Plots**	-Mobile **chronometer** - **Demarcation cones**	- **Chronometer** - **Demarcation cones** *(we used Mini Cooper test instead 200m FWT)*	**- Mobile chronometer** **- Demarcation cones**
FITTS' LAW TASK	-**Chronometer** -**A4 sheets** with the test inside (in appendix) -Pens, Table & Chair (already owned by the clubs)	-**Chronometer** -**A4 sheets** with the test inside (in appendix) -Pens, Table & Chair	-**Chronometer** -**A4 sheets** with the test inside (in appendix) -Pens	**- Chronometer mobile app** - **A4 sheets** with the test inside (in appendix) - **Pens, Table & Chair** (already owned by the clubs)	**-Chronometer mobile app** - **A4 sheets** with the test inside (in appendix) - **Pens, Table & Chair** (already owned by the clubs)
BOX AND BLOCK TEST	-**Chronometer** -**Blocks** (Learning Resources 2.5 cm coloured wooden cubes (set of 102) and **Box** (Jive Dekobox Set of 3 10l storage boxes with lid, Plastic (recycled PP), 10l (37.5 x 27.8 x 13.5 cm) -Table & chair (already owned by the clubs)	-**Chronometer** -**Box and Blocks boxes** of the brand "BASERGO" (French Company) -Table & chair	- **Chronometer** **-Legos adapted** (all the same size)	**- Chronometer mobile app** - **Blocks** (Learning Resources 2.5 cm red/white coloured wooden cubes (set of 15) and **Box** (double cardboard box, 35.5 x 25.5 x 12.7 cm each one) - **Pens, Table & Chair** (already owned by the clubs)	Was not applicable to the tested population
TRAIL MAKING TEST	-**Chronometer**	-**Chronometer**	-**Chronometer**	**- Chronometer mobile app**	**-Chronometer mobile app**

	-**A4 sheets** with the test inside (in appendix) - **Pens, Table & Chair** (already owned by the clubs)	-**A4 sheets** with the test inside (in appendix) - **Pens, Table & Chair**	-**A4 sheets** with the test inside (in appendix)	- **A4 sheets** with the test inside (in appendix) - **Pens, Table & Chair** (already owned by the clubs)	- **A4 sheets** with the test inside (in appendix)
BELLS TEST	-**Chronometer** -**A4 sheets** with the test inside (in appendix) - **Pens, Table & Chair** (already owned by the clubs)	-**Chronometer** -**A4 sheets** with the test inside (in appendix) - **Pens, Table & Chair**	- **Chro-A4 sheets** with the test inside (in appendix) - **Pens, Table & Chairnometer**	**- Chronometer mobile app** - **A4 sheets** with the test inside (in appendix) - **Pens, Table & Chair** (already owned by the clubs)	-**Chronometer** -**A4 sheets** with the test inside (in appendix) - **Pens, Table & Chair**
GO-NOGO TEST	-**Computer** (already owned by the clubs) -**Table & Chair** (already owned by the clubs)	-**Computer** (DELL, Laboratory's property) -**Table & Chair**	-	- **Computer** (owned by staff member) **- Table & Chair** (already owned by the clubs)	- **Computer** (bought from project resources)
LATERALITY JUDGEMENT TASK	-**Computer** (already owned by the clubs) **-Table & Chair** (already owned by the clubs)	-**Computer** (DELL, Laboratory's property) **-Table & Chair**	-	- **Computer** (owned by staff member) **- Table & Chair** (already owned by the clubs)	Was not applicable to the tested population

1.4 Methodology

All personal data collected are confidential and have been anonymized. The consent of the participants and/or of their parents was obtained thanks to a consent form (in the appendix). All these tests are recognised as gold standards and scientifically validated. They are easy to administer and low-cost.

For the moment, **this study includes 69 autistic people** who came from **France** (23), **Portugal** (10), **Italy** (21) and **Croatia** (15). There are 65 girls and 4 boys and they are aged between 6 and 52 years old. The battery of tests was proposed by the C3S Laboratory of the University of Franche Comté (those presented in part 1 of this document). The partners (ASPTT, C3S, Inovar Autismo, SUZAH, and SS Romulea) were able to dip into it to choose the tests that they can administer, depending on their possibilities and of the public tested.

Indeed, even if the battery of tests is simple, it's important to always adapt yourself to the public.
This study also includes 22 neurotypical people tested by the C3S laboratory of the University of Franche Comté in order to compare the physical condition of neurotypical people and those of autistic people, but at this stage we received the results of the tests of only 10 neurotypical people (we are waiting for the feedback of one of the structures). Same for the autistic people, in this document we present the results of 69 autistic people, but in reality 77 autistic people were tested (we wait for the feedback of one of the structures).

The tests administered in **France** by the **ASPTT** took place in ASPTT Caen, ASPTT Nancy, ASPTT Toulouse and ASPTT Metz. The participants tested are autistic children subscribing to the program SOLIDARITE autisme by ASPTT, an inclusive sport program for autistic children where they practice with neurotypical children but with the support of a specialised educator (APA). The tests were administered by their educator in order to not disturb the children, and the educator only did the tests which seemed to him adapted to the children. At the beginning, other clubs were engaged but the administration of the tests was not possible with the volunteers participants (don't understanding of the instruction, lack of concentration, autism to severe, etc.). They tried to do the tests, but with a public of autistic children we did not insist on not perturbing the children. It was for example the case in ASPTT Strasbourg. Finally, 3 other clubs agreed to participate in these tests before the end of December 2024: ASPTT Beauvais, ASPTT Marseille and ASPTT Montpellier.

The tests administered in **France** by the **C3S laboratory of the University of Franche Comté** took place in two main centers for autistic children: The ACODEGE (Association côte-d'orienne pour le développement et la gestion d'actions sociales et médico-sociales, https://acodege.fr/) in Dijon and the PLURIEL foundation (https://www.fondationpluriel.org/) in Besançon. Tests were performed under supervision of the usual educators of the autistic children that were hosted by those institutions.

The tests administered in **Italy** by **SS Romulea** took place in Rome, within the spaces designated for the sports activities of the Autistic Football Club team, made available by the sports centre of the Società Sportiva Romulea.

The tests administered in **Portugal** by **Inovar Autismo** took place in an open-air square in Almada, with some parents and personal assistants present. Most participants, over the age of 16, were connected to the Inovar Autismo independent living center. Additionally, the principal reached out to an umbrella organisation supporting young autistic individuals in sports to include teenagers under 16 in the study.

The tests administered in **Croatia** by **SUZAH** took place in two SUZAH member organisations that have extensive experience in sports programs for children with autism with the highest need for support. First organization Pogled (https://udrugapogled.hr/) from a small town of Nedelišće organized testing in their local sports center which they use for activities for the past 10 years. Tests were conducted by two sports trainers. Second organization is Rubikon from Zaprešić (https://udrugarubikon.hr/), a satellite town west of Zagreb. Tests were conducted by a professional sports trainer in a gym that is located in a local church complex.

PART 2 - RESULTS OF THE TESTS

2.1 General presentation of the results

The objective of these tests is **to have a better understanding of the profile of autistic people in order to have more information on their capacities, deficits, and challenges encountered**. To have this better understanding, these tests are necessary to collect data about the physical condition of autistic people, including their anthropometric characteristics, muscular capacities, cardiorespiratory capacities, flexibility, and neuromuscular capacities, and also data about their cognitive abilities, including their visual attention and their capacities to switch tasks, their manual dexterity, their time to aim at a target depending on the size of the target, etc. This information is necessary to develop a sports program adapted to their profile.

The chart below indicates the number of autistic people who participate in each test. It was not mandatory for participants to do all tests, and the priority was to respect the capacities and the desires of tested people. As the aim is also to work on a battery of tests that could be reused for other projects on sport and autism, the column “Remarks” regroups the main feedbacks.

Tests	Number of autistic people tested on a total of 69	Remarks
Hand-Grip Force	61/69	Test to keep - Easy to administrate
Standing broad jump	48/69	Test to keep - Few difficulties to make it clear the instruction: some of them would like to jump high rather than long.
200-metre Fast Walk Test	37/69	Test to keep - Some difficulties to make it clear the instruction: some of them wanted to run and some of them wanted to stop before the end of the 200 metre.
Balance test	25/69	Test not to be kept in its current state - difficulty level too low
Fitts' law task	43/69	Test to keep - Easy pen-and-paper test
Box and Block Test	29/69	Test to keep

Trail Making Test (TMT)	43/69	Test to keep - Easy pen-and-paper test To note: A prerequisite is the ability to read and count
The Bells Test	42/69	Test to keep - Easy pen-and-paper test
Go-No Go Test	No exploitable data	Test on a computer software, need more familiarization than expected, for participants as well as for instructors
Laterality Judgement Task (Mental rotation)	No exploitable data	Test on a computer software, need more familiarization than expected, for participants as well as for instructors

2.2 Anthropometrics data

The age of autistic people tested goes from 6 years old to 52 years old, with an average age of 18,5. Among autistic people tested, there are children, young teenagers, teens, young adults and adults. However, we did not find people above 52 years old.

	Average	Standard deviation
Age	18,5	8,9

	Average	Standard deviation
Height in centimeters	163,8	18,5

The size of people tested goes from 120 to 190 centimeters, with an average of 163,8 centimeters.

The weight of people tested goes from 20 to 106,5 kilograms with an average of 62,9 kilograms.

	Average	Standard deviation
Weight in kilograms	62,9	22,3

	Male	Female
Gender	94,2%	5,8%

Even if male represent a larger proportion of the autistic population, this data constitutes a limit of our study: autistic females are underrepresented. This over-representation of autistic males is also present in the scientific literature.

This proportion is in accordance with the proportion of right-handers and left-handers in Europe. Indeed, there are largely more right-handers than left-handers.

	Right handed	Left handed
% of people	89,1%	10,9%

Lecture and interpretation of the results: Overall, the sample tested covers all range of age (until 52 years old) and is representative of most of the aspect of the autistic population. Nevertheless, more women/girls are to be included to fit with the proportion of the actual population.

2.3 Sports habits

	Average	Standard deviation
Time in min	79	32
Frequency in number of session/week	1,5	0,6
Experience in number of years	3,9	3,3

The statistics regarding sports habits fit with what can be found in the field.

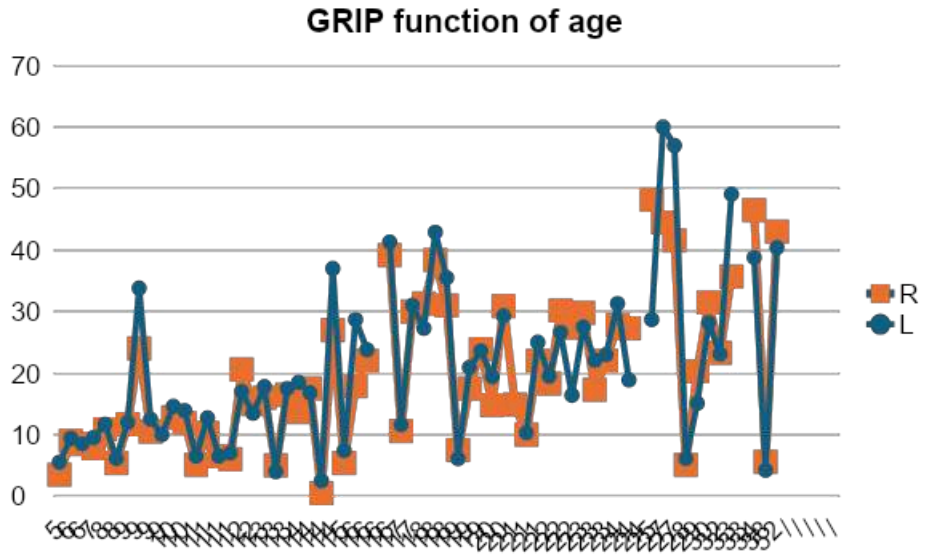
The sports most practice by autistic people tested is in part correlated by the fact that the partner of the project ASPTT Federation Omnisports administered the tests in it's clubs, where a lot of autistic people practise multisport, and because the partner of the project SS Romulea administered the tests in its club, where the sport practised is the football.

Sports	Number of persons
Multisport	24
Football	13
Judo	12
Swimming	12
Bowling	5
Walking	4
Strength	3
Yoga	1

2.4 Handgrip strength test

	Minimum	Maximum	Average	Standard deviation
Handgrip in kg - LEFT	0	48,2	16,3	14
Handgrip in kg - RIGHT	0	60	16,4	12,5

The 0 in the minimum indicates that one of the tested people failed to tighten the dynamometer during one of the tests. The maximum is slightly higher with the right hand than with the left hand. It can be explained by the fact that the right hand is the dominant hand of more tested people.



Lecture and interpretation of the results: The results of autistic people tested on the handgrip in the framework of this project indicate that values of autistic people are below those of neurotypical people as demonstrated in some studies. Thus, the strength of autistic people is on average lower than the strength of neurotypical people. The studies used to compare our results with those of neurotypical people are:

- Omar MT, Alghadir A, Al Baker S. Norms for hand grip strength in children aged 6-12 years in Saudi Arabia. Dev Neurorehabil. 2015 Feb;18(1):59-64. doi: 10.3109/17518423.2014.967878. Epub 2014 Oct 17. PMID: 25325246.
- Sun Y, Yin X, Li Y, Bi C, Li M, Yang X, Zhang T, Zhang F. Normative Values for Muscular Fitness for Chinese Children and Adolescents Aged 7–18 Years. Sustainability. 2020; 12(15):6078. https://doi.org/10.3390/su12156078
- Wang YC, Bohannon RW, Li X, Sindhu B, Kapellusch J. Hand-Grip Strength: Normative Reference Values and Equations for Individuals 18 to 85 Years of Age Residing in the United States. J Orthop Sports Phys Ther. 2018;48(9):685-693. doi:10.2519/jospt.2018.7851
- Massy-Westropp, N.M., Gill, T.K., Taylor, A.W. et al. Hand Grip Strength: age and gender stratified normative data in a population-based study. BMC Res Notes 4, 127 (2011). https://doi.org/10.1186/1756-0500-4-127

2.5 200 metre Fast Walk Test

	Minimum	Maximum	Average	Standard deviation
Times in seconds	42	200	113,9	40,7

The “42 seconds” in the case “minimum” indicates that the tested people who did this time ran during the test.

Lecture and interpretation of the results: The results of autistic people tested on this test in the framework of this project indicate that there is no significant difference with normative value of some studies which did the same test on neurotypical people. Indeed, the study Bahrawi, Gazal T et al. “200-Meter Fast Walk Test Normative Data for Young Healthy Individuals-An Observational Study.” (2017).

2.6 Standing broad jump

The “0 cm” in the case “minimum” is for an autistic people who did not succeed in some of the attempts but did succeed at least once.

	Minimum	Maximum	Average	Standard deviation
Jump in cm	0	240	131,4	53,4

Lecture and interpretation of the results: These results of autistic people can be compared with the study Grosprêtre S, Lepers R. Performance characteristics of Parkour practitioners:

Who are the traceurs?. Eur J Sport Sci. 2016;16(5):526-535. doi:10.1080/17461391.2015.1060263

2.7 Balance test

	Minimum	Maximum	Average	Standard deviation
Balance (points)	0	4	3,5	0,9

The average, 3,5 points, is very close to the maximum number of points of this test: 4.

Lecture and interpretation of the results: The maximum score being 4, it was concluded that having an average of 3.5 (+/- SD of 0.9) revealed that the test was not sensitive enough to analyse posture of autistic people, being too easy. For this reason, we suggest not keeping this test in its current state in a battery of tests for autistic people.

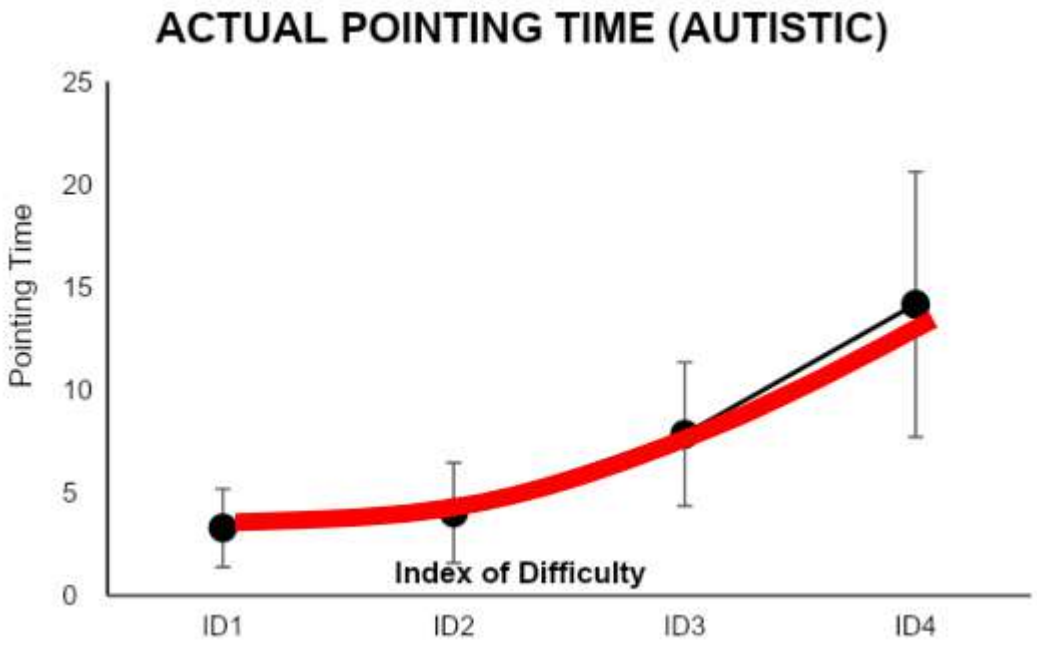
2.8 Box and Block Test

On a total of 150 blocks, the average number moved from one compartment to the other in 60 seconds is 52,2 with the left hand and 48,8 with the right hand, which indicates no significative differences between the both hands

Number of blocks/min	Minimum	Maximum	Average	Standard deviation
Left hand	14	90	52,2	23,4
Right hand	4	91	48,8	25,6

Lecture and interpretation of the results: Box and blocks test revealed a slightly lower number of blocks moved as compared to normative values at the same age. This revealed a lower manual dexterity ability in autistic people tested as compared to a non-autistic population.

2.9 Fitts Law Task



Black line: result of the present study
Red line: result obtained on a previous study on non-autistic participants of the same age

Lecture and interpretation of the results: Actually, the autistic population revealed the same motor strategy to complete the test, indicating that the management of the conflict between speed and accuracy was not affected as compared to a non-autistic population. The following study can illustrate this idea: Grosprêtre S, Marcel-Millet P, Eon P, Wollesen B. How Exergaming with Virtual Reality Enhances Specific Cognitive and Visuo-Motor Abilities: An Explorative Study. Cogn Sci. 2023;47(4):e13278. doi:10.1111/cogs.13278

2.10 Bells test

	Minimum	Maximum	Average	Standard deviation
Number of bells	25	35	32,6	6,2
Time to do find the bells in seconds	83	371	195,2	84,6

On a total of 35 bells, tested people found 32,6 bells and they did the tests in 195,2 seconds. The minimum number of bells found is 25 and the maximum 35. For information the best performance was 35 bells found in 83 seconds.

Lecture and interpretation of the results: The results of autistic people tested on this test in the framework of this project indicate that autistic people are longer than neurotypical people tested in other studies as in Paiva SCE, Viapiana VF, Cardoso CO, Fonseca RP. Bells Test:

Are there differences in performance between adult groups aged 40-59 and 60-75?. Dement Neuropsychol. 2017;11(1):40-47. doi:10.1590/1980-57642016dn11-010007

2.11 Trail Making Test

On average, autistic people tested took 25,2 seconds to do the test with an average of 0,7 error.

TMT A	Minimum	Maximum	Average	Standard deviation
Time in seconds	6,7	60	25,2	13,7
Number of errors	0	7	0,7	1,7

TMT B	Minimum	Maximum	Average	Standard deviation
Time in seconds	11,7	89	36,6	20
Number of errors	0	11	1,7	3

On average, autistic people tested took 26,6 seconds to do the test with an average of 1,7 errors.

Lecture and interpretation of the results: This test has to be adapted for our autistic population therefore there is no direct comparison with normative values of a non-autistic population. However, taking the difference between the easy task (part A), and the hardest task (part B), this test provides surprising results. Actually, on the difference B-A, autistic people performed better than what can be usually observed in the literature. Usually, the B-A difference is indeed higher in a non-autistic population. Finally, the prerequisite to realise this test is the ability to read and count. We can't compare because it's not the same number of circles, but it's interesting to read:

- Giovagnoli AR, Del Pesce M, Mascheroni S, Simoncelli M, Laiacona M, Capitani E. Trail making test: normative values from 287 normal adult controls. Ital J Neurol Sci. 1996;17(4):305-309. doi:10.1007/BF01997792
- Tombaugh TN. Trail Making Test A and B: normative data stratified by age and education. Arch Clin Neuropsychol. 2004;19(2):203-214. doi:10.1016/S0887-6177(03)00039-8

2.12 Unusable results for this report

At this stage, the results of the Go-No Go Test and of the Laterality Judgement Task are not usable. Indeed, tests on computer software need more familiarization than expected, for participants as well as for instructors.

Moreover, the results of the tests to measure the psychological conditions (Childhood Autism Rating Scale and McGill Quality of Life) are unusable for the moment. There is no translation of these tests in Croatian, Portuguese and Italian so they were just administered in France. To simplify the administration, it was professionals of the structures ACODEGE (Association côte-d'orienne pour le développement et la gestion d'actions sociales et médico-sociales) and of the PLURIEL foundation who realised it and we are waiting for their feedback.

In addition, as mentioned at the beginning of this document, 22 neurotypical people were tested by the C3S laboratory, but at this date, we received the results of only 10 neurotypical people. However, results are not presented in this document because we would like a larger sample of neurotypical people tested before the end of the project. So we are waiting for the results of a dozen of neurotypical people who have already taken the tests, and we are organising new sessions of tests until the end of December 2024 to test new neurotypical people.
We will wait to have a larger sample to propose a comparison, but we can nevertheless mention some provisional elements of the comparison of the physical condition of 10 autistic people and those of 10 neurotypical people. At this stage, with this little sample, autistic people have lower results than those of neurotypical people. There are significant differences in the grip strength of the no-dominant hand (average of 13,33kg VS 25,54 kg), the standing broad jump (average of 99,3 cm VS 163 cm) and the endurance with the 200 metres fast walking test (144,3 seconds VS 96,3), where These results can be linked to the difference in body mass index and to a lesser practice of physical activities. However, the results don't demonstrate differences between both groups about the balance (average of 4 points for both groups) and the grip strength of the dominant hand (16,32 kg VS 25,98 kg). For recall, the results of the balance test have to be relativized because it seems too easy to do.

Finally, one of the objectives of these tests is to compare before and after a sports program. Thus, the C3S laboratory organised tests for 18 autistic people who did tests named *T0* in March 2024 and who did again the same tests named *T1* in June 2024, after 12 weeks of a sport program, period named "*intervention*". The implementation of the sport programs during the intervention period of 12 weeks depended on the possibility of both structures: climbing, boxing, motor courses, field hockey, biathlon, gymnastics, walking, motor courses and swimming. For the same reason as mentioned above, at the date of the redaction of this document the structure did not send us some of the information necessary to analyse the results. So, before the end of the project we will have results on the comparison of the effect of the sports program on around twenty autistic people.

CONCLUSION

The objective of these tests is **to develop and validate a battery of cognitive and physical tests** and **to test autistic people in order to develop a pedagogical model of sport programs adapted to autistic people**. About the battery of tests, we can conclude **that physical tests and cognitive tests seem suitable and could be re-used**, whereas computerised tests were difficult to implement. About the results, we can conclude that **autistic people have a deficit on motor aspects and specific cognitive impairments**, but **some aspects are in normative values, or even better**. Therefore, **autism does not seem to affect all cognitive aspects**, but rather lead to a specific psycho-cognitive profile. Finally, it's necessary to note that this study has some limitations as:

- The fact that 94,2% of the autistic people tested are of the male sexe,
- The size of the sample, notably of the sample of neurotypical people,
- The fact that some participants of the autistic may not have understood the instructions.

Moreover, at the beginning of the project, the objective of the tests was to do tests in 4 countries to measure the impact of sport on autistic people for 12 weeks. However, as the project progressed, it seemed more feasible to measure the effect of a sport intervention of 12 weeks on autistic people in only 2 structures, thus covering 18 autistic people. As explained, we are waiting for some information about one of the structures to analyse the results. In addition, as the project progressed, it appeared important to us to administer tests on autistic people to have a better knowledge of the profile of autistic people, and these results are helping us to create a pedagogical model of sports programs adapted to their needs. During these tests, the sporting habits of tested people were taken into account.

It wasn't planned at the departure, but we decided to administer tests also on neurotypical people to have comparison items and to understand the specific needs of autistic people. To have a larger sample, **we decided to extend the tests until the end of December 2024. At this date, new autistic people and neurotypical people were agreed to do the tests**.

A scientific article on the results of the tests is currently being written by our partner C3S Laboratory of the University of Franche Comté. It will be submitted to a scientific journal for publication.

Finally, **we would like to sincerely thank all the persons who participated in these tests**, from the people tested to the people who organised and administered the tests. These results are essential to helping us to create a pedagogical model of sports programs.

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APPENDIX

Appendix n°1: Document to present the tests, the instructions, the necessary papers and the notebook to note the results

Appendix n°2: Consent form

Co-funded by
the European Union

SACREE
Autism & Sport

Project Sacree - Detailed test list

UFR STAPS Sciences et techniques des activités physiques et sportives
UNIVERSITÉ DE FRANCHE-COMTÉ

CSS EA 4660
Culture
Sport
Santé
Société

Presentation of the document

This document presents the tests that will be carried out as part of the Sacree project. The Sacree programme aims to improve the daily lives of autistic people by promoting sporting activities. The 36-month project, which runs until 2025, is funded by the European Commission's Erasmus+ Sport programme and is being carried out by 6 European organisations: ASPTT Fédération Omnisports, Autism Europe, the C3S laboratory at the University of Franche Comté, Inovar Autismo, SS Romulea and SUZAH.

In concrete terms, this project aims to propose a model of sports programmes accessible to autistic people. To do this, we are taking into account the scientific literature, the best practices of the various partners, and the experience and knowledge of autistic people, their families and those involved in the sports sector. We also want to put our programme on a scientific footing through field tests.

This document is the fruit of the project's scientific team: the C3S laboratory at the University of Franche Comté. The results of these tests will make it possible to:

- Evaluate the effects of sport on autistic people (for the structures that will carry out the tests at T0 and then at T1 after a few months of sporting activity)
- Gain a better understanding of the skills/abilities/deficits of autistic people (for facilities that will only carry out the tests once).

Not all the tests are compulsory. Some of the tests may be omitted if they are not suitable for certain autistic people or if the necessary equipment is not available. The use of a tool other than the one mentioned on the test sheet must be indicated in the observation booklet.

Finally, we advise you not to do all the tests at the same time, so as not to overload the person, but to spread them out over a few sessions.

Disclaimer :

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

Table of contents

1. Complete equipment list for one person

- Hand-Grip (https://mtraining.fr/dynamom%C3%A8tres/725-dynamom%C3%A8tre-%C3%A0-main-take%C3%AF-tk200.html)
- Box and Block (https://www.equipement-ergotherapie.com/materiel-evaluation/box-and-blocks-test/)
- Jumping mat (https://www.amazon.fr/Atreq-Unisexe-Debout-Tapis-Longueur/dp/B01MXVN7K1/ref=sr_1_96?__mk_fr_FR=%C3%85M%C3%85%C5%BD%C3%95%C3%91&crid=1Y0OTFDZO0520&keywords=jump+mat+horizontal&qid=1707729498&sprefix=jump+mat+horizontal%2Caps%2C99&sr=8-96)
- Floor markers
- Tape measure
- Studs
- Stopwatch
- A4 sheets (Appendix 1, Appendix 2, Appendix 3 and Appendix 4)
- Table
- Chair
- Pens
- Pencils
- Computer

2. Physical tests (indoor or outdoor)

2.1. Hand-Grip Force:

The Hand-Grip is a clamping test that measures grip strength based on muscular force or the maximum force/tension generated by the forearm muscles. It can also be used to measure upper-body and overall strength. To do this, standing with arms at the sides of the body, the user performs a maximum contraction to squeeze the handle dynamometer. The measurement requires a minimum of two attempts per hand, with 30 seconds' rest in between. It is advisable to alternate sides to limit muscle fatigue. The best score, expressed in kilograms (kg), is used.

Time required for one person to set up and perform the task:

- Approximately 5 minutes.

Equipment required:

- Hand-Grip
- A4 sheets (Appendix 4)
- A pen

Instructions:

1. Press the "On" button on the handgrip,
2. Stand with your arms at your sides,
3. Apply as much pressure as possible for 3 seconds with your dominant hand,
4. Repeat the same test with the other hand,
5. You can perform this exercise up to 3 times, with 30 seconds' rest between each attempt,
6. It's very important to encourage the person, for example, “Courage! The task is short”.

Notes / Field tips:

- Give an initial demonstration to the person who is to perform the test,
- Encourage them to do their best.

Test illustration:

Standing at the side of the body:

Exert maximum force on the handgrip:

2.2. Standing broad jump:

This test measures the explosive power of the lower limbs. After a standardized warm-up and explanation of the instructions, the athlete attempts to jump as far as possible, landing on both feet without falling backwards. To do this, they must propel themselves and land on both feet, swinging their arms and bending their knees to ensure forward thrust. A marker is placed on the ground where the test begins (take-off line). Another marker is placed on the back of the heel as the person lands. If the person falls or takes a step backwards, the landing marker is placed at this point. The distance between the start and finish points is measured and counted using a tape measure. The longest distance jumped among the three permitted trials is recorded. Take care to perform this test on non-slippery ground. To make this test easier, you can use a jumping mat.

Alternative version (without jumping mat):

1. Place a marker on the floor at the point where the test begins (take-off line),
2. Unroll the tape measure to the side of the marker, in the direction of the jump,
3. Place a marker on the ground where the person lands,
4. Measure the distance between the two points.

Time required for one person to set up and perform the task:

- Approximately 10 minutes

Materials required:

- Jumping mat / floor markers
- Tape measure
- A4 sheets (Appendix 4)
- A pen

Instructions:

1. Stand with feet together behind the take-off line,
2. Try to jump as far as possible (not as high),
3. To succeed, use your arms as much as possible and bend your legs before jumping,
4. Mark the distance you reach,
5. Perform the test with 3 attempts.
6. It's very important to encourage the person, for example, “Only 2 jumps left!” or “Come on, for the last jump!”.

Notes / Field tips:

- Give an initial demonstration to the person who is to perform the test,
- Don't hesitate to jump with the person during the demonstration,
- Encourage the person to do his/her best.

Test illustration:

Step 1:

Step 2:

Step 3:

2.3. 200-meter Fast Walk Test (200m FWT):

The 200-meter Fast Walk Test was developed to test aerobic endurance. It involves walking as fast as possible over a distance of 200 meters. Poles are placed 25 meters apart to delimit the course. After a standardized warm-up and explanation of the instructions, the person performs the test. The total time taken is recorded. During the test, you should be encouraged to go as far and as fast as possible.

Time required for one person to set up and complete the task:

- Approximately 10 minutes.

Materials required:

- Poles or markers on the ground
- Stopwatch
- Tape measure
- A4 sheets (Appendix 4)
- A pen

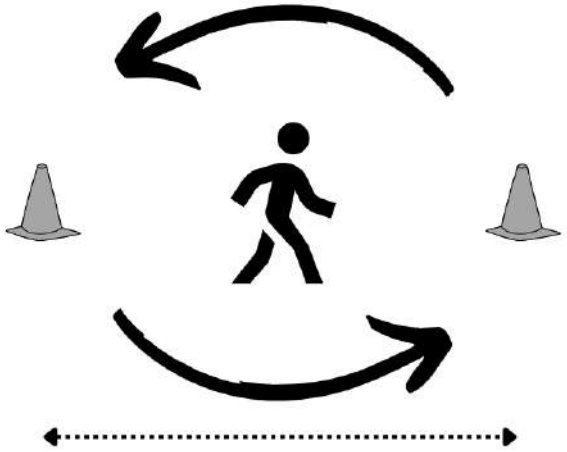
Instructions:

1. Place two studs or markers 25 meters apart,
2. Start at the beginning of the course,
3. Walk as fast as you can for 200 meters,
4. Walk back and forth from one marker to the next (4 back and forth),
5. Keep going without stopping, if possible,
6. At the end of the test, stop and let the person record your time,
7. It's very important to encourage the person, for example, “Come on, cheer up, you're halfway through!” or “You're nearly finished, you've only got one peg left!”.

Notes / Field tips:

- Give an initial demonstration to the person who is to perform the test,
- Don't hesitate to walk back and forth with the person during the demonstration,
- During the test, don't hesitate to ask the person to follow you to encourage them to walk as quickly as possible,
- Encourage the person to do their best.

Test illustration:


25 meters - 4 back and forth

2.4. Balance Test:

In this test, the person must maintain balance in three different positions: standing with feet together, in semi-tandem (one foot slightly in front of the other) and in tandem (one foot directly in front of the other). The time taken to maintain the position is taken into account in the evaluation. For each of the three positions, the person is encouraged to stand for 10 seconds without moving their feet or holding on to anything. For the first and second positions (feet together and semi-tandem), the person scores a point for holding the position for more than 10 seconds (greater than 10.1 seconds). No points are awarded if the position is held for less than 10 seconds. For the third position (feet: "Tandem"), the person scores one point for holding the position between 3 and 9.99 seconds, and two points for more than 10 seconds. No points are awarded for holding the position for less than 3 seconds. Better balancing skills are correlated with higher scores.

Time required for one person to set up and complete the task:

- Approximately 10 minutes.

Materials required:

- Stopwatch
- A4 sheets (Appendix 4)
- A pen

Instructions:

1. Maintain balance for 10 seconds in the following positions:
    1. Feet together
    2. Feet in semi-tandem (one foot slightly in front of the other)
    3. Tandem foot (one foot directly in front of the other)
2. It's very important to encourage the person, for example, "You're maintaining your balance very well!" or "Come on, you've already been holding this position for 5 seconds!".

Notes / Field tips:

- Give an initial demonstration to the person who is to perform the test,
- Don't hesitate to place the person's feet correctly,
- You can show them the stopwatch to help them hold the 10 seconds,
- Encourage the person to do their best.

Test illustration:

"Feet together" position:

“Semi-tandem” position:

“Tandem” position :

3. Table tests

3.1 Fitts' law task:

Fitts' law states that the time required to aim at a target is a function of the distance to the target divided by the size of the target. The greater the distance and the smaller the target, the longer the time required to aim at the target. Movement time increases linearly with the difficulty index.

In our test, using a pencil, the person has to go around the circle as quickly as possible without going beyond the delimited area. This task has 4 difficulty levels. The time and number of errors (each time the pencil is touched or the edges of the circle are crossed) per difficulty index are taken into account.

Time required for one person to set up and complete the task:

- Approximately 10 minutes.

Materials required:

- A4 sheets (Appendix 1)
- Pens or pencils
- Stopwatch
- A4 sheets (Appendix 4)
- Table
- A chair

Instructions:

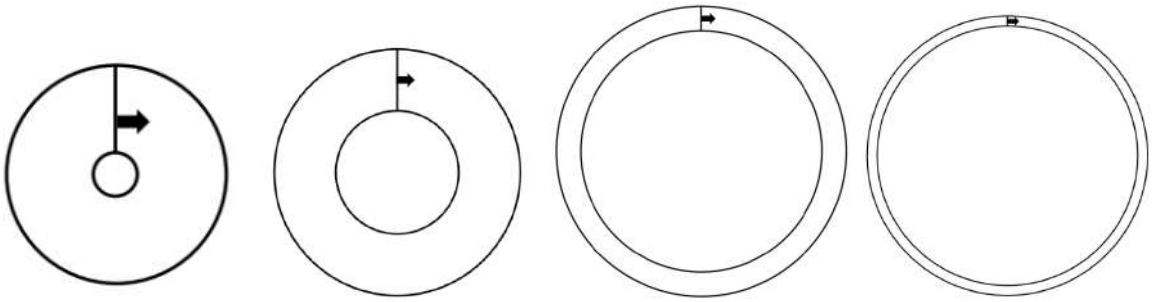
1. Please print out the sheets of Appendix 1 (A4 format) that we have sent you,
2. Place a pen or pencil at the top of the circle,
3. Your aim is to go precisely around the circle as quickly as possible without touching or going over the edges,
4. Repeat this for each circle, noting the time taken for each series of movements and the number of errors (touching or going beyond the edges of the circle),
5. Increase the size and decrease the thickness of the circles to increase the difficulty,
6. Use a stopwatch to measure the time taken for each trial,
7. Receive encouragement after completing a circle, e.g., “That's very good, you've gone around the circle” or “You're very precise”.

Notes / Field tips:

- Carry out this test in a room, alone with the person (supervisor may be present), without any disruptive elements,
- Give an initial demonstration to the person who is to perform the test,
- Don't hesitate to ask the person to give a demonstration, with guidance,

- Encourage the person to do his/her best.

Test illustration:



3.2. Box and Block Test (BBT):

The Box and Block Test measures unilateral global manual dexterity. It is a quick, simple and inexpensive test. The test consists of a wooden box (53.7 cm x 25.4 cm x 8.5 cm) divided into two compartments (25.4 cm each) by a partition and 150 blocks (2.5 cm cubes). The person must move, one by one, a maximum number of cubes from one compartment of the box to the other for 60 seconds. The box should be positioned lengthwise, on the person's midline. The test can be performed once with one hand and a second time with the other. The person must take care to pass his fingertips over the partition and not pick up any blocks that might fall out of the box. Each side can be tried for 15 seconds. Scoring is based on the number of blocks transferred from one compartment to another. Better manual skills correlate with higher scores.

Alternative version:

1. You can make up the test by constructing the box and cubes according to official measurements.

Time required for one person to set up and complete the task:

- Approximately 10 minutes.

Materials required:

- Box and Block
- Stopwatch
- A4 sheets (Appendix 4)
- A pen
- Table
- A chair

Instructions:

1. Move the cubes one by one, from one side of the box to the other, within 60 seconds,
2. Use your dominant hand,
3. The timer starts as soon as the person touches the first cube,
4. Repeat with the other hand,
5. It's very important to encourage the person, for example, "Well done, keep it up! You've reached the halfway mark" or "You've understood the instructions very well!".

Notes / Field tips:

- Give an initial demonstration to the person who is to perform the test,
- Don't hesitate to move the cubes with the person during the demonstration,
- Encourage the person to do his/her best.

3.3. Trail Making Test (TMT):

The Trail Making Test is a test of flexibility, visual scanning and working memory. It is divided into two parts: Part A (TMT-A) for working memory and Part B (TMT-B) for executive functions. They can be used together or independently. In each part, the person must draw a line between 12 consecutive circles arranged at random on a page measuring 21.6 cm x 27.9 cm (A4 format). TMT-A uses a sequence of numbers, while TMT-B alternates between numbers and letters. In the latter, the person has to link alternating numbers and letters in ascending order (e.g.: 1, A, 2, B, 3, C, ...). The time required (in seconds) and the number of errors made in completing each part are recorded for comparison with standards.

Time required for one person to set up and complete the task:

- Approximately 10 minutes.

Materials required:

- A4 sheets (Appendix 2)
- Pens or pencils
- Stopwatch
- A4 sheets (Appendix 4)
- Table
- A chair

Instructions:

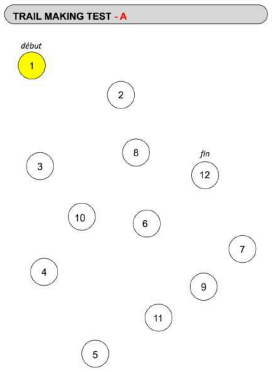
1. Please print out the sheets of Appendix 2 (A4 format) that we have sent you,
2. Use a pencil or pen to connect the numbers 1 to 12 and the numbers and letters 1; A to 6; F in ascending order,
3. If you make a mistake, correct it and continue,
4. The time taken to complete the task and the number of errors are recorded,
5. Receive encouragement after the test, for example, “That's excellent, you've done it!” or “Come on, cheer up! You can do the second part of the test!”.

Notes / Field tips:

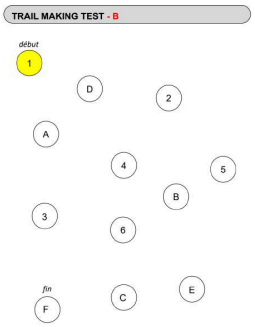
- Perform this test in a room, alone with the person (supervisor may be present), without any disruptive elements,
- Give an initial demonstration to the person who is to perform the test,
- Don't hesitate to ask the person to give a demonstration, with guidance,
- Encourage the person to do his/her best.

Illustration of the test :

Part A:


TRAIL MAKING TEST - A
début
1
2
8
3
fin
12
10
6
7
4
9
11
5

Part B:


TRAIL MAKING TEST - B
début
1
D
2
A
4
5
B
3
6
fin
F
C
E

3.4. The Bells Test:

The Bells Test is an instrument to identify targets (bells) among distractors. It assesses selective and focused visual attention, visual perception and visuo-motor processing speed. Using a pencil, the participant circles 35 bells mixed with 280 distracting elements (trees, birds, fish, etc.) in black on a 216 x 279 mm (A4 format) page. The drawings appear to be randomly distributed, but are in fact precisely arranged in 7 columns comprising 5 bells and 40 distracting elements. The black dot at the bottom of the page indicates the direction in which the page is facing. In this configuration, of the 7 columns, 3 are to the person's left and 3 to their right. The number of bells circled, the time taken to complete the test and the number of errors (other than bells) are counted. An omission of 6 or more bells on either side indicates unilateral spatial neglect. The severity of the visual neglect and the side affected is determined by the number of bells omitted from the spatial distribution.

Time required for one person to set up and perform the task:

- Approximately 10 minutes.

Materials required:

- A4 sheets (Appendix 3)
- Pens or pencils
- Stopwatch
- A4 sheets (Appendix 4)
- Table
- A chair

Instructions:

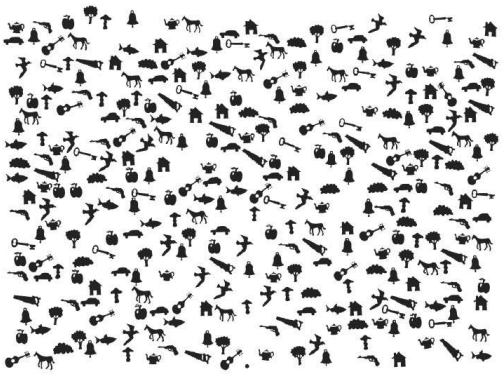
1. Please print out the sheets of Appendix 3 (A4 format) that we have sent you,
2. Use a pencil or pen to circle only the bells in the drawings,
3. Try to do it as quickly as possible,
4. The number of bells, time and errors are recorded,
5. It's very important to encourage the person at the end of the test, for example, “That's great, you've found lots of bells!” or “Yes, you've completed the exercise!”.

Notes / Field tips:

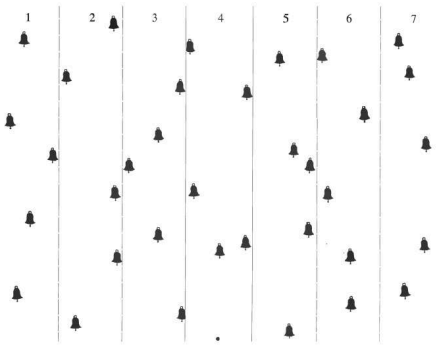
- Perform this test in a room, alone with the person (supervisor may be present), without any disruptive elements,
- Give an initial demonstration to the person who is to perform the test,
- Don't hesitate to ask the person to give a demonstration, with guidance,
- Encourage the person to do his/her best.

Test illustration :

Test board :



Correction:



4. Computer-based tests

4.1 Go-NoGo Test :

The Go-NoGo Test is a simple test for assessing inhibitory control. It assesses reaction time and inhibition capacity. The person is asked to respond as quickly as possible to a certain stimulus (Go) and not to respond to other stimuli (No Go). For example, the person must press a button when the black circle turns green and not press it when it turns red. Reaction time for Go trials, commission for NoGo trials and omission for Go trials are recorded.

Time required for one person to set up and complete the task:

- Approximately 10 minutes.

Equipment required:

- Computer
- A4 sheets (Appendix 4)
- A pen
- Table
- A chair

Instructions:

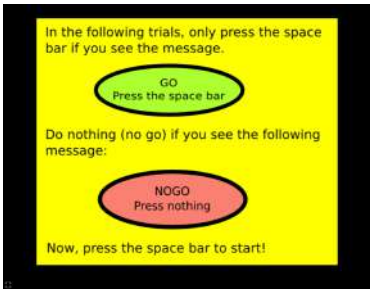
1. Use a computer to perform the test,
2. Download the transmit document and double-click to launch it,
3. Press the “Space” key only when the word “GO” is displayed in green on the screen,
4. Do not press the “Space” key when the word “NOGO” is displayed in red,
5. Try to do the test as quickly as possible, reacting instantly when the word “GO” appears,
6. Note the type “GO” or “NOGO”, the error and the time taken for each decision, which appear at the end of the test in the “Show Data” section,
7. It's very important to encourage the person after the test, for example, “The test wasn't easy, it's okay, you did it” or “Very good, you passed the test!”.

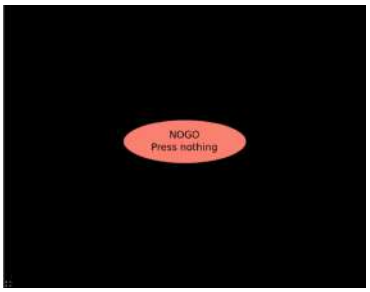
Notes / Field tips:

- Carry out this test in a room, alone with the person (supervisor may be present), without any disruptive elements,
- Give an initial demonstration to the person who is to perform the test on some “GO” and “NOGO”,
- Do not hesitate to ask the person to demonstrate some “GO” and “NOGO” with guidance,
- Tell the person to press the "Space" bar only when the green "Go" appears.

- Encourage them to do their best.

Test illustration:





4.2. Laterality Judgement Task (Mental rotation):

The Laterality Judgement Task (LJT) assesses the ability to make implicit mental representations. The assessment takes into account reaction time to different difficulty cues and the accuracy of responses.

Time required for one person to set up and complete the task:

- Approximately 15 minutes.

Equipment required:

- Computer
- A4 sheets (Appendix 4)
- A pen
- Table
- Chair

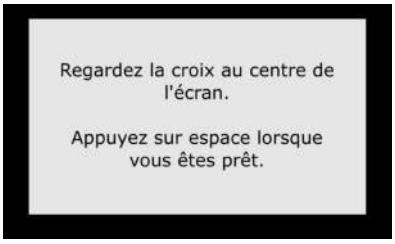
Instructions:

1. Use a computer to perform the test,
2. Download the transmit document and double-click to launch it,
3. Images of hands in different positions will be displayed on the screen,
4. Your task is to quickly decide whether the hand is the right or left one,
5. Use the on-screen controls to make your choices,
6. Press the "a" button for the left hand and the "p" button for the right hand.
7. Repeat for several hand images,
8. Note the orientation of the hand, the number of errors and the time taken for each decision,
9. Try to make choices as quickly and accurately as possible,
10. It's very important to encourage the person after the test, for example, “That's very good, you've identified the hands well” or “It doesn't matter if you can't do it, the exercise is complicated. You'll get it right next time!”.

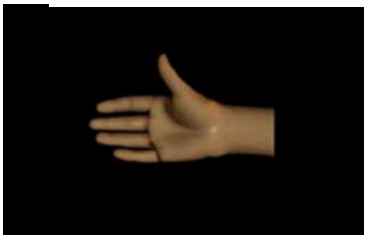
Notes / Field tips:

- Carry out this test in a room, alone with the person (supervisor may be present), without any disruptive elements,
- Give the person who is to perform the test an initial demonstration of a few hand rotations,
- Don't hesitate to ask the person to demonstrate a few hand rotations with guidance,
- Encourage the person to do his/her best.

Test illustration :

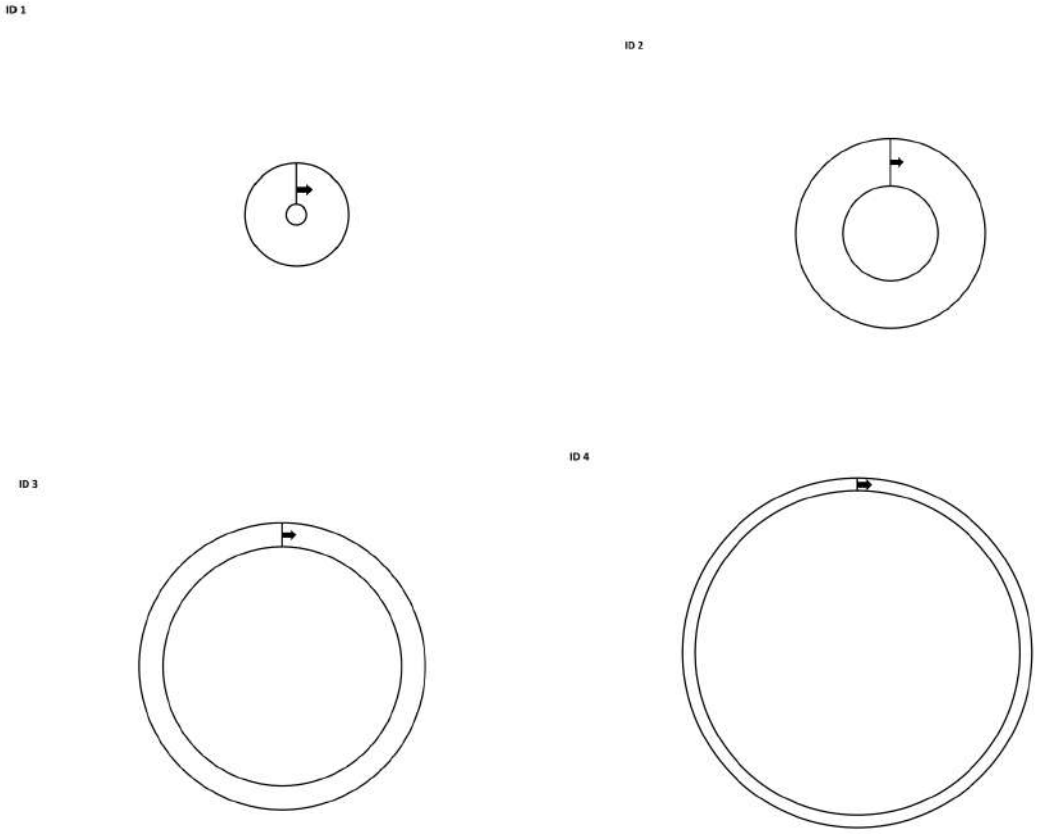

Regardez la croix au centre de l'écran.
Appuyez sur espace lorsque vous êtes prêt.


Fixez la croix au centre de l'écran.
La série suivante commence dans 5 secondes.

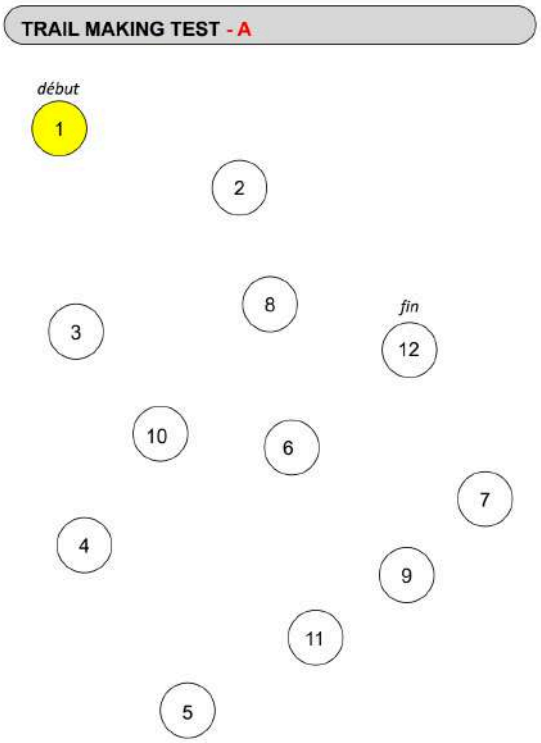


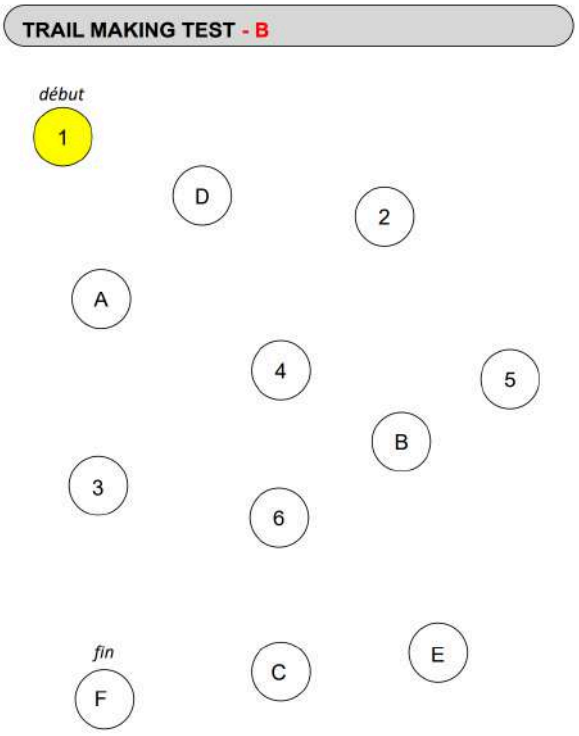
5. Appendix

Appendix 1: Fitt's Law Tast

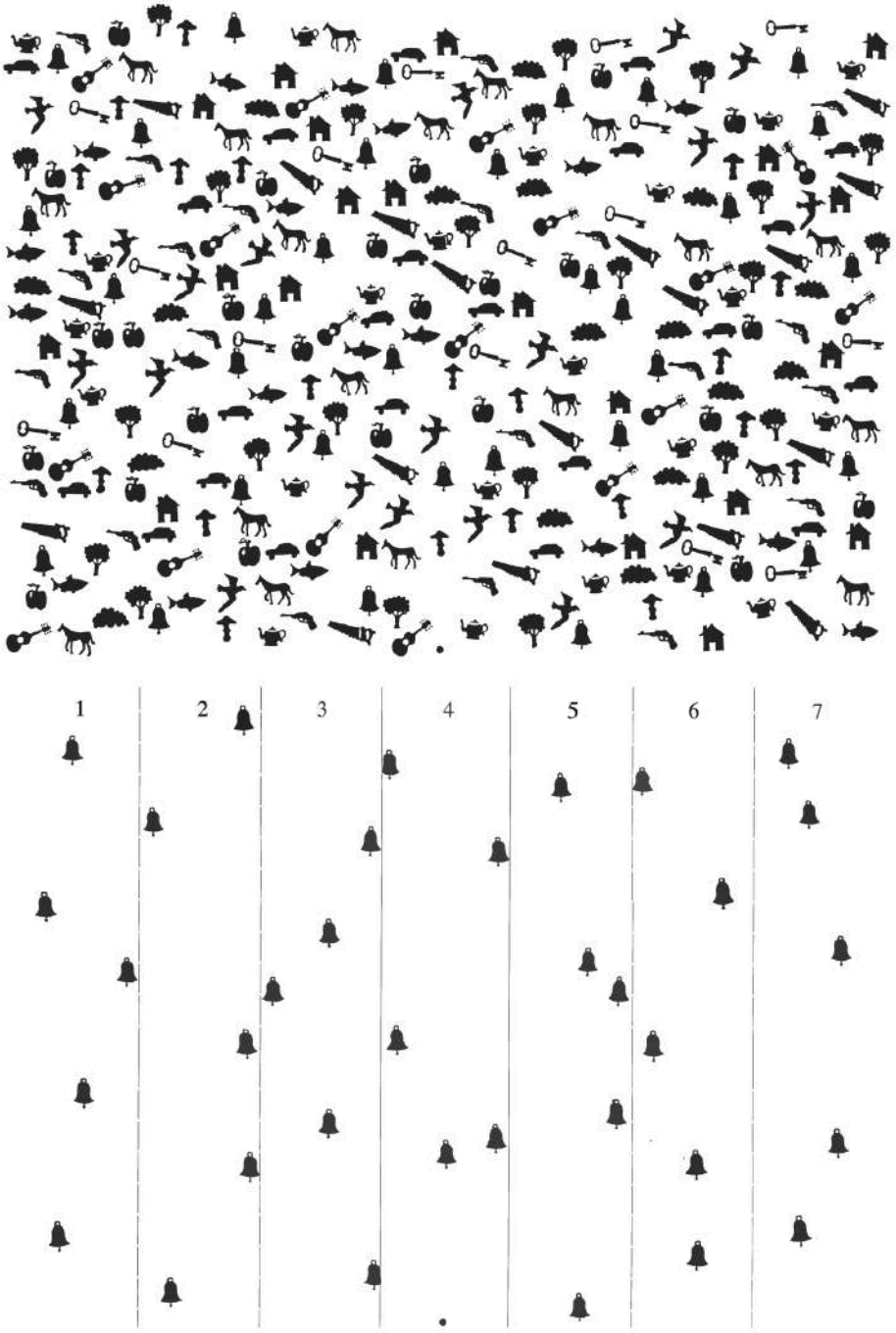


Appendix 2: Trail Making Test





Appendix 3: The Bells Test



Appendix 4: Observation booklet

Project SACREE – Observation booklet

Date: .....
Hour: .....

ID: .....

GENDER: ☐ Man ☐ Woman

LATERALITY: ☐ Right ☐ Left

AGE: .....
SIZE: .....
WEIGHT: .....

VISION: ☐ CORRECTED ☐ UNCORRECTED

PRACTICAL SPORTS:	.....	.....	.....
Hours/week:	.....	.....	.....
Since (years):	.....	.....	.....
LEISURES:	.....	.....	.....
Hours/week:	.....	.....	.....

Disorders associated with ASD:

1:.....
2:.....
3:.....
4:.....
5:.....
6:.....

Additional comments:

.....
.....
.....
.....

Project SACREE – Physical condition assessment

TEST 1: Hand-Grip Force

Pre-evaluation (Left / Right):
1:……/……
2:……/……
3:……/……

Post-evaluation (Left / Right):
1:……/……
2:……/……
3:……/……

TEST 2: Standing Broad Jump

Pre-evaluation:
1:……
2:……
3:……

Post-evaluation:
1:……
2:……
3:……

TEST 3: 200 meters Fast Walk Test (200m FWT)

Pre-evaluation:
1: ……

Post-evaluation:
1: ……

Comments:

Project SACREE – Assessment of sensory-motor functions

TEST 1: Fitts' Law Task (Circle)

Time / Errors:	Time / Errors:
Pre-evaluation:	Post-evaluation:
1:……/……	1:……/……
2:……/……	2:……/……
3:……/……	3:……/……
4:……/……	4:……/……

TEST 2: Box and Block Test (BBT)

Cube nombers:	Cube numbers:
Pre-evaluation (Left / Right):	Post-evaluation (Left / Right):
1:……/……	1:……/……

TEST 3: Balance Test

Feet together:	Semi-Tandem:	Tandem:
Pre-evaluation:	Pre-evaluation:	Pre-evaluation:
1:……	1:……	1:……
Post-evaluation:	Post-evaluation:	Post-evaluation:
1:……	1:……	1:……

Project SACREE – Assessment of sensory-motor functions

-

TEST 4: Laterality Judgement Task (Mental rotation)
Pre-evaluation / Post-evaluation

Direction :	Time:	Errors:

Project SACREE – Assessment of cognitive functions

TEST 1: Trail Making Test

Time / Errors (TMT-A):

Pre-evaluation:
1:...../.....

Post-evaluation:
1:...../.....

Time / Errors (TMT-B):

Pre-evaluation:
1:...../.....

Post-evaluation:
1:...../.....

TEST 2: The Bells Test

Bells / Time / Errors:

Pre-evaluation:
1 :...../...../.....

Bells / Time / Errors:

Post-evaluation:
1:...../...../.....

Project SACREE – Assessment of cognitive functions

-

TEST 3: GO – NoGO Test
Pre-evaluation / Post-evaluation

Type :	Time:	Errors:

Project SACREE – Questionnaires

QUESTIONNAIRE 1:

Pre-evaluation:	Post-evaluation:
1:.....	1:.....
2:.....	2:.....
3:.....	3:.....

QUESTIONNAIRE 2:

Pre-evaluation:	Post-evaluation:
1:.....	1:.....
2:.....	2:.....
3:.....	3:.....

QUESTIONNAIRE 3:

Pre-evaluation:	Post-evaluation:
1:.....	1:.....
2:.....	2:.....
3:.....	3:.....

Information sheet for parent(s) of minor participants, or independent adult participants.

SACREE
Autism & Sport

Title of the project:

"Feasibility and effectiveness of adapted physical activity in autistic people".

Administrator of the tests:

Name:
First name:
Email:

Research locations:

Address where testing takes place:

Aim of the research project:

The aim of this study is to integrate new scientific knowledge to better understand the benefits of physical activity on the health of autistic people. Analysis of the results obtained under different conditions of practice will enable the design of adapted and personalized training programs.
Through physical activity and sport, we aim to promote a more inclusive society, with a view to improving the lives and developing the physical, mental and social skills of autistic people from an early age.

What is expected of your child (or of you if you are an independent adult):

Your child (or yourself) will complete a series of standardized tests during their regular physical activity sessions, with the presence and support of their supervisor. These tests can cover three components of health: psychosocial, motor and cognitive.

The psychosocial assessment will involve answering two short paper questionnaires on autonomy and the quality of social relations (parents will be asked to respond).

Motor evaluation can involve 3 physical tests to assess muscular strength (grip strength with a hand dynamometer, and vertical relaxation), posture (unipodal and bipodal holding time), and endurance capacities (6-minute run).

Cognitive evaluation will involve 3 tests to assess visual attention using the "bell test" (ability to detect visual shapes in a drawing), inhibition using the "go-no-go test" (ability to inhibit a hand action following a visual cue), and working memory using the "trail making test" (ability to link items together using hand movements).

All our tests have been scientifically validated in numerous healthy and pathological populations. Tests involving active participation (strength or relaxation,

for example) will be carried out in an environment that is familiar and safe for the participant (in the presence of his or her trainer, in a known place of practice) and involves no risk to physical or mental health.

Benefits of your child's participation:

The data collected and the results of the study will enable you to better identify certain characteristics associated with autism, as well as the benefits of physical activity. Your (or your child's) participation in this research will also give you an insight into the workings of a scientific study in the life sciences (human movement sciences and health).

Your right to withdraw from research at any time:

You have the choice of accepting or refusing and terminating your child's participation (or your own participation) in this study without consequence or prior notice.

Your right to confidentiality and privacy:

All data will be collected in accordance with Article 13 of the General Data Protection Regulation.

During the course of the research, the individual data collected on participants and transmitted to the sponsors by the investigators (or any other qualified party) will be made non-identifying and will under no circumstances reveal the name, address or any other information enabling direct identification of the participant. They will remain strictly confidential and will be pseudo-anonymized (an identifier will be assigned). An observation book (handwritten and/or computerized) will be produced, and only the study managers will have access to it.

Data collected as part of the research will be kept for up to 2 years after the last publication of the research results or, if no publication has been made, until the final research report has been signed. They will then be archived on paper and/or electronically for a period of 15 years, in accordance with current regulations.

If you withdraw your child's participation in this study before its completion, the data are automatically destroyed. If your child completes the study, the data are automatically destroyed at the end of the archiving period. However, if you wish your child's data to be destroyed before the end of the archiving period, you must submit a request to the study managers.

Possible risks:

This research does not present any particular risk. However, it is possible that the participant may suffer a minor injury during the physical activity. As the practice is rigorously supervised, this is a rare occurrence.

Diffusion:

As participants' data are subject to statistics (means and standard deviations), it will be impossible to identify them when disseminating the results.

The data will be used mainly for scientific articles and internship dissertations. If you wish, we can send you a summary of these articles and explain the results and progress of the study in person. You can also request the results by e-mail from the researchers in charge of the research project.

This research is also likely to be disseminated at conferences and published in conference proceedings, academic journal articles and scientific books. It may also be used to write press articles aimed at the general public, popularization works, contributions to university websites or links between the academic community and the general public. Finally, this research may also be used in interviews or speeches on radio, television or the Web, as part of teaching activities.

Your right to ask questions at any stage of the study: :

At any time, you can ask the people in charge of the study any questions you may have:

Scientific project leaders:

- Sidney GROSPRETRE, Senior lecturer, Laboratory EA 4660 – C3S, sidney.grospretre@univ-fcomte.fr / 06.76.34.11.03
- Nicolas GUEUGNEAU, Senior lecturer, Laboratory EA 4660 – C3S, nicolas.gueuneau@univ-fcomte.fr / 06.76.01.61.91
- Célia RUFFINO,Senior lecturer, Laboratory EA 4660 – C3S, celia.ruffino@univ-fcomte.fr / 06.36.87.17.08

Collaborators (trainees):

- Rémi DEMARIA, Student M2-STAPS-APAS, UFR STAPS (University of Toulon), remi-demaria@etud.univ-tln.fr / 07.66.26.73.34
- Nathan AYMARD, Student M2-STAPS-IEAP, UFR STAPS (University of Reims), natathle37@gmail.com

Your right to stop participating at any stage of the study:

You may, at any time, decide to stop participating in this study by notifying : Camille RACHYNSKI or other member(s) responsible for the research, without having to justify your decision and without any prejudice.

Consent form

By signing this consent form, you certify:

- That you have read and understood the information Information sheet for parent(s) of minor participants, or independent adult participants.
- That you have had the opportunity to ask all the questions and have obtained all the answers you wanted,
- That you can ask further questions about the study at any time by contacting the research team,
- That you have understood how the study was conducted,
- That you have understood how the data will be collected and used.
- That you have been informed that you are free to withdraw your consent or withdraw your child from this research at any time, without the need to justify yourself and without prejudice,

For minors,
To be completed by the minor's legal guardian(s) :
I have read and understood the above information and willingly agree to my child's voluntary participation in this research.

Name and surname of minor:

Date and signature of minor (if able to express his/her wishes):

Name, First name - Date - Signature (Holder of parental authority A)

Name, First name - Date - Signature (Holder of parental authority A)

For independent adults,
I have read and understood the above information and willingly agree to participate in this research on a voluntary basis.

Name and surname

Date and signature :

To be completed by the person responsible for the study :
I, the undersigned, certify that I have explained the terms of this form to the signatory(ies) by answering the questions they have asked me in this regard, and that I have made it clear that I am free to terminate my child's participation in the research project described above at any time. I will provide him/her with a signed and dated copy of this form.

Name, First name - Date - Signature (Person responsible for the study)

One copy of this document is given to you, and another is kept by the project's scientific manager.

APPENDIX

- Annex 2: Forms for structures

SHEET 1 – RENSEIGNEMENTS

GENERAL INFORMATION

SPORT SEASON: .....

THE ATHLETE:

Name and surname: .....

Date of birth: .....

Phone and e-mail (if concerned): .....

.....

PARENTS :

Parent 1:

Name and surname: .....

Phone and e-mail (if concerned): .....

.....

Parent 2:

Name and surname: .....

Phone and e-mail (if concerned): .....

.....

PERSON TO CONTACT IN CASE OF EMERGENCY:

Name and surname: .....

Phone and e-mail (if concerned): .....

.....

GENERAL INFORMATION

HOST STRUCTURE	
Type of structure	
Name of the structure	
Name and contact of the referent	

ATHLETE FOLLOW-UP		
PROFESSIONAL	**NAME**	**CONTACT DETAILS**
Psychomotrician		
Psychologist		
Neurologist		
Occupational therapist		
Speech therapist		
Physiotherapist		
Other, please specify		

CONDITIONS ASSOCIATED WITH AUTISM AND/OR TREATMENT (EPILEPSY, ADHD, ETC.):

.....

.....

SENSORY PROFILE

PROFILE:

- [ ] Hyposensitivities
- [ ] Hypersensitivity

LIGHT SENSITIVITY:

- [ ] Hight
- [ ] Variable
- [ ] Neutral

NOISE SENSITIVITY:

- [ ] Hight
- [ ] Variable
- [ ] Neutral

TOUCH SENSITIVITY:

- [ ] Hight
- [ ] Variable
- [ ] Neutral

Specify the textures or materials that cause discomfort:

.....

VESTIBULAR HYPERSENSITIVITY:

- [ ] Yes
- [ ] No

FEELS PAIN:

- [ ] Yes
- [ ] No

OTHER INFORMATION:

.....

.....

.....

COMMUNICATION AND SOCIAL INTERACTION

ATHLETE'S MODE OF COMMUNICATION:

- ☐ **NON VERBAL COMMUNICATION:**
  - ☐ Tablet
  - ☐ Langue des signes
  - ☐ Images or pictograms
  - ☐ Written
- ☐ **VERBAL COMMUNICATION:**
  - ☐ Words
  - ☐ Sentences
  - ☐ Makaton (Signs, pictograms and words)
- ☐ **NO COMMUNICATION**

Other, specify: .....

If pictograms or images, specify name of image bank:

.....

ATHLETE'S MODE OF EXPRESSION:

- ☐ **NON VERBAL :**
  - ☐ Sounds
  - ☐ Cries
  - ☐ Gestures
  - ☐ Pointing / Showing
- ☐ **VERBAL :**
  - ☐ Words
  - ☐ Sentences

Other, specify: .....

SOCIAL INTERACTIONS:

- ☐ Avoid contact
- ☐ Contact-seeking
- ☐ Interaction with few people
- ☐ Imitation
- ☐ Physical contact possible
- ☐ Comfortable with interactions

COMMUNICATION AND SOCIAL INTERACTION

MANIFESTATION OF NEEDS:

Hunger	
Fatigue	
Taking a break	
Cleanliness (toilet, hand washing…)	
Thirst	

MANIFESTATION OF FEELINGS:

Anger	
Pain	
Joy	
Satisfaction	
Stress	
Sadness	

COMMUNICATION AND SOCIAL INTERACTION

MANIFESTATION OF CHALLENGING BEHAVIORS (HITTING OR KICKING, SHOUTING, RUNNING AWAY, ETC.):

.....

.....

.....

.....

.....

BEHAVIORS TO ADOPT IN THE EVENT OF CHALLENGING BEHAVIORS (BREAK, BREATHING, MUSIC, COMFORTER, ETC.)

.....

.....

.....

.....

.....

OTHER INFORMATION (ALLERGIES, PHOBIAS, ETC.) :

.....

.....

.....

.....

.....

SHEET 2 - MOTOR SKILLS

KNOWLEDGE:

The athlete knows where is the:

- ☐ Head
- ☐ Hair
- ☐ Eyes
- ☐ Ears
- ☐ Mouth
- ☐ Arms
- ☐ Back
- ☐ Nose
- ☐ Hands
- ☐ Stomach
- ☐ Legs
- ☐ Feet

The athlete knows the colors:

- ☐ Yes
- ☐ No
- ☐ Partially

The athlete knows the numbers:

- ☐ Yes
- ☐ No
- ☐ Partially

PREFERENCES:

I LIKE	I DON'T LIKE

PHYSICAL ABILITIES:

Motor development:

- ☐ Good
- ☐ Average
- ☐ To be developed
- ☐ Hypotonic

The athlete knows how to:

- ☐ Run
- ☐ Blow
- ☐ Jump
- ☐ Bend arms
- ☐ Stretch legs
- ☐ Bend legs
- ☐ Catch
- ☐ Throw
- ☐ Avoid
- ☐ Open and close the mouth
- ☐ Swim
- ☐ Look at a specific point (floor, ceiling, wall...)

OTHER INFORMATION:

.....

.....

APPENDIX

- Annex 3: Sheets used by the ASPTT Fédération Omnisports

Fiche 1:
First contact

Name and surname : .....

Date of birth: ...../...../.....

Chosen activity :

☐ Kidisport ☐ Swimming ☐ Babysport ☐ Other:.....

Availabilities to practise the activity (several possible choices):

☐ Monday ☐ Tuesday ☐ Wednesday ☐ Thursday ☐ Friday ☐ Saturday

Contacts parents :

Tel 1: .....

Tel 2: .....

Mail 1: .....

Mail 2: .....

SOLIDARITÉ autisme by ASPTT

Fiche 2: General presentation of the child

My name is: ..... Year of birth :

My mother: ..../...../.....

My dad: .....

My brothers and sisters: .....

In case of emergency:

Person to contact: .....

Phone number: .....

Host structure	
Type (Sessad, Ulis, MPEA, CAMPS, IME...)	
Name of the structure	
Name and contact details of the referent	

Follow up of the child		
	Name and surname	Contact details
Psychomotrician		
Psychologist		
Neurologist		
Occupational therapist		
Speech therapist		
Physiotherapist		
Others, specify :		

Treatment and/or diagnosis of the child: :

.....

.....

SOLIDARITÉ autisme by ASPTT

Fiche 2: General presentation of the child

Mode of communication with the child :

☐ FSL ☐ PECS ☐ MAKATON ☐ Personal mode

☐ Tablet ☐ Written ☐No or little communication

Others, specify :.....

The child's mode of expression:

☐ Words ☐ Sentences ☐ Sounds ☐ Cry

☐ Gestures ☐ Pointed ☐ PECS workbook

Others, specify :.....

Sensory considerations:

☐ Hypo sensitivities ☐Hearing ☐Visual ☐ Gustative

☐Hypersensitivities ☐Epidermic ☐Vestibular

☐ Search for sensory sensations:.....

Relationship with others (Physical, sensory and social interaction) :

☐ Avoid contact possible ☐ Doesn't know how to deal with peers ☐ Search the contact ☐ Physical contact ☐ Imitation of peers

How I manifest my desires:

CLEANLINESS (autonomy)	
FEAR	
HUNGER (particularity)	
PAIN	
COLD	
FATIGUE (sleep well at night)	
THIRST	

How I manifest my emotions :

JOY	
SATISFACTION	
DISAPPOINTMENT	
SADNESS	
ANGER	
FRUSTRATION	

Others important informations to communicate to us (allergy, phobia) :

.....

Fiche 3: Motor skills

Knowledge of the body: *Does your child know where they are ?*

☐ Head ☐ Hair ☐Eyes ☐ Ears ☐ Nose ☐Mouth

☐ Arms ☐ Hands ☐Belly ☐Back ☐ Legs ☐ Feet

Physical skills: *Does your child know how to ?*

☐Running ☐ Climbing ☐Blowing ☐Opening/closing the mouth ☐ Stretching out the arms ☐ Bending the arms ☐ Stretching out the legs ☐ Bending the legs ☐ Looking at a specific point (floor, ceiling, wall…)

Motor development:

☐ Good ☐ Medium ☐To develop ☐ Hypotonic

Additional information:

I like	I don't like
- - -	- - -
I know	**I don't know**
- - -	- - -

In case of a crisis what are the elements or strategies which permit to calm your child? (example: a song, a nursery rhyme, a comforter…)

……

……

……

……

……

……

SHEET 4: EVALUATION OF THE SESSION

Date: .....

Supervisor(s) : .....

Surname and first name of child: .....

Activity practised: .....

Child behaviour :

☐ Enthusiast ☐ Cooperative ☐ Tired ☐ Refuses to practice

Comment:.....

Control of emotion:

☐ No control, sharp, impulsive reactions ☐ Good control

☐ Low/Medium control, comments taken into account ☐ Full control

Comment:.....

Relationships with others:

☐ No or few relationships ☐ Relations conflictuelles

☐ Relation exclusive avec l'adulte ☐ Confiante (coopération et échanges)

Comment:.....

Understanding instructions:

☐ Does not understand ☐ To be developed ☐ Good

Comment :.....

Axis of work:

.....

.....

.....

SOLIDARITÉ autisme by ASPTT

Report on the Sports Years and the relationship with others

Surname and first name of child: .....

Activity chosen:

☐ Kidisport ☐ Swimming ☐ Babysport ☐ Other:.....

Practice day:

☐ Monday ☐ Tuesday ☐ Wednesday ☐ Thursday ☐ Friday ☐ Saturday

Regular attendance:

☐ Yes ☐ No

1st year	
Balance	
Jump	
Catch	
Launch	
Opposition	

Move	
Flotation	
Jump	
Immersion	
Breath	
Beat Leg to wall	

Recap	
Recommandation	
Integration	

2nd year	
Balance	
Jump	
Catch	
Launch	
Opposition	

Move	
Flotation	
Jump	
Immersion	
Breath	
Beat Leg to wall	

Recap	
Recommandation	
Integration	

3rd year	
Balance	
Jump	
Catch	
Launch	
Opposition	

Move	
Flotation	
Jump	
Immersion	
Breath	
Beat Leg to wall	

Recap	
Recommandation	
Integration	