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IDEAL: Intellectual Disability and Equal opportunities for Active and Long-term participation in sport

Good Practice Guide for coaching athletes with Intellectual Disabilities

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Section 1: Introduction, Context and Purpose

This Good Practice Guide has evolved from the '**I**ntellectual **D**isability and **E**qual Opportunities for Active and **L**ong-term Participation in Sport' (IDEAL)[1] Erasmus+ European Union funded project. This project involved eight European partners and its main objective was to address inequalities through increasing the quality of sport interventions and structures, empowering young people with Intellectual Disabilities (ID) and improving their physical and mental health. Our part of this project was to review and add to the resources that are available to coaches working in this area. This guide is the product of that work and we would like to acknowledge the kind contribution of all the athletes and coaches who shared their experiences and expertise.

Using this Good Practice Guide

The content of this guide is based on a comprehensive and in-depth review of the current resources available to this specific area of coaching. After carrying out extensive web and database searches, over 100 resources comprising coaching manuals, courses (including E-learning), textbooks, journal articles, web pages and information booklets were sourced. Each was reviewed and information beneficial to coaching ID athletes was extracted. Some resources we were not able to include as they were not in English, but were included in the database which you can access by visiting [INSERT DATABASE LINK]. Interviews also took place with coaches and athletes who had expertise across a range of sports to gain their experiences, examples and resources to further expand these ideas about good practice. We have then placed these suggestions within the context of theory to help coaches generalise practice across different contexts.

The target audience for this Good Practice Guide are coaches that are currently or interested in coaching athletes with ID, from grass roots to elite level. It may also be useful to Physical Education teachers, volunteers that work with individuals with ID, event organisers or those proving sport and exercise opportunities. The information contained within these Good Practice Guidelines may also be beneficial for parents or carers of children/young people with ID wishing to engage in sport as both a recreational and a developmental activity.

The Good Practice Guide focuses on several key coaching areas for athletes with intellectual disabilities.

> **Section 2: Inclusive Sports Practices**. Approaches that promote a more inclusive sporting environment for all athletes are presented, with examples of how each approach can be applied across a variety of sports. The aim of this section is to suggest ways athletes with ID can be fully included in any training session and with any level of athlete, which increases their access to high quality coaching and includes them in potentially all activities.
>
> **Section 3: Cognitive Factors and Sports Performance**. This section describes the impact that having limitations in intellectual functioning may have on sporting performance, including learning, motor control, planning and monitoring skills It

[1] To learn more about the IDEAL project visit www.idealproject.org

provides suggested adaptations to compensate for these difficulties, using specific examples from coaches' experiences.

Section 4: Effective Communication. Many athletes with ID have problems with communication and good communication is a fundamental to coaching success. This section will outline some of the common problems and how communication between the coach and the athlete can be enhanced.

Section 5: Psychosocial Factors, Engagement in Training and Sports Performance. Motivation, teamworking and self-discipline are all important skills for the athlete and this section outlines some of the difficulties which may be encountered by the coach and athlete with ID and how such obstacles may be overcome.

Section 6: Self-regulation and emotions. Being able to learn from the coach is vital, but for the successful athlete they also need to manage themselves through self-regulation and managing their emotions. This section covers the theory of self-regulation, how it applies in the coaching context and how it may be made useful for athletes with ID.

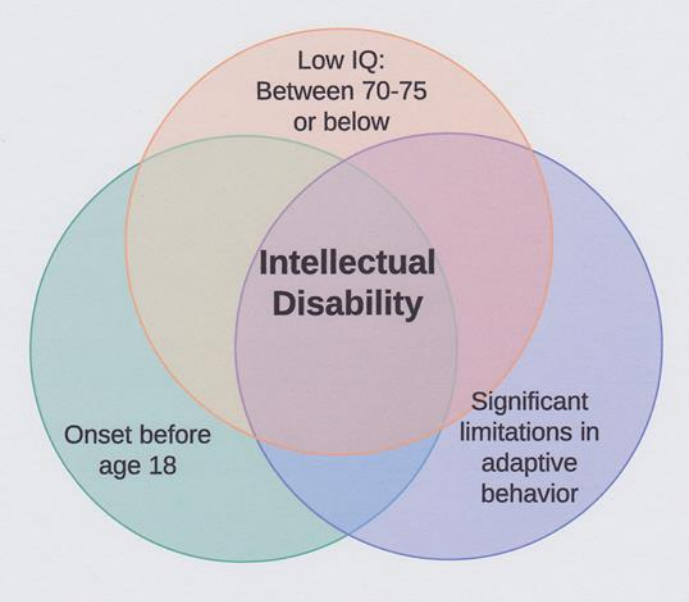
Within each section we have tried to provide concrete examples of practice, recommendations and tips. If you want to find further information about particular topics the references to the bibliography are numbers e.g. (1) if you are reading this electronically just ctrl-click on the number and it will take you to the correct place in the bibliography at the end. Likewise, we have placed hyperlinks in the text to take you to websites with additional resources you may be interested in, e.g. the IDEAL Project website.

It is important to note that while this Good Practice Guide provides general coaching tips and advice, every athlete is unique and their coaching should be approached in an individual manner, tailored to their specific needs.

Definition of ID and Autism

Intellectual Disability (ID) is a neurodevelopmental disorder characterised by impairments in intelligence and adaptive behaviour (daily living skills)(1). Several terms have been used to describe this condition including 'developmental delay', 'mental retardation', 'learning disabilities', and most recently in the latest revision of the World Health Organisation(2) International Classification of Diseases edition 11 a 'disorder of intellectual development'. There are generally three elements required to diagnose intellectual disability: significant limitation in intellectual functioning, significant limitation in adaptive functioning, and the age of onset, required to be before the age of 18.

Impairment to intellectual functioning is generally measured using an IQ test, with a score that is approximately two standard deviations below the mean (less than 70-75 IQ points) indicating significant impairment to intellectual functioning. Limitations to adaptive functioning are objectively assessed, using standardised measures based on the general population for that culture. If such tests are not available within the culture this assessment can be made by clinical observation and interviews with the person and those who know them well. The skills assessed are those used in daily life and usually cover the domains of conceptual, social and practical skills(3). Age of onset is typically understood to be under 18 in order to



differentiate between acquired impairment which has occurred after the main developmental period, for example due to brain injury occurring in adult life.

The degree of ID is sometimes described as mild, moderate, severe and profound. This is based on IQ scores and is used to give a general description of the level of impairment and limitations the person may encounter in daily life, indicating the amount and type of support they may need.

Figure 1:Diagnosis of intellectual disability.

Autism Spectrum Disorders (ASD) consist of a range of conditions typically characterised by a degree of impairment to social functioning, communication and language as well as a restricted range of interests and activities that are carried out repetitively and are unique to each individual[(4)]. ASD begins in childhood and continues into adulthood, with other conditions often co-occurring such as attention deficit hyperactivity disorder (ADHD). ID and ASD sometimes occur together, with the severity of one appearing to influence the severity of the other condition[(5)]. For this reason, this Good Practice Guide can also be applicable to athletes with ID who also have ASD.

For many people with ID the reason they have this condition is unknown, however for some it is a result of a genetic condition. The most common genetic form is Down Syndrome which occurs in about 1 in 1000 births, but can vary from country to country. People born with Down Syndrome may have additional health challenges such as cardiac, musculoskeletal and or sensory limitations, in addition to ID. For these reasons engagement in sport is even more important to remain healthy and some sports clubs and organisations have developed specifically to promote sport in this population.

ID and Sport

Sport for individuals with disabilities may often be referred to as Parasport or Disability Sport. Sport can either be played non-competitively, otherwise known as recreational sport, or competitively, involving tournaments, leagues or rankings against other competitive athletes. For athletes with ID there are several organisations which offer sporting opportunities.

1. **Special Olympics** (www.specialolympics.org) - is a worldwide organisation supporting over 5 million athletes, 1 million coaches and volunteers, in more than 100,000 competitions each year, in 32 different sports, in 170+ countries. The emphasis is on inclusion, health, enjoyment and community.
2. **Virtus** - World Intellectual Impairment Sport (www.virtus.sport - formerly called INAS - International Federation for Athletes with Intellectual Impairments. The aim of Virtus is to provide athletes with an Intellectual Impairment across the world to have the opportunities to achieve excellence in sport and high-level competition. It includes people with ID and those with autism. The emphasis is on building opportunities and

increasing the level of competition at regional and international levels in both winter and summer sports. It is commonly part of the pathway into elite competition at Paralympic level.

3. **Paralympics** (www.paralympic.org) – The International Paralympic Committee (IPC) runs the summer and winter Paralympics and many other international sporting competitions. It acts as the International Federation for 10 sports and manages classification and anti-doping. Competition at the Paralympics is the pinnacle of sporting performance and currently athletes with ID compete in table tennis, athletics and swimming.
4. **Down Syndrome** – there are several smaller organisations specifically for people with Down Syndrome such as the Sports Union for Down Syndrome (www.su-ds.org) which offers international sporting opportunities just for athletes with Down Syndrome. It covers nine sports including one winter sport of downhill skiing.

Inclusion of People with ID in Sport

The context

Despite the well-documented and numerous health benefits of participating in sport and physical activity, combined with the general increased risk of health problems for individuals with ID, (2.5 times more likely)(6), research has shown that people with ID generally lead more sedentary lifestyles and are less likely to participate in leisure time physical activity than the general population[7] [8].

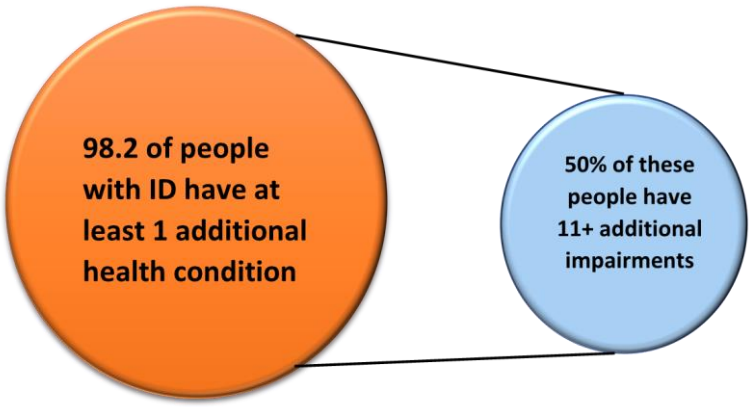


Figure 2: Prevalence of additional health issues in ID population

See Kinnear et al (2017). British Medical Journal Open; DOI: 10.1136/bmjopen-2017-018292

There is also a clear link between the level or number of impairments an individual has and their participation in sport and exercise. The more impairments they have the less exercise they take, exacerbating their health problems.

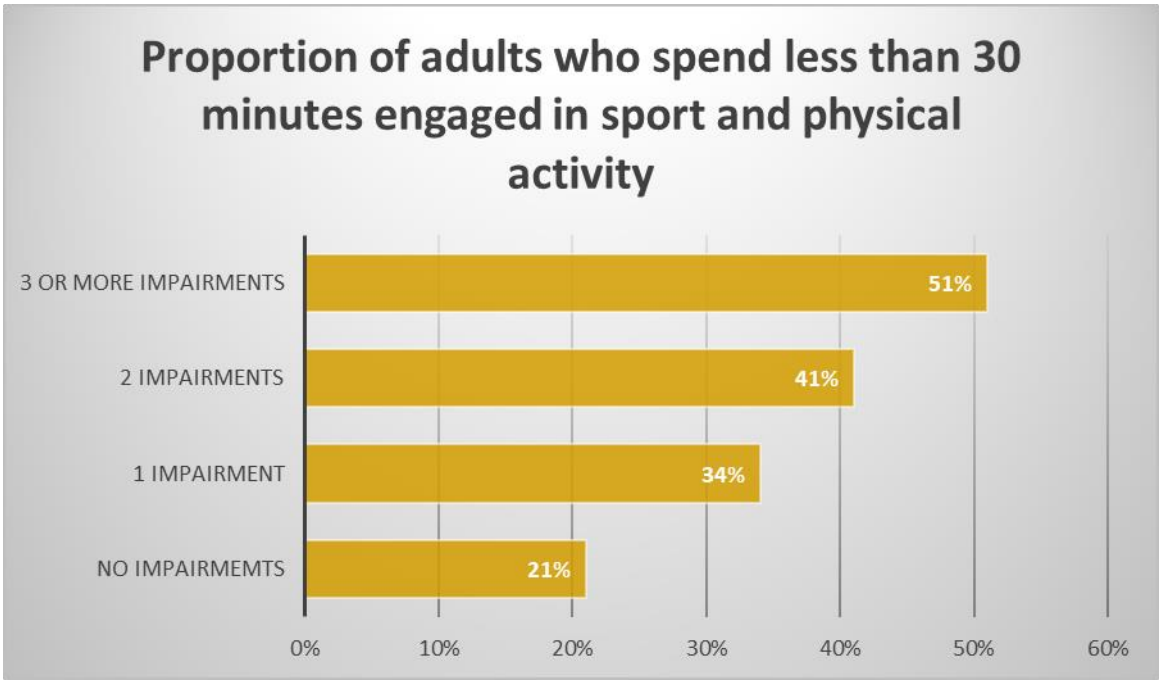


*Figure 3:Levels of physical activity in ID population (**See** Active Lives Survey 206/17 Sport England)*

The prevalence of ID is generally estimated to be at least 1-2% of the global population[(9)]. That means with a population of approximately 7.5 billion people worldwide, there are at least 140 million people experiencing intellectual disabilities. Despite this, research has shown that the number of individuals with ID achieving global physical activity guidelines may be as low as 9%, with severity of ID being a strong predictor of individuals not achieving minimum physical activity guidelines[(10)]. Such statistics suggest that the majority of people with ID are not involved in sufficient physical activity and as a result have higher levels of obesity and other related physical and mental health conditions[(11)] [(12)].

Importance of getting more ID athletes involved in sport

Article 30 from the 2006 UN Convention on the Rights of Persons with Disabilities[(13)] emphasised the importance of increasing the low percentage of individuals with ID currently participating in physical activity by outlining their right to equally participate in sport, physical activity and recreational pursuits[(14)].

There are numerous benefits attached to increasing the level of participation in sport for those with ID. These benefits include physiological improvements that are universal to all individuals involved in sport and physical activity such as[(15)] [(16)]:

- Increased cardiovascular fitness;
- Flexibility;
- Muscular strength;
- Reduced risk of illnesses such as coronary heart disease, diabetes, obesity and certain types of cancer.

As people with ID display generally lower levels of overall physical fitness as well as more specific issues such as limitations in muscular strength and range of motion, when compared

to individuals without ID[17] [18] it is paramount that more people with ID are encouraged to get involved in sport.

There are also social and psychological benefits to participating in sport that are specific to individuals with ID[19] [20]:

- Instilling a sense of belonging;
- Creating companionship;
- Developing relationships with others;
- Providing a sense of achievement;
- Improving social and communication skills;
- Creating a sense of autonomy and independence;
- Improving feelings of self-esteem and self-worth.

Why are most individuals with ID not involved in sport?

Numerous barriers exist for individuals with ID that may prevent them from having equal opportunities in sports[19] [21] [22] [23]. These can be broken down into practical/policy related barriers, outside the scope of this Good Practice Guide, and educational barriers which are targeted in this Good Practice Guide.

Practical/Policy barriers:

- Lack of choice in sporting activities;
- Lack of appropriate adapted facilities;
- Lack of awareness of options;
- Financial constraints;
- Safety issues;
- Transport issues;
- Lack of clear policies for engaging in regular physical activity in residential services;
- Insufficient staffing resources.

Educational Barriers:

- Lack of knowledge of those teaching physical education or sports coaching on how to interact and adjust for those with ID;
- Not seen as a priority by support staff/carers/families;
- Attitudes of other people (unwilling to engage participants with disabilities, hostility, failure to recognise and accommodate);
- Lack of interest/motivation from individual with ID;
- Intrapersonal constraints (communication problems, challenging behaviour and initial level of fitness);
- Impairment-related issues (lack of coordination, poor concentration, limited capacity to understand rules, anxiety in groups and in new activities).

All these barriers are surmountable, and many of them are not directly related to the actual impairment but due to attitudinal responses and not putting the necessary supports in place.

How can we be more inclusive?

The European Union Disability Strategy 2010-2020 highlights the need to improve inclusion and access for people with disabilities to sport and exercise activities[24]. The World Health Organisation highlights physical inactivity as one of the leading risk factors for death

worldwide and commits to reduce insufficient activity in its member states by 10% by 2025[25]. One such measure involves the provision of appropriate training and adequate education to provide an inclusive setting for young people with disabilities to participate in sport.

The aim of this Good Practice Guide is to provide a resource for coaches working with people with intellectual impairments, including those with ID and autism, to improve their practice and encourage engagement in, and maintenance of, higher levels of physical activity, from the grass roots level to high performance.

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Section 2: Inclusive sport practices

Defining inclusion

Before suggesting how a coach can promote more inclusive practices in their sport, it is important to clarify what we mean by the term **'inclusion'** for athletes with intellectual disabilities. Inclusion in sport refers to adopting a practice that allows for equal participation of all individuals, regardless of disability or any other factor by removing or overcoming potential barriers to an individual or minority group within that sport[(26)]. This is not to be confused with **integration**, whereby individuals with disabilities may be incorporated into an existing mainstream group, providing that they are able to adapt to the requirements of the existing group.

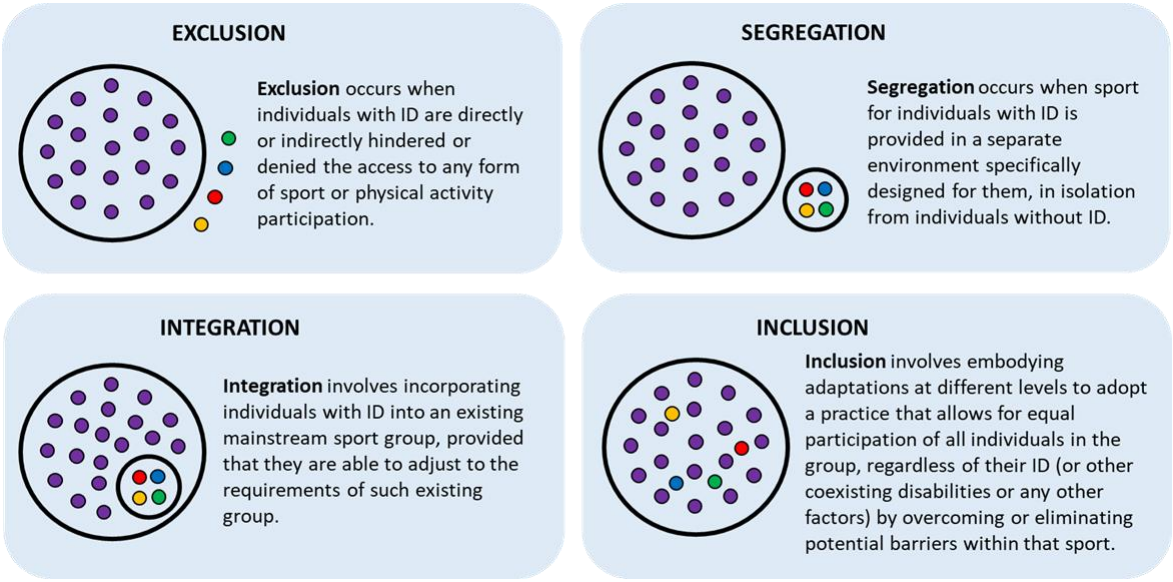


Figure 4: Differences between exclusion, segregation, integration and inclusion in the field of ID-sport. Note. These adjusted definitions are based on the original definitions from the General Comment No.4 created by the UN Committee on the Rights of Persons with Disabilities (2016) for the context of education.

Inclusion, integration and segregation in sport

Full inclusion may be an ultimate aim for people with disabilities in sport, but both integrated and segregated opportunities have their places and can provide positive experiences on the road to inclusion. Segregating athletes with disabilities, i.e. providing a separate coaching environment away from that of mainstream athletes, can provide an opportunity to really focus on the needs of the individual athletes, allowing more specialisation in terms of the appropriate learning environment required.

It may also be a preference of the athlete themselves. Segregation can be beneficial for athletes with ID that are new to a sport or are still becoming familiar with the skill set required. An integrated setting depends on all athletes being able to understand the coaching or instructional style being provided and the rules of the game but can provide an invaluable opportunity to experience a different level of performance.

Experienced coaches suggest taking a 'needs based' approach, setting up the coaching context that is going to best suit the needs of the athlete to learn the skills required. A number of models have been developed to put these ideas into more formal frameworks.

Approaches to inclusion in sport

These models have originated in different parts of the world using slight variations or acronyms to label the model. For this Good Practice Guide, we have included the most prominent approaches that are used both in the disability sport literature and the numerous coaching resources for athletes with ID that have been consulted during the formation of this guide.

The Inclusion Spectrum[27] [28] [29]

The Inclusion Spectrum was established in the UK and was first introduced by Ken Black in 1996[30]. It has since been revised to the current adaptation tool used by practitioners around the world today. The model has been developed for use with all types of disabilities, and while it has not been created specifically for use with athletes with ID, the concept remains the same. The Inclusion Spectrum is an activity-centred approach to the inclusion of young people with a variety of abilities in sport and, more broadly, physical activity. It is based on the idea that inclusion can be achieved through altering the structure in which the physical activity is offered. The benefit to using this framework is the ability to cater for the various needs and ability levels within a single group of athletes, helping to maximise the potential of all athletes involved.

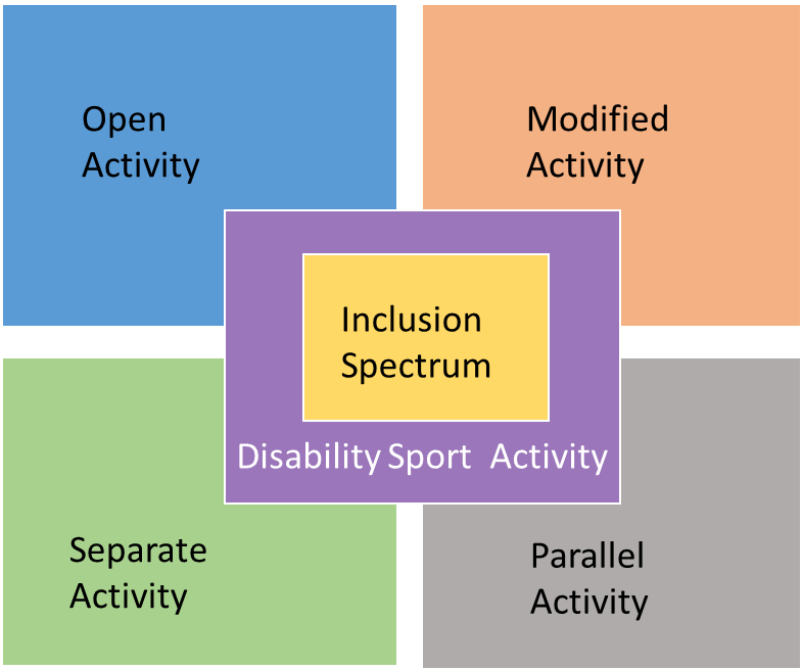


Figure 4: the difference activities involved in the inclusion spectrum

According to the Inclusion Spectrum there are essentially 5 different methods in which an activity can be provided for a group of athletes with varying ability levels. For the purpose of this guide we will focus on how this can be adapted specifically for athletes with ID.

1. **Open Activity** - Everyone can participate in the same activity, without requiring adaptations or modifications to include athletes with and without ID.

Example: incorporating all athletes into the same warm up and cool down routine during a training session

2. **Modified Activity** - This type of activity requires changes or modifications to the activity in order to allow all athletes to take part together. The activity may be modified in terms of the environment or equipment used in order to promote inclusion. It is important to note that adaptations can be implemented in order to both support and challenge athletes across a range of abilities and does not always involve lowering the difficulty level for a certain portion of the group. There are techniques to structure modified sessions in this way, such as the STEPS model (see below).

Example: allow an extra bounce for an athlete with ID during a practice tennis match.

3. **Parallel Activity-** This involves grouping athletes according to their ability level. Each group will work on a similar activity, but in independent groups at a level that suits the individuals within each group. It is important to note that the grouping of athletes may differ according to the specific activity being implemented at that time.

Example: divide a large group of hockey players prior to completing a passing drill, into two smaller groups consisting of those that are more competent at passing (and may be able to complete the drill using fewer touches) and those that are less competent at passing (and may require more time to complete a pass).

4. **Separate Activity-** For specific activities that are not appropriate for inclusion of all athletes and require that the activity or skill be practiced independently or in a group with others of the same ability level. Individuals are encouraged to work temporarily on specific skills to be successfully included into future activities. This type of activity has benefits and drawbacks. It has the potential for athletes with ID to feel excluded from the session, lowering their self-confidence. However, under the right circumstances it can be used to increase a specific skill, raising the individual's confidence to be able to work in a more integrated way later.

Example: Allowing those hockey players that are less competent at passing to work on their passing skills in pairs whilst the remaining athletes compete in a match or more complex passing drill.

5. **Disability Sport Activity** - Involves incorporating aspects of disability sports activities or adapted physical activities into a training session. This provides specific opportunities for athletes with disabilities to get involved with disability sports activities whilst providing a new challenge for mainstream athletes. This comprises a process of **reverse integration**. Mainstream athletes are included in disability sports with athletes with disabilities and may be taught about a Paralympic sport activity by these athletes. This type of activity may help to improve attitudes towards disability sports and raise the self-esteem of those athletes that are proficient in their disability sport.

Example: incorporate an aspect of a popular Special Olympic sport such as Bocce (a form of boules) into a training session, possibly as an initial icebreaker or warm-up. Bocce may not be familiar to mainstream athletes and so incorporating Bocce may involve the athletes with ID teaching and explaining the sport to mainstream athletes and then competing in a situation where those with disabilities may have the advantage.

It is important to note that all aspects of the Inclusion Spectrum can be utilised within a single training session.

STEPS model [27] [28] [29] [31]

The Youth Sport Trust (UK based charity) has developed the STEPS resource material for assisting sports providers in adapting and differentiating activities. The STEPS model refers to an adaptation tool that can be used in a stand-alone capacity to modify training activities or can be used to support the Inclusion Spectrum framework by providing a structure and organisation to activity adaptation and modification. STEPS is an acronym derived from the following words:

Space - Increase or decrease the size of the overall playing area based on fitness and experience level; alter the amount of distance to be covered in training activities in order to suit the level of ability and mobility of participants; use of zoning (matching athletes by ability level in different areas of the pitch) can provide more opportunity to participate.

An example for athletes with ID with mobility issues may be to play football on a half-sized pitch by moving the goal posts to either end of the touchline and playing across the pitch, using the half-way line and the goal line as boundaries.

Task - Provide all athletes with an equal opportunity to participate in a training activity, by deconstructing complex skill training activities into smaller, more

manageable components to allow athletes to learn skills at their own pace. It is also important to provide enough opportunities for athletes to practice any skill that they have learnt, either individually or in pairs, prior to expecting this to be performed in a more competitive environment such as a training match.

For example, athletes with ID may require extra time to practice dribbling in basketball and 'get in the zone' by dribbling up and down the side of the court or on a practice court in pairs, prior to taking part in a full-sided training match or scrimmage.

Equipment - It is possible to alter the equipment that is typically used for a particular sport; by increasing or decreasing the size of the equipment used to suit the ability of the athletes or to enable easier initial practice of particular skills.

For example, changing the size of a ball, such as replacing a regular tennis ball with a starter tennis ball, or by changing the weight of the equipment such as using a tennis ball instead of a cricket ball for practice, or through the use of specialist equipment such as colourful bibs and cones to provide visual aids.

People - It is important to match athletes by ability level during training drills, small-sided games or close marking activities in order to ensure all athletes are able to progress and develop. Within team-based sports it is important to balance teams according to the overall ability of the group. It may also be beneficial to construct unequal teams during training in order to facilitate inclusion and maximise participation while maintaining a certain standard of competition.

For example, a team with a lower overall ability level may be allowed an extra player on their team in order to compensate for this. More generally, it is vital that the coach perceives the ability level, not the disability level, and adjust sessions accordingly.

Speed - The speed at which the activity or skill is carried out may require modification. For example, specific training drills may need to be carried out at walking pace, and slowly built up to a competitive tempo.

For athletes with ID this may mean learning to dribble a basketball whilst walking and then learn to run whilst dribbling. This technique could be combined with training match play by confining all players to walking, allowing more equal play with more skilled members and providing a slower environment to learn more about positioning and set plays.

Research evidence[32] has suggested that the STEPS model may be particularly useful for athletes with autism as a method of providing step-by-step progressions (generally preferred by these athletes) in order to achieve learning objectives by changing the environment, task, tools, or individuals systematically and in a controlled way[33].

Combining the Inclusions Spectrum and the STEPS model

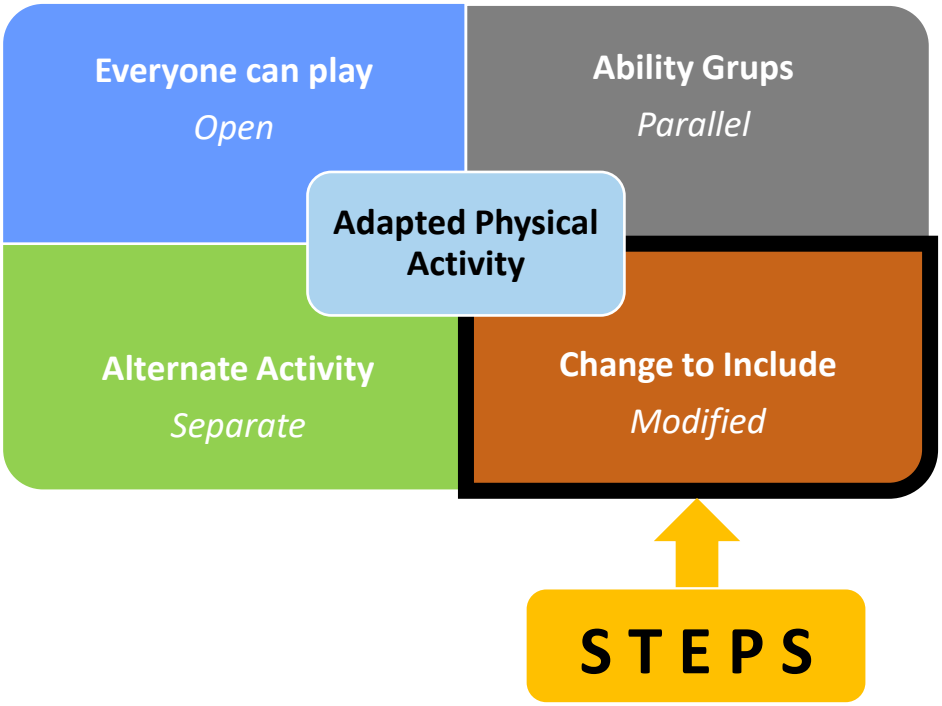


Figure 5: How the STEPS model can be incorporated into the Inclusion Spectrum

As can be seen above, the STEPS adaptation tool can be incorporated into the Inclusion Spectrum framework, particularly when attempting to create modified activities. While the Inclusion spectrum highlights how activities can be separated into different categories, it does not provide the tools to alter these activities. The STEPS tool can be used as a structure to follow when attempting to adapt those activities that require modification.

Example: Let's take a previous example of a modified tennis match between two beginner athletes with ID as an activity.

Space - The size of the court could be shortened from the baseline to the service line in order to require less distance to be covered and increase the likelihood of successfully hitting the tennis ball over the net.

Task - Ask the athletes to work in pairs to practice hitting the ball to each other, away from the net and a competitive environment, to allow enough opportunity to practice their shot performance, movement and selection.

Equipment - The athlete's tennis rackets could be replaced with mini rackets, which have a shorter handle and larger head to increase the likelihood of successfully striking the tennis ball, or use a large tennis ball, or both.

People - Ensure that the two athletes are of similar ability levels, if not it may be beneficial to swap partners in order to increase the likelihood of successful rallies.

Speed - It is important not to push the athletes to progress at a speed they are not comfortable with, they may prefer to continue practicing within their pairs for several sessions before moving into a more competitive stage

TREE Model [(34)]

TREE represents an acronym for a similar adaptation tool used to modify activities, designed by the Disability Sport Division of the Australian Sports Commission. The added benefit of this model is the emphasis on the direct actions of the coach. A series of cards are provided describing various sports or activities, the equipment needed, the skills to be learnt and how to set up the game. On the flip side are suggestions about **T**eaching style, **R**ules, **E**quipment and **E**nvironment.

Teaching style - Involves the method of communication and delivery strategy that is implemented to assist athletes in achieving their goals.

Important factors to consider are:

- The use of appropriate language;
- Providing clear instructions;
- Being aware of all group members;
- Providing visual aids;
- Regularly checking for understanding on the behalf of the athletes.

Example: teach the participants the meaning of different whistled instructions before starting the training

Rules - It may be beneficial to alter or simplify the rules of the sport or activity to facilitate the different ability levels that may be present. For example, manipulating the number of players on a team, altering the distance to be covered in a match-style situation or introducing a novel scoring system that positively reinforces behaviour that approximates a correct action or skill. Another method is to introduce rules one by one into a sport as the athletes begin to understand the concept of the activity.

Example: with players new to a sport that has many rules such as basketball, it may be helpful to introduce rules in a phased manner to prevent the athletes from becoming overloaded with information. Initially, you may not enforce the rule that the ball can only be dribbled with one hand at a time, but rather enforce that the ball must be bounced while running with it.

Equipment - Like altering the equipment, as mentioned in the STEP model, attention is paid to making the equipment fit the needs of the participants.

Example: while teaching an athlete to shot put, consider using a foam ball or miniature football to practice the technique without risk of injury, prior to moving onto the heavier shot.

Environment - includes the space required for the activity amongst other factors, such as required structures and boundaries.

Example: the height of the net on a badminton court could be lowered to increase the likelihood of success initially. ID football can also be practiced on an inside pitch with hard boundaries in order to prevent the ball from going out of play.

This model also stresses the temporary nature of the modifications. These changes are not intended to be permanent, do not necessarily apply to all athletes and should be phased out as and when required. There should always be a consideration of maintaining the integrity of the game, i.e. the activity or sport should not be modified beyond recognition.

For example, practising football inside may be beneficial initially however it is important that athletes with ID are eventually introduced to the boundaries of a football pitch in order to develop more technical and tactical knowledge. An intermediary step could be to instigate 'throw in' when the ball hits the boundary, allowing the ball to still be contained on the field of play, but encouraging the players to keep the ball in touch

SPELL Framework (Autism specific) [35]

The SPELL acronym provides the framework used and developed by the UK National Autistic Society for understanding and responding to the needs of children and adults on the autism spectrum. This is a framework that places emphasis on five principles that have been identified as vital elements of best practice in autism, providing suggestions of methods to change the environment and approach to meet the specific needs of each person on an individual and unique level[36]. This framework can be easily applied to sporting situations.

Structure - Providing a structured environment to training sessions creates an idea of a safer place for an athlete with ID, and especially for those with autism. This can be accomplished using visual information such as a timetable. This also provides a level of autonomy and independence for the individual as they require less prompting, and anxiety can be reduced, as athletes are aware of the next activity or progression in the training session. For example, a coach could provide athletes with a training activity schedule prior to the session so that athletes are aware of the design of the upcoming session. Words could be replaced by pictures, for those who are not so literate.

	Monday	Wens	Friday
6.00-6.20 (20 mins)	Stretching and warming up	Stretching and warming up	Stretching and warming up
6.20-7.00 (40 mins)	Circuit training	Play a match	Practice ball skills
7.00-7.20 (20 mins)	Stretching and cool down	Stretching and cool down	Stretching and cool down
7.20-7.30 (10 mins)	Discuss how things went	Discuss how things went	Discuss how things went

Figure 6: example timetable

More elaborate visual aids can be developed for more complicated activities. For example, in a football training session shown in Figure 5, time will be divided between four activities. Firstly, a game of 2 on 2, followed by a game of soccer tennis to practice in air ball skills, followed by the third component of practicing tackling in 1 on 1 situations, and finally practicing goal shots with oppositional blocks.

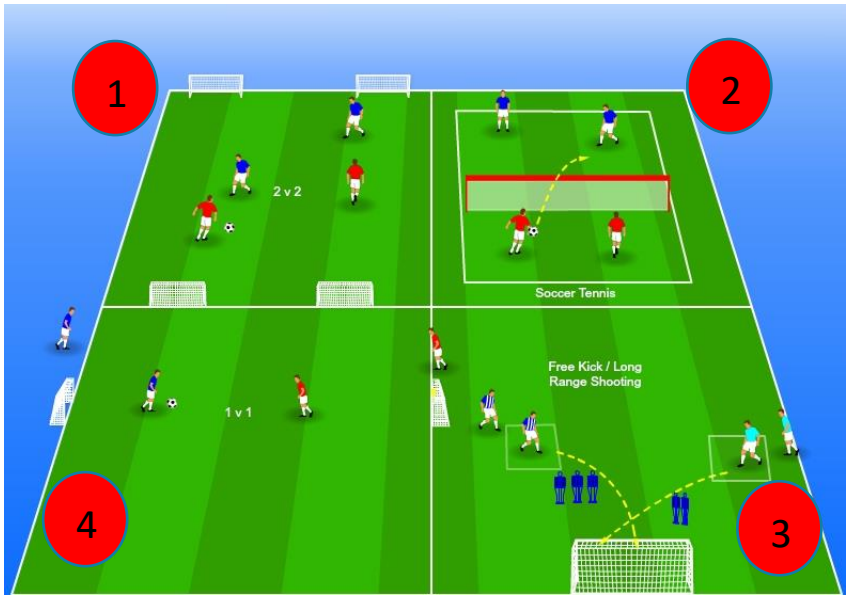


Figure 7: How training activity schedules can be used to make athletes aware of the structure of a session

Positive Approaches and Expectations - It is important to reinforce self-esteem and self-confidence by building training sessions around the athlete's natural strengths, abilities and interests.

- Individuals with ASD are often preoccupied with singular **special interests** (this forms a key part of the '**repetitive behaviours'** that are often displayed by individuals with ASD. These special interests can be used as motivators for training.

  For example, naming stations within a training circuit after something the athlete is familiar with e.g. capital cities and encourage the athlete to visit each place.

- New experiences, activities or skills should be introduced in familiar surroundings to reduce anxiety.

  For example, while attempting to introduce a new training activity such as a new passing drill (e.g. in air passes), relate it to an activity that the athlete is comfortable with and has practised regularly (ground passes), ideally as an extension to a previous passing drill.

Expectations should be high but realistic and achievable. This may require some time to assess the level and ability of the athlete prior to initiating a training session. (see Figure 18:Self-Determination Theory

- Goal setting[41] [42] [54] [70] [71] [74])

  For example, before teaching in-air passes check the athlete know how to kick the ball so it goes through the air not on the ground.

- Assessments should also take place in several forms including speaking with the athlete, speaking with parents/carers, and observations to develop a clear, individual understanding.

  For example, prior to the first training session speak directly with the athlete and ask questions regarding their ability level in terms of the specific sport. It may also be useful to find out if the individual has any other previous sporting experience. It may be helpful to have the parents/carer present during this or alternatively speak to the parent/carer separately. Start with a task you are sure they can do, and then build up in small incremental steps, to get a sense of their capability. Initially, pay close attention to the athlete during training, not just their practical skills, but their social and communication skills and preferences.

- It is important to value the athlete's own point of view, allowing them to contribute to what will be involved in the training session as they may feel excluded if these decisions are taken away from them or they feel they cannot complete a certain task. This requires close attention from the coach to understand the athlete's current level of self-confidence and mood. [37].

Empathy - It is important to see the world from the athlete's point of view. It sometimes helps to develop a 'player profile'. Constructing a player profile consists of gathering as much relevant information about the athlete as possible. For example, their ability level in a range of activities, their strengths and weaknesses, their interests and possible triggers.

Take an interest in what motivates the athlete but also what might cause anxiety, fear or distress. Establish what their preferences are in how they communicate and their preferred activities. Sometimes a person with autism can see a situation very differently and effort might be required to understand their perspective, so try to 'look through their eyes'. This will encourage a more open communication to develop and will increase the quality of the coach-athlete relationship.

Low Arousal - Create a context or environment of low arousal, i.e. reduced stimulation. People with autism often have heightened sensitivities to noise, touch, smell, textures and can easily be overstimulated and create a feeling of being overwhelmed. This and other autistic characteristics mean they also prefer a known structure and dislike change. Sporting environments can be very noisy, overwhelming, unpredictable places. The coach may need to try and manage the environment to reduce stimulation, increase structure and so reduce anxiety and increase focus. Knowing the individual likes and dislikes of the athlete is vital to understand their optimal learning environment.

Other methods for maintaining low arousal and dealing with sensory issues involve:

- **Adapting instructional techniques** to reduce auditory stimulation. For example, in noisy sport rather than add to the noise use visual representations (e.g., hand signals) or cue cards rather than shout verbal instructions;

- **Equipment** may need to be adapted to overcome tactile input challenges such as tactile hypersensitivity, otherwise known as tactile defensiveness, where certain type of touch or sensation can cause distress. It is important to understand what these sensitivities are and adapt accordingly. Certain fabrics (e.g. latex) may cause an aversive response, or a common sensitivity is an aversion to tight clothes so the athlete may prefer not to wear certain sporting attire (e.g. a tight swim cap) or may need time to adjust;

- **Preparation strategies** such as previewing the training schedule, where the athlete is made aware, prior to commencing the training session, of what activities will be involved, can reduce anxiety and better prepare the athlete. This can be done by the coach verbally explaining the structure of the session or by providing the athlete with a written or pictorial schedule, perhaps emailing the athlete the day before, or posting on social media;

- **Physical boundaries** may also be used to define play spaces as this creates visual barriers and can reduce the potential for an over stimulating environment. For example, using colour coded cones to mark out certain areas of a pitch for each activity can help to ease the sensory load on the athlete and provides a sense of predictability. These colours could also be tagged to a common sequence allowing the athlete to anticipate what comes next, green – warm-up, amber – practice skills, red – match play *(38).*

Links - Should be created with the athlete and their wider support network including parents/carers if possible. Valuable information regarding the athlete can be obtained by establishing a positive relationship with all parties. An open communication style will reduce the potential for confusion or misunderstanding and should create a more positive experience for the athlete. A training log could be created and maintained by the athlete with the assistance of the coach and parents can help the athlete to log their training activity outside of coaching sessions. In this way, a connection is developed between the coach, athlete and parents/carers, whilst maintaining as much independence for the athlete as possible. Some coach-athlete pairs like to use digital activity/fitness trackers to share data, especially if the athlete likes using technology.

Why inclusive practice matters: Two case examples

The experiences of a coach moving from coaching in the mainstream to working with young people with ID[39]

Colum Cronin is an experienced basketball coach who moved from coaching in the mainstream to coaching young people with ID and wrote a paper about what this was like. He describes some of the challenges he faced and what he found he had to do to overcome them. Some of the challenges he had not faced before were behavioural issues during sessions, inability to stick to the pre-planned structure of the session, and difficulties in developing an appropriate communication style and rapport. In response, he concluded that it was important that the physical activities employed emphasised fun and were participant-led, rather than being coach-led and sport-focussed. He realized he had to adapt his style to be less structured and more free-flowing, and to have some alternative activities available. It was beneficial to allow the participants a degree of freedom in choosing the activities they would like to participate in, rather than this being determined by the coach. This way rapport, engagement and a trusting relationship were developed, which could then be used to become more sports focussed later.

Calum also describes using some of the techniques described above to adapt games and sessions according to ability level (which required Colum to understand in advance the variety of ability levels present within a session), and pair up athletes of similar ability levels to practice specific skills. For example, within an activity of 'killer', a common basketball shooting activity, different rules were applied to each participant with some needing to score a basket, while others needed to hit the backboard and some just needed to hit the net with the ball. Calum also created 'sessions within sessions', i.e. implementing several different activities within the one coaching session to suit the abilities and interests of the individuals involved.

Calum's story describes how he felt like a 'fish out of water', but by letting go of some of the approaches he had used in the past, he got to know the children more and used play more than formal teaching strategies. This example also provides a real-life account of how inclusion can be increased by using aspects of the various models identified above such as the STEPS and TREE model, including: altering the rules, teaching style and taking a more egalitarian approach in the session.

The Experiences of a Para-Athlete with ID [32]

In an interview for a newsletter of an autism network Jessica-Jane Applegate MBE, an S14 professional Paralympic swimmer and gold medallist, shared her personal experience of what it is like to be an athlete with autism and intellectual disabilities. Jessica explained how her choice of sport was influenced by her autism. She described swimming as requiring less social interaction while training or competing, which she felt better suited her.

Jessica-Jane also described some challenges to participation in swimming competitively which she had to overcome. These included, practical issues such as understanding sets (knowing what pace to swim at, what stroke and for how long), reading session plans (understanding the language and terminology used during a swimming workout), understanding a pace clock, remembering specific techniques, constantly losing count of lengths, concentration being a challenge, forgetting what she had learnt in previous sessions, forgetting pieces of equipment and not always being able to communicate effectively. Jessica-Jane identified that maintaining a set pool

and gym training schedule as being beneficial and changes needed to be managed carefully and shared her demanding schedule:

"My alarm goes off at 4am and I get up and travel to Norwich from Great Yarmouth. In the pool 5:30am – 7:30am. In the gym 7:45am – 8:45am. Eat my breakfast in the car and travel home. Sort out my kits, eat lunch, try to get a nap and then travel back to Norwich. Land training 4:30pm – 5:00pm. In the pool 5:00pm – 7:30pm. Eat my evening meal in the car and travel home. BED!!!"

The routine nature of competitions is helpful to Jessica-Jane, as such events are predictable in terms of what the schedule will involve. Jessica-Jane is one of the most successful Paralympic swimmers with ID, but it has also brought her personal gains as she describes how swimming has helped her to develop self-confidence and has also helped to deal with her hyperactivity as 'swimming burns up a lot of energy'.

Section 3: Cognitive Factors and Sports Performance

One of the primary areas that athletes with ID may struggle with is cognition. Cognition is the process of thinking, sometimes called mental processing. Cognition can be at the conscious level, e.g., trying to remember a telephone number, or unconscious, such as knowing how to drive a car. Cognition requires the interaction between several different abilities such as perception (noticing and coordinating motor actions), attending to the right information (attention) and the use of memory (storing and retrieving information). How these cognitive abilities combine and work together is managed by an ability called 'executive functioning', a bit like control panel.

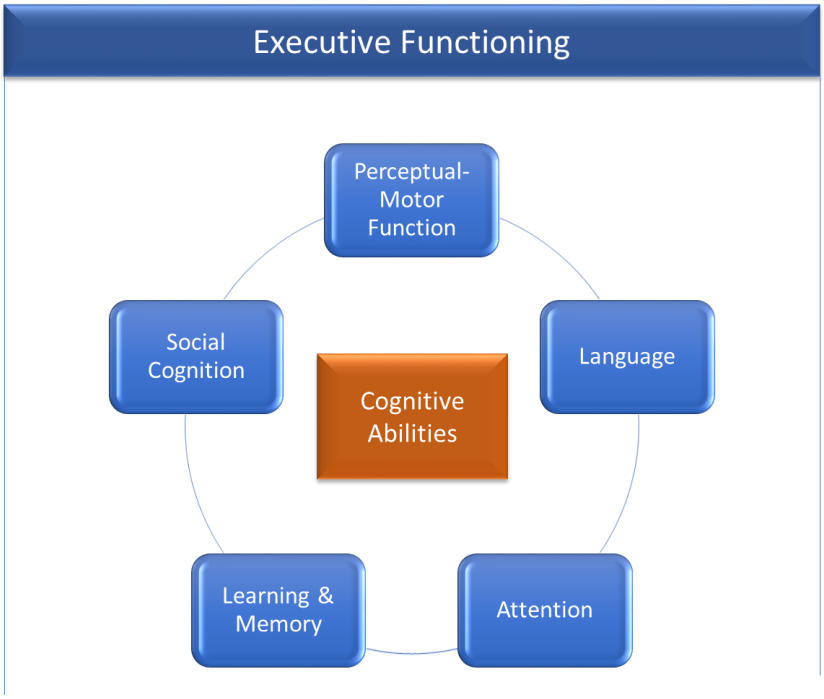


Figure 8:Types of cognitive abilities governed by executive functioning [(40)].

Cognition and learning are inherently linked, in that cognition is the process which results in learning. People with ID may have difficulties in some or all these cognitive abilities, and everybody has strengths and limitations across their cognitive abilities. Each of these areas of cognition are not discrete but have an interactional effect on each other. For example, if your ability to attend is compromised it will impact on your learning, which in turn impacts on your memory.

A brief description of these type of cognitive abilities is shown in the table below.

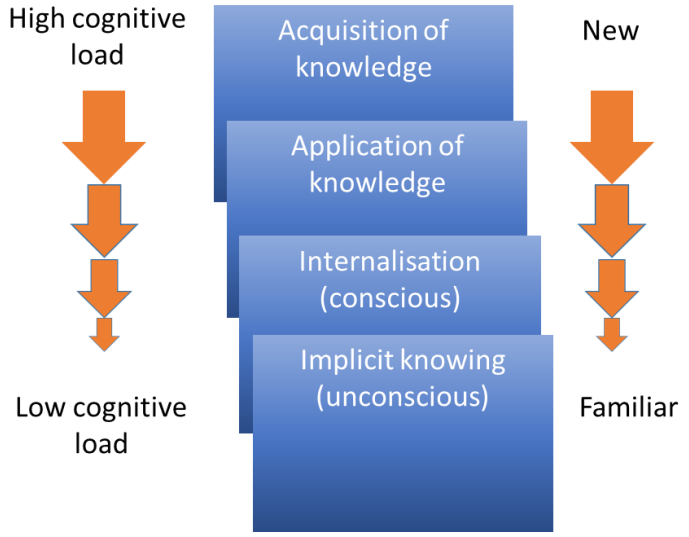
Cognitive Ability	Skills
Perceptual-motor	• Visual perception (seeing) • Auditory perception (hearing) • Kinaesthetic perception (proprioception - awareness of own body movement) • Perceptual motor-coordination (moving)
Language	• Object naming (giving things the right name) • Word finding (being able to find the right word) • Fluency (how well speech flows)

	• Grammar and syntax (knowing how language is constructed) • Receptive language (ability to understand language) • Expressive language (ability to put thoughts into words and sentences)
Social Cognition	• Recognition of emotions (e.g. being able to distinguish sadness, anger etc.) • Theory of Mind (being able to think about thinking) • Insight (awareness, understanding) • Self-evaluation (reflection) • Self-efficacy (belief in ability to succeed)
Attention	• Reaction time (quickness of reactions) • Processing speed (how fast thinking occurs) • Selective attention (being able to attend to the right thing) • Sustaining attention (maintaining attention) • Distraction (not being distracted by irrelevant things)
Learning (acquisition of skills or knowledge) and Memory (expression of what you have acquired)	• Free recall (remembering with no prompts) • Cued recall (remembering with prompts) • Recognition memory (remembering previously encountered people, situations etc.) • Semantic memory (general knowledge) • Episodic memory (recall of personal experiences) • Long-term memory (remembering things from long ago) • Implicit learning (learning without being aware you are learning)
Executive functioning	• Planning (organisation) • Decision making (deciding) • Inhibition (impulse control)) • Flexibility (attention switching) • Self-monitoring (observing self) • Emotional control (managing your emotions) • Working (short-term) memory • Task initiation (motivation)

Table 1: Descriptions of cognitive abilities

All these cognitive abilities are implicated when learning to play a sport, from simple technical tasks such as learning to kick a football, to more complex tasks which combine technique and strategy, such as playing a football match.

A simple approach to viewing learning new skills is **acquisition and application**. Learning acquisition in terms of sport consists of learning new skills, techniques or tactics whilst application refers to the ability to adapt these learnt skills or tactics from a training scenario to a competitive or new situation. As learning becomes imbedded (internalised), the conscious effort required to attend to learning reduces, and learning can then occur implicitly, i.e. without conscious effort. Conscious cognitive processing is a limited capacity in that an individual has only a certain amount which they must direct in the right places. Too much stimulation, i.e. **high cognitive load**, can overload the person and lead to emotional distress and not learning. As learning occurs, the attentional demands decrease and the



person moves from a position of high cognitive demand to **low cognitive demand**, where they can then attend to new learning. People with ID may face some challenges with both acquiring new knowledge and applying learnt knowledge, and managing the context so they learn how best to learn.

Figure 9: Relationship between cognitive load and learning

Learning Acquisition in People with ID

Common issues include[31] [41] [42] [43]:

- Learning occurs at a slower rate;
- Normal amounts of information may be too much to process so it needs breaking down into smaller chunks;
- It may take longer to process information or instructions;
- Motor control and fine movements (muscle memory) may take longer to learn;
- Shorter attention span and/or high distractibility during drills or while receiving instructions;
- Comprehension of language may be more limited so instructions are not always understood;
- Anxiety about failure may obstruct learning;
- Impulse control issues may impede the athlete taking advantage of learning;
- Poor self-monitoring and regulation leads to not learning how best to learn;
- Competing emotional needs (e.g. to please) distract from learning.

Learning Application in People with ID

Common issues include[41] [42]:

- Knowing which skills and knowledge to apply in a new context;
- Struggling to transfer skills from one scenario to another, otherwise known as generalisation of skills;
- Failing to prioritise the right responses in the right order.

Example of difficulty in transferring skills

A new player found it difficult to play their first badminton match because the court lines were a different colour to those they were used to.

General Strategies to deal with Learning Acquisition issues:

1. Repetition[31] [41] [42] [43]

Repetition in terms of providing instructions and implementing training drills is important. The coach needs to consistently reinforce any instructions that they are giving through reiteration of verbal and/or visual demonstrations. This enables the athlete to embed the instructions in their mind while simultaneously easing the strain on their cognitive resources. This can be particularly beneficial when learning a new skill as there is a significant amount of new information to be managed during this process. Repetition can also ensure that an athlete with a shorter attention span has more opportunities to be exposed to the instructions being presented. Within a competitive situation, re-stating tactical instructions also allows the athlete to focus limited cognitive resources on processing information in their immediate environment.

New skills or training drills should also be repeated regularly in order to establish **muscle memory** for the skill or particular movement being practiced. Muscle memory refers to a type of movement which the muscles become more familiar with over time and repetition[44]. Repetition of a skill allows the muscles to repeat the desired movement and thus increase familiarity with the muscular contractions required to create the movement, and with practice a reduction of directed, conscious effort to get the required bodily movement.

2. Provide simple, short and clear instructions and include demonstrations [31] [41] [42] [45]

Providing instructions in a concise and straightforward manner also eases the strain on the athlete's cognitive resources. Any ambiguity in delivering instructions could cause confusion in the mind of the athlete. Well-defined instructions prior to a training drill ensure that the athlete understands what is being asked of them and increases the likelihood that the athlete will be able to complete the drill correctly. **For a new instruction always provide a demonstration.**

Research has shown that some individuals with ID have shorter listening spans (attention) [46], therefore it is also important to keep instructions short. For example, limiting coaching points to a maximum of three short statements will increase the likelihood that the athlete will be able to maintain attention and retain this information.

Example:
A coach noticed an athlete she worked with was slower at processing instructions so she developed a technique of mentally counting to four, after giving an instruction before moving onto the next point, to allow the athlete to think about what has just been said and allow a question if not understood.

3. Allow enough time to process the information [35] [42]

Athletes should be provided with enough time to process the information being given, which may be longer than with other people. As a coach gets to know an athlete they will know the length of time that each athlete generally requires to

process information. They should not move on to another coaching point or activity until the athlete has been given enough time to understand the current instructions.

4. Maintain attention[41] [43]

Athletes with ID may find it hard to attend for long periods of time, especially if fatigued and may be easily distracted. Therefore, to get the best out of a session attention is should be maintained. This may include making sessions shorter and rotating around the groups so all have some 1:1 time. Variation helps to keep the activity fresh and even when learning a discrete skill different activities or stimuli may be used to get the same result. For example, using different targets when trying to improve shooting accuracy. Known drills, or exercises may be combined into a circuit with different stations addressing different skills to also maintain attention.

5. Check regularly for understanding [42] [43]

A coach should not assume that the athlete has understood the information provided simply because they have not expressed any concerns. Particularly in the initial stages when an athlete may be unfamiliar with their coach, they may not feel comfortable expressing themselves verbally or disclosing that they have not understood. Gently, probing and asking questions about the instructions provided ensures that the coach is aware of the current understanding of the athlete, and if needed to go back and repeat some steps. Sometimes, asking the athlete to repeat back what they have been instructed to do, both repeats the information and checks for understanding. Or if the athlete has lower verbal skills or is reticent to speak physically demonstrating and asking them to copy can provide feedback on understanding.

6. Model skills using a variety of methods[31] [41] [43] [47]

When presenting skills or specific techniques to an athlete, it is important to utilise a range of methods to maximise the potential for the athlete to understand the skill. When possible use a visual demonstration at the outset. A coach should ideally be able to provide a visual illustration, a verbal explanation, and a physical demonstration, to make use of auditory, visual and kinaesthetic methods.

'Showing while saying'

Showing the athlete while telling the athlete what you want them to do. This maximises learning at the start and ties the verbal instruction to the visual demonstration making it clearer what the verbal instruction means. In terms of memory it also links the physical movement to the words of the coach making it more likely the athlete will recall the instructions when carrying out the physical action.

7. Consistent structure and routine to sessions [31] [41] [42] [43]

Athletes with intellectual disabilities and athletes with autism in particular can be reluctant to try a new activity or embrace changes to their routine. Therefore, it is important to maintain a regular and predictable schedule to training sessions. Whilst it will always be necessary to make changes to training sessions such as introducing new drills or progressing current activities, in order to further develop the athlete's abilities, the new drills should be introduced gradually and into the current session framework. Progressions should also be easily recognisable for the athlete, using subtle differences. It is also important to maintain a consistent training schedule, where possible. In Section 2, Paralympic swimmer and gold medallist, Jessica-Jane Applegate MBE pointed out the benefits for her of keeping to a strict training routine [32].

Example: try to maintain a consistent broad structure to training such as warm-up – stretching - technical skills training - tactical skills training - cool-down. Use the same parts of the sports hall to perform these

8. Make participants aware of upcoming transitions [31] [35] [41] [43]

As athletes with ID or autism can find changes to their routine or training schedule disruptive and/or anxiety provoking, any upcoming changes should be communicated to the athlete in advance of implementing the changes. An example of this would be to inform an athlete a week in advance to any modifications to their training schedule, and then remind them again before starting the session. It is also important to make athletes aware of alterations to specific training drills. A useful way of doing this is through 'now and next' transition slides to indicate what the athlete is currently working on and also what the next activity will be. Providing a verbal instruction that the current activity will be ending shortly also eases any potential stress on the athlete. During new training drills it may also be helpful to walk through the activity with the athlete in order to aid the athlete in anticipating what will come next within a drill or what they should expect at each stage.

9. Develop a profile of the athlete [42] [48]

Based on the athlete's level of impairment, a specific and unique profile should be developed by the coach as early as possible in order to better understand the ability of the athlete. This profile should outline the ability of the athlete in terms of learning/cognitive, physical/motor and social/emotional aspects, along with previous experience and outcomes based on this experience. It may also include any communication preferences and specific likes and dislikes. This allows the coach to align their training methods to the profile established of the athlete. Developing such a profile together can help to develop the coach-athlete relationship early on.

10. Differentiate learning and think outside of the box [28] [41] [43] [47] [49]

Based on the establishment of the athlete profile, learning should be specific to each athlete, and therefore training should occur at the level appropriate for the athlete.

The later Section 'Scaffolding learning' describes how learning supports can also be used initially and removed as skill mastery occurs. In order to teach at the level of the athlete, a coach may be required to 'think outside of the box' to problem solve training issues and individualise training methods for the athlete. This requires a high level of flexibility from the coach in terms of delivery and a good understanding of the athlete.

Swimming Example: an athlete may struggle to understand stroke rate, an important component of understanding pacing in swim coaching. To overcome this, a coach could focus on stroke count, i.e. the number of strokes an athlete takes to swim a length of the pool. Initially, it may be helpful to teach this over a shorter length in the pool (for example swimming half the length). Once the athlete understands how to pace themselves using a certain number of strokes to swim half of a length, then try to get the athlete to swim at the same pace to complete a full length. Essentially this teaches the athlete about stroke rate without the athlete requiring an understanding of strokes per minute.

11. Plan drills that align to developmental age rather than chronological age [42] [49]

Similarly to building a profile of the athlete, it is important for a coach to understand the level or severity of impairment of their athlete and consequently tailor their training style to match this. Training activities and communication styles should align with the athlete's level of impairment. However, it is important to note that a coach should never talk down to an athlete despite their perceived developmental age or impairment, but rather should utilise drills and delivery methods that are appropriate to the athlete's level of understanding in an age appropriate and respectful way.

12. Determine level of pre-requisite motor skills prior to initiating training [29] [42] [48] [49]

Similarly, to points 7 & 8, it is imperative that the coach determines the baseline motor skill requirements of their particular sport and the relevant motor skill capability of a novice athlete prior to commencing

It may be useful for the coach to develop a resource pack of activities and assessments *that could be used to assess specific motor skill and ability level before initiating training. This might include balance, fine motor control, reaction time, accuracy of throwing, upper and lower body strength, flexibility, etc.*

training. If an athlete does not possess the minimum motor skill requirement, then it would be beneficial to train and improve these skills before starting training the technical aspects of the desired sport.

13. Chart progress against athlete's own base level, rather than just correct skill performance [(41)]

Particularly for novice athletes, it is important to provide positive experiences during training. Therefore, the coach should encourage the athlete to see their own progression path, rather than comparing novice performance to correct skill performance. Progression may be slower for this group of athletes and so comparing improved individual performance against past individual performance puts a positive frame around progress, whereas continuously comparing performance against the ideal may suggest repeated failure, reducing motivation. Obviously, as the skill level of the athlete improves, then it becomes more important to approximate the correct technique during skill performance.

Scaffolding Learning

For learning to occur well a scaffold of support needs to be built around it, so that achievable, incremental steps are taken which progress the athlete but do not stretch them too far. Learning is then positive, stimulating and developmental. In learning theory this principle is known as the **'zone of proximal development'**, developed by the Russian Psychologist Vygotsky. To put the athlete in this optimal learning zone they must be presented with tasks they cannot do on their own, but with the support of the coach can be achieved. 'Scaffolding' is the support structure built around the student to help them through the zone of proximal development.

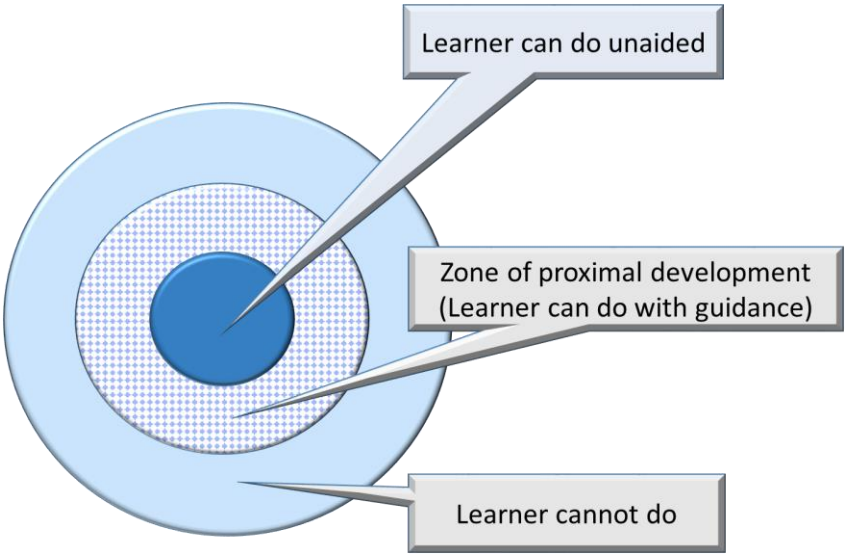


Figure 10: Zone of Proximal Development

Example from hockey.

PLAYER CAN: Stop and hit the ball

PLAYER CANNOT: Dribble the ball

SCAFFOLDING: Coach builds a course using cones through which the player needs to dribble, as they get more skilled the coach brings the cones nearer together (Zone of Proximal Development).

Examples of learning supports:

- **Environmental supports** can provide information to the athlete in the context of their learning [(52)]. Researchers have suggested the following type of environmental supports can benefit the learning of individuals with ID and autism [(47)]:
    - **Temporal** supports aid the understanding of the sequence of events over time.

      Examples include:
      1. *Timers and schedules to indicate the start and end of an activity or session. Schedules can be used to indicate the sequence of activities within a session or to break down the steps of a single activity.*
      2. *Verbal or visual indication of the activity to be completed, and the preferred activity that will follow it, i.e. "first… then…".*
      3. *Count downs to display how many repetitions are left to complete.*
      4. *Wait cards to be held by athletes to provide a reminder that they must wait for their turn.*

    - **Procedural** supports depict the steps in an activity and how these steps come together to make a whole activity

      Examples include:
      1. *Schedules (or visual depictions) of steps or sequences required to complete a complex skill.*
      2. *Rule or behaviour scripts provide a visual depiction of the rules to be followed during a training session. This can provide tips to help athletes manage their behaviour.*
      3. *Name tags or colour coding can identify equipment that belongs to each athlete, as well as indicating the equipment that is present for use by everyone.*

    - **Spatial** supports help athletes to better understand how the learning environment is organised to ease the strain on cognitive resources.

Examples include:

1. *Arm's length can be used for young athletes to give each other an appropriate amount of space for safety and social comfort.*[2]
2. *Divide up the space into various zones such as practice areas and break areas. Colourful cones can be used to provide visual cues regarding the boundaries of the training areas. Alternatively, lines on a court or field can be used to divide up space for various activities.*

- **1-1 direct instructional supports** include the educational strategies that a coach can employ while providing instructions to their athletes with ID during sessions. For example:
    - Use brief and focussed language while giving initial instructions and as you work on the skill or activity with the athlete. The simpler, the better!
    - Ensure that the athlete's attention is appropriately directed to the object or activity prior to delivering instructions about the object/activity. This allows the athlete to link the instructions to the activity, *e.g., look, target, aim, kick.*
    - Offer your athletes choices regarding the training session, but do not make these too complex, e.g., "which would you like to practice next, shooting or dribbling?". This gives the athlete a sense of shared control, so they are more likely to give their best and pay attention. When motivation is an issue, it may be helpful to phrase your offer of a choice in a way that does not allow for a 'no' response. For example, allow an athlete to choose which team they will be on by holding up two different coloured bibs or two different activity cards.

In the next section, specific learning techniques such as chaining and prompting will be introduced as methods of providing direct instructional support to your athlete.

Applying Behavioural Analysis and Learning Techniques

There has been a lot of research into teaching people with ID new skills, all of which are very applicable in the sports coaching context. The first technique, **Task Analysis**, describes how to break the acquisition of a new skill into trainable parts and the following techniques,

[2] Copyright Adrian Asagba

Prompting, Reinforcement, Chaining, Shaping, and Error Reduction Training are techniques to then help the athlete learn the new skill.

For many of the learning strategies mentioned below, it is often helpful for the coach to carry out a **Task Analysis**[47] of the skill to be learnt prior to coaching it to the athlete.

Task Analysis

A task analysis This refers to the process of breaking down a skill into its smaller component parts or teachable chunks. This technique is often used in teaching new skills, but when working with athletes with ID the chunks may need to be smaller, more explanation may be needed, especially demonstrations and more repetitions before the skill is learnt.

The coach needs to know the athlete well to establish the level of incremental steps that keep the athlete in the 'zone of proximal development' (see Scaffolding Learning) and builds on the skills in which the athlete is already competent. Hence, whilst the task may be common, e.g. completing a swim turn, how it is taught may be an individualised process. There are usually several steps to this process.

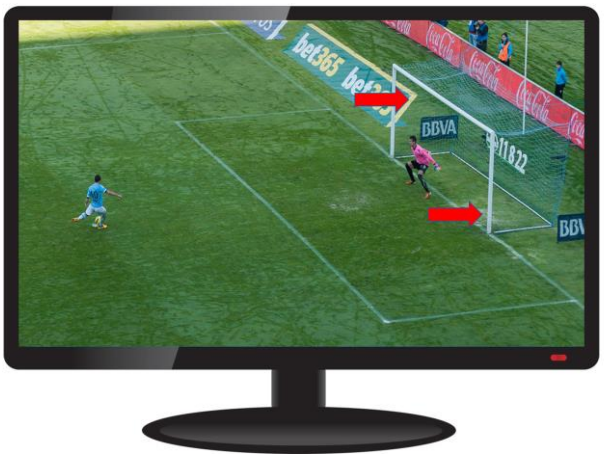
1. Identify the target skill

Example: teach how to take a penalty shot in football.

2. Identify the pre-requisite skills

Example: know what a penalty is, to place the ball on the penalty spot, how to kick the ball well, what makes a difficult shot to save (placement, velocity, etc.).

Tip: watch a recording of a football match with penalties and stop the recording at specific points such as just before the player places the ball and guess where they place it to learn about the penalty spot, or just before the shot is taken and guess where they think the player will shoot, to learn about good shot placement.



3. Break the skill into its component parts

Example: Strategy (goalie, target), place the ball, the run up, aiming, kicking the ball.

4. Agree how the skill will be taught

Example: work on targeting first, place some targets in the goal, without goalie, practice without run up, then move to run up to increase velocity. Change the position and size of the target to increase difficulty.

Figure 11: Improving penalty shots

5. Implement and monitor progress

*Example: a footballer finds getting lift to the ball difficult, so first place the target in left and right low corners, once she has mastered **direction** the targets are increasingly moved towards the top bar as her skill increases and she learns how to give the ball **lift.** Including a run-in then adds to **velocity.***

Prompting [47] [53]

Prompting involves the coach encouraging the desired response from the athlete and can be achieved using a variety of methods.

1. **Modelling** - the coach either demonstrates the entire skill or part of the skill. Asking an athlete with similar characteristics (such as height and age) to model the skill for novice athletes can also help as it shows the skill is achievable. Off pitch training can also use video modelling, i.e. a video of the coach or athlete demonstrating the skill can also be useful in acting as a prompt. This is a useful technique as the coach can name the components of the task as they are performed and stop the video to demonstrate particular positions/actions at various points in the sequence [54]. '**Modelling bigger'** [47] involves exaggerating movements to make the requirements more obvious to the athlete.

Verbal feedback is helpful after an athlete attempts to model a skill. This should include praise, as well as specific feedback about what the athlete did well and further specific encouragement aimed at improving the performance.

For example, giving feedback after a shot put throw - "Good job with that throw, I liked how you finished really close to the board! This time lets also try to really stretch out your body as you release the shot."

2. **Visual Prompts** - include pictures, videos etc. that provide the athlete with information on how to perform the skill. These can be available in the learning environment in order to serve as prompts that remind the athlete of the skills to be performed[(38)]. For example, having a laptop/tablet/mobile phone with the video of the demonstration available so the athlete can check what they are doing. This can also be useful while completing circuits or a session involving multiple activities at various stations. Digital aids such as apps on mobile phones can be used to remind athletes of what comes next or to model the action the athlete needs to copy. Hand signs can also be very helpful, but it is important that the meaning of the signals are taught in advance.

3. **Physical guidance** - A coach may physically move the athlete into a certain position in order to aid the athlete in producing the target movement. This can range from full physical prompting throughout the whole movement, or partial prompting such as a hand placed lightly on an athlete's arm.

   It is important to ask the athlete if this is ok in advance, especially as some athletes with autism may find physical touch uncomfortable.

> *Example: a coach can gradually increase the time between asking an athlete to putt a golf ball (including steps from the point of taking the ball and setting it down right through to putting the ball) and providing extra verbal or physical prompts (moving a body part) that enable the athlete to complete the skill correctly, until eventually the athlete is able to complete the skill without requiring any prompts. Prompts may include instructing the athlete where to position their feet or physically moving the athlete's hands into the correct position on the golf club.*

4. **Maximum-to-minimum prompt reduction strategy**[(55)] - involves teaching a skill initially accompanied by a high-level prompt such as verbal instructions combined with strong physical guidance. Once the skill is correctly performed at this level then the level of prompt is incrementally reduced. For example, the physical prompt will change from physically moving the athlete into the correct position, to gently prompting them to move their own body in the correct manner. As the athlete successfully completes the skill at each level of prompt, the prompts are further reduced until eventually all prompts are faded and removed. Referring to Scaffolding Learning**,** fading the prompts is like taking

the scaffolding away as the structure/skills becomes stronger and can sustain itself. This technique has been implemented with great success in research studies with individuals with severe intellectual disabilities, such as in the training of a side-foot pass in football[55].

5. **Time delay prompting** – a prompting procedure whereby a delay is interposed between the stimulus and prompt in order to reduce the need for, and eventually eliminate the prompt altogether. The time delay can either be constant (delay time remains the same) or progressive (the delay is gradually increased). In order to successfully introduce time delay prompting, the coach must establish each step involved in producing the skill, and be prepared to intervene if a step is completed incorrectly or is missed[56].

Positive Reinforcement[43] [53]

Positive reinforcement refers to the addition of stimuli following a behaviour or response, that can increase the likelihood of a specific behaviour or response happening in the future. These positively reinforcing stimuli are often called **rewards**. Within coaching, a typical example of a reward is verbal praise. Verbal praise can act as a type of performance feedback[57]. Within motor skill learning, the addition of verbal praise from the coach to the athlete following a correct movement increases the probability that the athlete will repeat the movement in the future. Other rewards can consist of visual stimuli such as stickers or gold stars, musical reinforcement (for example playing a clip of an athlete's favourite song after completing a movement correctly) or social reinforcers (a smile or thumbs up could socially reinforce a skill).

Research has shown that both **performance feedback** and **positive reinforcement** can successfully improve learning and performance in athletes with ID[57]. A choice of prize (such as a healthy snack, sports drinks, choosing the next activity or colourful stickers) preselected by an athlete and provided immediately following successful performance acted as a positive reinforcer. Rewards are best used in early skill development and then faded out as the athlete becomes more competent, otherwise the they may only display the skill when they know they will be rewarded. Sometimes it helps to train the athlete to move from **extrinsic** (external reinforcement e.g., the coach saying well done) to **intrinsic** (internal reinforcement e.g., the athlete learning to use '**self-talk**' to tell themselves they have done well). Likewise, rewards can be stretched to require more unrewarded activity before the reinforcement is given e.g., the complete exercise circuit is finished before the athlete is praised, rather than after each exercise [41].

Shaping

This is a type of reinforcement whereby behaviour that approximates the correct response is reinforced to direct future responses towards the target response[48]. In terms of coaching this can be used to reinforce successive approximation of a correct motor skill movement until the correct pattern has been learnt. It can be helpful to develop a shaping hierarchy, based on the various steps or requirements of a skill. Start from the most basic aspect that the athlete should be able to do initially and then attempt to advance the movements progressively through each step of the hierarchy [58].

Example of shaping in basketball: When learning to complete a bounce pass in basketball, the skills are first broken down into the component parts (task analysis). Then each successive movement the athlete makes that approximates the overall correct movement is reinforced through verbal praise. Initially, the coach may praise the athlete for completing one part of the skill correctly, however, following this they should only praise attempts that are becoming progressively nearer to the desired behaviour. This way the athlete is only reinforced when they demonstrate a progression to the target skill.

Stimulus control shaping. This is a specific type of shaping that starts with some sort of stimulus-response which occurs naturally, and then is used to start to develop a new skill, by building on an existing and easily occurring behaviour. It is a useful approach as it starts from a positive beginning with something the athlete can already do and so inspires confidence and motivation. The behaviour is then modified by small incremental steps, 'shaping' the behaviour to more an increasingly accurate representation of the desired behaviour.

Stimulus Control Shaping Example: When starting to teach jumping a hurdle, the coach may start with jumping over a puddle. This is a no risk exercise, and most people will have had the experience of jumping puddles. The coach will then shape the way the athlete jumps, until ready to move on to a low bar, gradually increasing the height of the hurdle as the athlete gets better at the technique. The distance between hurdles can also be altered to increase or decrease the complexity of the task. The bar can also be replaced with a tape if the athlete is anxious about hurting themselves. The objects to be hurdled, the distance between them and the height are all 'stimuli' which can be altered to increase or decrease the difficulty of the task and the likelihood of the desired behaviour 'good hurdling technique' occurs.

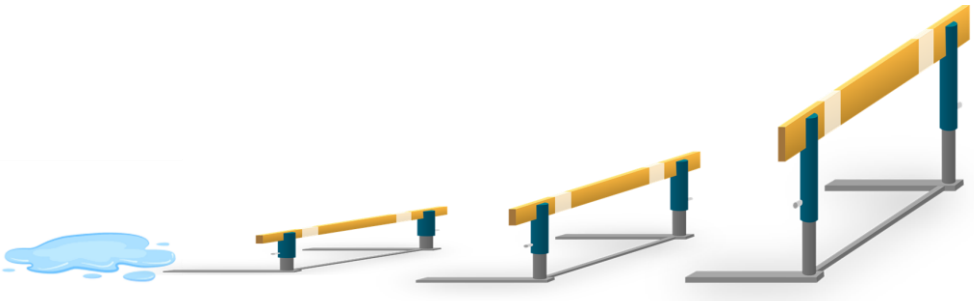


Figure 12: Shaping hurdling technique

Chaining

Chaining is similar to shaping and refers to teaching a complicated set of behaviours or skills as a sequence of simple skills, linking each behaviour to the other so it easier to learn [(36)](#) [(48)](#). This is most suitable for complex actions that have naturally sequential parts such as a long or triple jump. Using this method, components of a skill can be taught from start to finish (**forward chaining**) or in reverse order (**backward chaining**), depending on the requirements of the skill. The importance of chaining is that mastery of each link in the chain then prompts the next part of the sequence.

Example of backward chaining in shot put: *it might be easier to teach the athlete the release throw first, before the turn. Becoming more accomplished at this last component may be more motivating to the athlete to then learn the other previous parts of the movement so they can improve the distance thrown.*

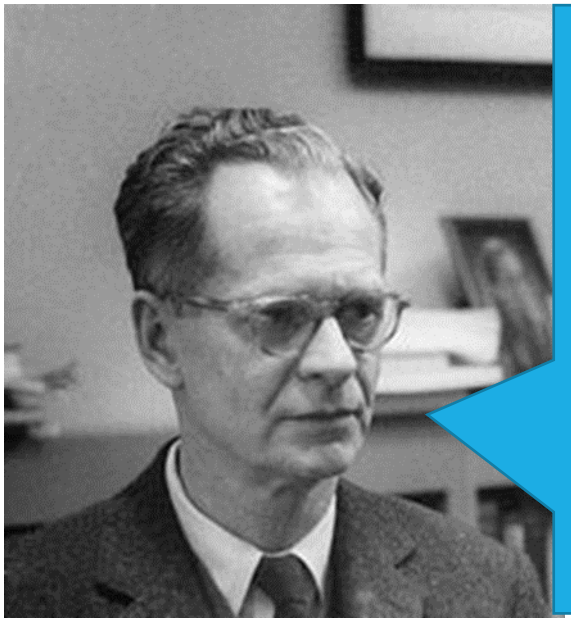
Example forward chaining in triple jump*: the skill is broken down into each component, i.e. the hop, skip, and the jump. A coach could start by teaching the hop until they are comfortable that the athlete has learnt this component, before adding the skip element into the sequence, and finally the jump aspect can be added to complete the skill. Becoming competent at the first hop element, places the athlete in the right position, on the right leg to then execute the skip element.*

Backward chaining tends to be used when the end of the activity is easier than the start of the activity.

Error reduction training (ERT) [59]

ERT has been used to teach fundamental movement skills (FMS) to children with mild ID with significant success[53]. ERT refers to training that encourages success initially by reducing the potential for errors, called '**errorless learning'**. The theory behind this is that early success reduces the athlete's dependence on cognitive processes to correct errors, which is particularly beneficial for individuals with ID who may have more limited cognitive resources. ERT may also free up cognitive resources to maintain the efficiency of a movement skill in the presence of other external distracting factors or variables. For athletes who have emotional issues such as low self-esteem and motivation it also provides an early sense of accomplishment and builds confidence.

The famous behavioural psychologist B.F. Skinner noted:



'Errors are not necessary for learning to occur. Errors are not a function of learning or vice versa nor are they blamed on the learner. Errors are a function of poor analysis of behavior, a poorly designed shaping program, moving too fast from step to step in the program, and the lack of the prerequisite behavior necessary for success in the program."

Errorless learning is the opposite of 'trial and error' learning and it works by making the incremental steps being taught small and easy enough and/or the prompts sufficient and strong enough for the athlete to always achieve without failing. It works not only through the emotional positivity of the approach, but also because the athlete is continuously demonstrating the correct behaviour, which means they are well set up to make the next small step successful.

ERT can take longer and require more effort than traditional trial and error techniques, but it is useful when the athlete has quite severe limitations and/or is very under confident, or when other approaches have failed.

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Example of ERT in basketball: *with the aim of teaching a young person to shoot a basketball, consider the variables – the ball, the basket (height, size), the distance of the player, the surroundings (other players or empty court), etc. All are factors which can be manipulated, so there is a lot of sensitivity to make many small incremental steps between the starting behaviour and the target behaviour. The coach might start by teaching the correct throw action, using a soft ball with a large basket on the floor, with the athlete close, and then gently move back a step with each successful series of 3 baskets. When they can accomplish this errorlessly from 3 metres away, they then may bring the athlete forward again and repeat the exercise with a smaller basket and so on.*

Mental Imagery

Mental imagery is now a well-established psychological approach to enhancing performance in mainstream sports. Students with more mild intellectual impairments have been shown to enhance their performances on cognitive tasks and motor tasks through the use of imagery[(60)]. Combining physical practice with imagery has resulted in significantly better performances than physical practice alone for participants with intellectual disabilities[(61)].

Mental imagery involves the athlete imaging themselves in the sporting context performing a specific activity, using all their senses. The imagery should include completing the task successfully and trying to experience the emotional satisfaction that comes with that outcome. This technique can be applied in broad (e.g., imagining arriving at the competition, running the race, getting the medal and returning home with it) to very specific moments (e.g., about to kick the ball in a penalty, visually imaging the trajectory from your foot to the target place in the net.

Self-Talk

This is sometimes called **'self-instructional training'** and has its roots in both behavioural approaches to learning and also cognitive behavioural therapeutic (CBT) approaches. However, it has also been shown to be effective in enhancing sports performance[(62)]. Many people with ID naturally use self-talk as they have found it a

natural aid to learning[63]. Whilst some people who engage in self-talk do this quietly in their heads, it may occur as actual speech for others, or in specific circumstances.

Self-talk can be used to reinforce behaviour and motivate in the case of giving oneself praise, but also in learning a new skill by verbalising the instructions to carry out the skill, providing additional prompts to the learning. Some people with ID, and especially those with autism, can learn by rote quite easily e.g., the words of a song, but find learning more complex behaviours combining both motor and cognitive skills more difficult. Hence, they may find it quite easy to learn the instructions which they can then repeat to help guide their physical activity. Self-instruction is a skill which must be learnt and one where the coach can help, and it is particularly helpful in that it can be applied by the individual whenever and wherever they need it without the aid of the coach.

Motor Skill Learning

When discussing the relationship of learning within sport, we are often referring to the learning of skills, otherwise known as skill acquisition, through the process of motor learning. **Motor learning** can be defined as the improvement of motor skills through practice and is associated with long-lasting neuronal changes. There are three stages to motor learning[42]:

1. **cognitive** stage (the initial stage of developing an understanding of the skill, improving through trial and error and the development of motor strategies to achieve certain goals);
2. **associative** stage (process of movement refinement, becoming more efficient and effective);
3. **autonomous** stage (able to perform the skill automatically without having to pay careful cognitive attention, otherwise known as skill mastery).

There are two key dimensions related to learning motor skills; **balance and visual skills**.

Research shows that impaired balance is frequently associated with people with ID[64]. In terms of improving balance, general coaching tips include:

1. It is important to assess whether your athlete has problems with balance. This can involve the coach observing the athlete during performance, or using specific tests of balance such as the **'flamingo' balance test** (to assess **standing balance**) involving standing on one leg and trying to maintain balance. Or to assess **dynamic balance** using equipment such as a **balance board**. If this equipment Is not available, ask your athlete to walk the length of a marked line on the pitch, court or track, turn round and walk back. If the athlete appears to have difficulties during any of these tests, i.e. loses their balance after a couple of seconds, you may need to incorporate balance specific training into your sessions.

Figure 13: Examples of static and dynamic balance tests

2. Introducing rope-skipping, trampoline and swiss ball exercises into your training sessions can help. These have all been found to be useful in improving balance in individuals with Intellectual Disabilities [(65)].
3. Focussing on improving the strength, especially core strength, of your athlete through training can also help to improve balance issues[(65)].
4. Encourage athletes to adopt a wide stance with loose arms and bent knees while learning new skills - a stance often referred to as the **'gorilla stance'**. Obviously, this technique is not appropriate for all motor skills and so needs to be adapted accordingly. The key point to remember is to utilise a base that provides a strong and stable frame while learning a new skill.

Optimising Learning Strategies

Contextual Interference

Contextual interference refers to a phenomenon where practicing multiple skills, of variations of a skill during a single practice section actually benefits the motor skill learning[(66)]. A situation of low functional interference is one where the athlete continuously repeats the same task, activity or skill in a controlled context, and a situation of high functional interference is where there is less control, lots of variation, different tasks and random sequencing. This is more commonly known in sports coaching as the **use of random practice or blocked practice,** whereby numerous skills are performed in a random order during a training activity, rather than continuously repeating the same skill over and over again within a training drill.

Research has shown that practicing skills in a context of high interference may reduce the actual practice performance. (i.e. they do less well in the training session), but it increases the retention of the skill learnt and transfer better performance to actual competition contexts (i.e. they learn more and this transfers to improved performance in competition. This applies both to learning motor control in people with ID and within the sporting context. One explanation for the benefit of random practice over blocked practice is the **'elaboration hypothesis'**. This hypothesis suggests that when an individual is required to perform a sequence of distinct skills in a random order, they learn to understand the similarities and differences between the skills and recognise how the skills contrast, enabling the individual to have a better understanding of the skills also meaning better retention in their long-term memory.

In other words, the athlete becomes more actively engaged in the learning of the skill and is required to understand the relationship between skills, rather than going into 'autopilot', repeating the same skill consistently. This increases the transferability of skills across a range of situations[(67)]. Initially, it may be beneficial to introduce random practice gradually and progressively once the building blocks of the skill learning have been created [(53)].

Important: the use of contextual interference should be avoided during the initial acquisition of a skill as it has been shown to lead to poorer acquisition performance, and this could be demotivating. For initial acquisition, blocked practice including a large amount of repetition (as highlighted above) would

To introduce this into training sessions, random practice (or high contextual interference) could be as simple as adding variation into the location of ten golf putts, rather than taking all ten putts from the same location. By changing the location of the putt, the athlete is required to adjust the direction and power of their putt, leading to a better understanding of the actual skill, rather than simply learning how to putt from one exact spot on one green. Another example could involve taking two free throws (basketball) fifty times throughout the course of a basketball workout, rather than taking one hundred free throws in a row during one block of the session.

Provide novel stimuli to improve response repertoire[(68)]

This is based on research into service return learning in athletes with ID in table tennis. By adding variety into training sessions such as including various spins and speeds, this expands the amount of return options that an athlete has and can bring about improvement in performance. This must be done intensively, i.e. over a long period of time to achieve the desired effects. Exposing the athlete to the range of 'stimuli', or in this case service shots, allows the athlete to prepare applying their service return skill in new contexts or situations.

In other sports this could translate to interacting with different players in different positions on a court or pitch, rather than an athlete only receiving a pass from one direction or from one teammate while training. In terms of receiving a pass, i.e. catching the ball, alternating between using chest passes, bounce passes and overhead passes, so that the athlete learns about the different directions and speed that the ball may arrive at.

Section 4: Effective communication with athletes with ID and ASD in sport

Steps to understanding your athlete(42) (49) (69)

1. Carry out a needs analysis - Speak to your athlete about their disability to find out what they can and cannot do in terms of communicating with others and understanding instructions.

2. Do not make assumptions based on assuming automatically that they will not be able to do the task, ask them or gently test it out.

3. Do not speak to your athletes as if they are children. Use age appropriate language.

4. Find out how the athlete's disability impacts their sporting ability by speaking openly about their impairments. For example, it is important to find out if your athlete has other issues like a hearing impairment, or if they have a very short attention span. You may also be surprised to discover that the needs of many athletes with ID r are not drastically different from other athletes, but where differences do occur some simple adaptations can really help(42).

Every athlete with an ID and/or autism is unique and will therefore have different learning requirements. This includes the type of communication style that is most appropriate for that athlete, therefore it is important for coaches to be aware of how communication may differ within this group of athletes and how your training sessions may need to be adapted. It is also important to take time to understand your athlete's favoured style, so that you can tailor your communication to most suit their preferred method of learning.

Selecting an appropriate communication style for your athlete enhances their potential to learn, relieves anxiety or stress caused by miscommunication of instructions and improves the coach-athlete relationship.

Comprehension and Expression

Understanding your athlete's comprehension and expression

- Observe if the athlete uses lots of 'set phrases', do they always use these at the appropriate times? Can they adapt them to the particular circumstance?
- If asked an individual question does the athlete respond with a generalisation? (I'm alright). If asked more detail are they able to give this in a personalised and individualised way, or do they always say the same things?
- How does their verbal communication fit with their non-verbal communication? For example, do they say they are 'alright' when physically they do not look ok?
- Ask an athlete to repeat instructions back to you to see if they have understood them.
- Is the athlete able to answer closed ended questions (yes/no) but finds open ended questions (how, why, what…etc.) more difficult?
- Does the athlete observe your reaction carefully and moderate their response depending on how you react? For example, they may be guessing a response as they have not understood and looking to you to indicate if they are on the right tracks. Or in relation to eye contact, not look at you at all but still understand what you have said.

Comprehension is what people understand and expression is what they can communicate. Everybody learns sayings (e.g., How are you today?) or ways of communicating feelings (e.g., clapping when you appreciate something) which is all part of how we express ourselves. This is the same for people with ID, but it is common that they develop better expressive skills than their level of comprehension. This is a consequence of being motivated to watch others to learn behaviours which 'fit in', sometimes so they are not picked out as being different, i.e. to 'mask' their disability. Hence, one of the first things for a coach to consider with an athlete's communication is their level of comprehension compared to what they say, as it is common to assume a level of comprehension that is higher than their actual skills.

Asking these sorts of questions will help you understand more about what the athlete understands, their ways of communicating and learning. The style of communication you adopt in response can help the athlete to understand you. It is a reciprocal relationship – how your athlete communicates with you impacts on how you communicate with the athlete which then shapes their response and so on. By applying the following tips to your coaching, you can ease the cognitive strain on the athlete and increase the athlete's comprehension of the coach's instructions

Tips for better communication

- **Apply the appropriate level of instruction (based on your understanding of the athlete's needs following the initial needs analysis). Factors you may need to think about include:**
  - **Length of sentence;**
  - **Number of instructions at one time;**
  - **Language and complex words;**
  - **How fast you speak.**

- **Repeat and reinforce instructions regularly and throughout the training session;**

- **While providing performance feedback, ask athletes to verbally summarise or physically demonstrate what they have learnt;**

- **Check regularly for understanding by asking questions about the instructions given. It is important to ensure that you allow sufficient time for the athletes to process information prior to answering questions. Find a pace of instruction and processing time that suits the athlete and keep to it[35];**

- **Do not overload the athlete with too many instructions. Instead focus on a few key coaching points;**

- **Be concrete and specific in the language that you use. Try and avoid metaphors or referring to examples outside of the athlete's possible experience e.g., driving a car.**

Autism and eye contact

Some people with autism do not like eye contact, and they can find it stressful.

- Do not assume if your athlete with autism is not looking at you they are not listening.
- Do not force your athlete to look you in the eyes.
- Sometimes you may need to direct the athlete where to look as they may not be following your gaze.

Different types of communication[43]

Verbal/audio. Verbal communication can include the coach giving instructions directly to the group, or on a one-to-one basis to the athlete. It may also be beneficial to audio record some instructions or explanations for the athlete to take away and listen to in their own time to familiarise themselves with the terminology or, alternatively, do some exercises to learn the terminology.

For example, in basketball set up set plays and ask the players to name them, give points and make a game out of correctly identifying the plays.

Gestural communication can be beneficial to praise the athlete for a good performance such as giving a thumbs up or a smile. This can also be an effective method of communicating simple instructions such as 'go faster'. Ensure that the athlete understands the meaning behind gestural instructions before using them. Combining them initially with the verbal instructions helps the athlete understand and learn them.

Visual communication can be a very effective method of communicating with athletes with ID. Using pictures or diagrams/drawings to provide instructions about a training activity may be easier to understand compared to complicated verbal instructions. There are many fitness apps with short videos demonstrating exercises, or routines such as an exercise circuit, which the athlete can access on their mobile phone or tablet.

Physical communication such as demonstrating a training drill or helping to move an athlete into the correct technical position can also help the athlete to understand what is required from them. It is also a way of helping the athlete to attend to the physical sensation of a movement and help develop their proprioception.

Written communication can be used to give coaching points to the athlete to take away with them. If literacy is an issue when writing down goals or instructions, consider using audio recordings or drawings to illustrate the goals being set or the activity to be completed. Many athletes use social media e.g. Facebook, Instagram etc. and can use email, which may help communication. Fitness trackers can provide good visual feedback.

Touching your athletes

Always explain what you want do and ask before touching your athlete. Some athletes with autism may really dislike being touched, and can be either over or under-sensitive to touch. They also may dislike particular textures e.g. latex, rough surfaces.

As a general reminder, use the *Tell, show, help, remind!* technique. This involves giving a verbal explanation of the activity, a visual depiction or physical demonstration of how to do the activity, assisting the athlete with any problems they are having while completing the activity, and finally reminding the athlete after they have completed the drill of the key coaching points.

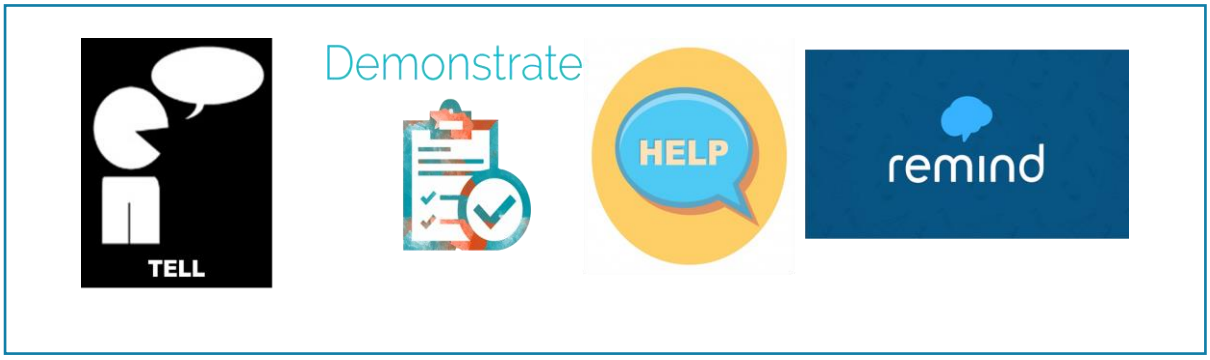


Figure 14: Tell, show, help and remind

Communication and Autism[31] [41]

Communication issues is one of the diagnostic characteristics of autism, so it is important to know if your athlete has this diagnosis so you can understand their style and adapt your communication to meet their quite specific needs. One of the very common communication features of autism is that language is understood very literally, in a very concrete way.

A coach gave the example of starting to train a young boy with autism in football and instructed him to pass the ball, so he stopped, picked up the ball and passed it to the coach. Once the coach understood that this boy did take language very literally and had not been exposed to a lot of football expressions he was able to explain what he meant in advance, adapt his instructions when necessary and as the boy became more familiar made his instructions more usual.

Other features to be aware of in terms of how autism may affect communication:

- Repetitive or rigid language – sometimes people with autism will say the same thing again and again, the content of which has no relationship to the context e.g., counting 1 to 5. Sometimes this is used by the individual to sooth, make a situation more controllable and so if increasing can be a sign of anxiety. They may also repeat what has just been said to them **(immediate echolalia**). This can be disconcerting to a coach, who may wonder why they have said this, and if they should reply. Once it is understood it is part of the autism, a reply is not required, but it may be an indicator of how the athlete is feeling.

- Narrow interests and exceptional abilities - The person may also talk repeatedly about one topic e.g., cars, or a soap opera on the TV, and have extensive, detailed knowledge of this topic. This is an expression of their **special interest,** and where possible it is good to try and channel this into the activity at hand or manage it by using it as a reward for other goals being achieved. Some people, but not all (thought to be about 10%), may have some exceptional abilities such as being able to recall the capital city of every nation, being able to remember every song by a particular artist. If they do have such an ability again it would be useful to think how this strength can be used in the sports context to help retain interest and motivate the athlete.

- Poor non-verbal skills – gestures may be difficult from them to both understand and use. Eye contact might be an issue as mentioned previously. They may have some stereotypical behaviours, such as rocking or hand flapping, and may have little understanding of how this is seen by others.

  When working specifically with athletes with autism, it may be helpful to consider these issues and if needed implement a slightly different communication style.

Intervening

- It may be tempting to try and stop some autistic behaviours, but firstly consider if this behaviour is really a problem. Some behaviours may be very deeply embedded and trying to stop of change them can lead to even greater problems and much distress for no real gain.
- Can one behaviour be replaced by another more appropriate but incompatible behaviour?
  Example: A coach who works with a young man who spent a lot of time hand flapping worked out that his athlete flapped less when he was engaged in activities or if he had to sit still if his hands were occupied. So, the coach kept the athlete very busy, but when they were sitting he would hand him the basketball to hold. Holding the basketball and hand flapping are incompatible.

General communication tips[31] [34] [41] [42]

- Be respectful of all athletes always. Allow athletes to give input into the training sessions.

- Discuss their communication needs with the athlete – they will know best what works well for them. Check in how it is working and be prepared to experiment and be flexible to change if something is not working.

- Ensure clarity when speaking to athletes i.e., do not use confusing phrases or figurative language (phrases that go beyond the literal meaning of the words, including metaphors and idioms). Athletes with ID and or autism may take these phrases at face value and follow the instructions literally e.g. can you put the football on the TV?

- Be consistent in the language that you use, including referring to equipment and training drills by a consistent name. Also, consistently utilise the same cues to mark the start or end of an activity.

- Be encouraging and positive in your feedback where possible. This includes phrasing all concepts in a positive manner e.g. '*That was great, how you can make it even better is….*'.

- In a mixed group do not single athletes with ID out in front of the rest of the group to further explain an activity. Instead provide the explanation to the group and then give further instructions to the athlete individually. Ideally, explain this to the athlete, privately in advance, so they do not become anxious if they do not understand the group instructions.

- Be patient with athletes when they are communicating with you. If you do not understand, simply ask the athlete to explain more. Do not pretend to understand what the athlete is trying to tell you.

- Limit instruction time as much as possible. This ensures that your athletes will be able to maintain their attention to your instructions.

- Avoid yes/no questions as athletes with ID are likely to respond positively regardless of the question being asked. Instead ask questions that require the athlete to explain their understanding of the question.

TIPS TO ADAPT YOUR COMMUNICATION STYLE FOR ATHLETES WITH AUTISM

- **Depending on the athlete's preferences and skills, reduce verbal communication, instead increase visual aids;**
- **Reduce sensory overload. It may be less stressful or confusing for the athletes if all performance feedback is kept until the training activity has been completed or the athlete's turn is over;**
- **Provide athletes with an individualised schedule plan with a confirmed start and finish to provide more structure to the session. This should also be verbally and visually explained;**
- **Verbally and/or visually prepare the athlete for transitioning into a new activity, shortly before the activity commences by giving them an alert;**
- **If eye contact is an issue, understanding can be confirmed by agreeing that the athlete will give a signal such as a 'thumbs up' after the instructions have been given;**
- **Use the athlete's name prior to giving instructions or asking questions.**

Example of concrete thinking leading to mis-interpretation

In the recreational room, the team mate of an athlete with autism asks him to put the football on the TV.

Section 5: Motivation, Performance and Sports Participation

Motivation

As mentioned in the introduction, many individuals with ID fail to meet the recommended guidelines for physical activity and research has shown that people with ID may experience decreased motivation and confidence[(20)]. To live a healthier lifestyle and maintain training regimes the athlete must be motivated. Motivation is the energy people have to activate and maintain certain behaviours. In terms of sports coaching, understanding an athlete's motivation means understanding why they either do or do not take part in sport, and what encourages them to continue to be involved. It also explains how committed they are to giving their maximum effort or not in their performance.

Understanding and subsequently developing a **positive motivational climate** can help manage athletes' perceptions of stress, enjoyment and feelings of competence[(70)] alongside encouraging them to maximise their sporting achievements. There are two main sorts of motivation:

1. **Intrinsic (internal)** – met own goals, fuelled own interests, personal satisfaction, sense of mastery.
2. **Extrinsic (external)** – winning medals or trophies or receiving approval from a coach or other teammates.

Many of the activities described in the previous sections in terms of prompts, rewards, etc., are extrinsic motivators as they are provided by the coach. The problem with extrinsic motivators is that if they are not present or repeated too often they lose their value and so do not motivate and the behaviour quickly drops off. Intrinsic motivators tend to sustain the desired behaviours longer, and if practiced well can be adjusted to set new aims and maintain motivation. Sport and exercise are a good example of how a new behaviour e.g., starting jogging, can be encouraged by extrinsic motivation, but then naturally can become an intrinsic motivator by the positive physical and psychological feelings of having taken exercise, increasing fitness and competence. Part of the coach's role is to provide extrinsic motivation but, more importantly, instil greater intrinsic motivation for the athlete.

Example: shift from extrinstic to intristic motivation for an athlete with Autism and ID

A young man with autism started to attend training sessions. He enjoyed it when he got there but was not keen on going. He also collected War Hammer figures. He agrred with his Mum that he would buy a new one every time he went training. After a few weeks he started to make friends and did not need to be encouraged by his Mum as he enjoyed the time he spent with his new friends.

EXAMPLE: COACH MOVING FROM EXTRINSIC TO INTRINSIC MOTIVATION

A coach was trying to encourage an athlete with ID to improve her swimming. One exercise was to help her beat the previous time she swam 100m freestyle. At first the coach logged this by showing her a tick or a cross in his training log. Soon he realised that she really liked using her smart phone so they downloaded an app that allowed her to enter her time and monitor the times herself. The coach showed her how to transfer the time on the clock into the app which showed her progress over the weeks. Soon she was self-monitoring and showing the coach her own progress.

Another way of seeing motivation is on a continuum, from control to autonomy:

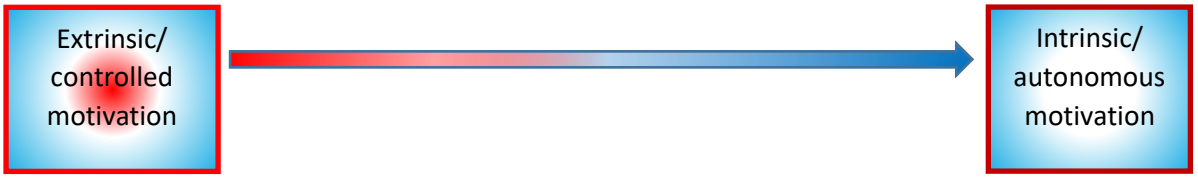


Figure 15:Extrinsic and intrinsic motivation

Along this continuum there are different types of motivation, which have advantages and disadvantages.

1. **Amotivation** occurs when an athlete lacks motivation. This is likely due to perceiving that their needs are not going to be met by engaging in this activity. It might also be the case that there is a competing, much stronger motivation which wins, e.g. not wanting to be away from their parents. This athlete is likely to have very little to no drive as a result and may not attend training or drop out of the sport altogether. For ID athletes' common challenges to motivation are fear of failure, always being at the bottom compared to others, fear of new experiences, not being able to anticipate the benefits in trying something new, etc. As coaches, we want to avoid amotivation at all costs.

2. **External regulation** involves the athlete feeling the need to comply or conform to certain external, expected behaviours, or being solely driven by rewards such as the desire to win a trophy or avoid a punishment such as being shouted at or having to do extra training as a result of poor performance. This is exclusively extrinsic in nature and may be utilised in order to obtain a more immediate reward. This type of motivation is useful for encouraging athletes to take part in activities that are necessary, but may not spark enjoyment or interest, and the results are short-lived.

3. **Intrinsic motivation** develops only when an athlete has a genuine interest in the sport or activity and receives enjoyment purely from taking part regardless of prizes or trophies. For example, an athlete that has chosen to do a sport purely as a recreational

hobby will generally be intrinsically motivated as they enjoy taking part. This type of motivation can positively influence high quality learning and nurtures creativity[71].

ATHLETES WITH ID AND INTRINSIC MOTIVATION

With some athletes, they may tend not to reflect or think about their own motivations as much, so be less skilled at developing their own intrinsic motivation. As a result they do not build up those little 'self nudges' or reminders (strategies) to keep motivated. A coach can help by encouraging the athlete to think about what helps with their motivation, how they feel after they finished some activity, how to remind themselves about this, what self-talk is useful etc.

Example

An elite athlete with ID gave the example of singing her national anthem to herself when the going got tough on a long race walk, as she thought about standing on the podium and hearing the anthem It both distracted her but also reminded her with pride that she was representing her nation and motivated her to win. The coach found out about this strategy after she won and he was congratulating her.

Self-Determination Theory

Several theories have been used to help understand motivation and how it can be applied in contexts such as sport, one of the most commonly used being Self-Determination Theory (SDT[72]). SDT suggests that all people have innate psychological needs and an inherent drive to meet these needs and develop. In a coaching context, if you can use sport to fulfil these needs and as a way of developing, the person will be naturally motivated to succeed[70]. The theory identifies three basic needs:

1. **Autonomy** - the need to feel in control of one's behaviours and goals.
2. **Competence** - the need to gain mastery of tasks and learn different skills.
3. **Relatedness** - the need to feel a sense of belonging and attachment to other people i.e. for relationships with others.

If an athlete suffers from a decreased sense of autonomy, competence or relatedness it can lead to a lack of motivation, a decreased willingness to try new skills or withdrawal from training sessions altogether. Previous research studies into the coaching practices of Special Olympics Hall of Fame coaches[70] [73], and with Special Olympics athletes has provided information about how coaches can meet the psychological needs of their athletes with ID and what motivates Special Olympics athletes, from an SDT perspective[71]. Drawing on these resources, the following suggestions are made as to how to develop intrinsic

motivation by using sport to meet these drives, especially for those athletes at Special Olympic level.

Autonomy

- Athletes should be encouraged to **initiate** their own participation in sport. Coaches can facilitate this by being inclusive, however, ultimately the athlete needs to take responsibility for getting involved. Research has shown that for SO athletes participating in sport gave them the chance to show others their ability, increase their social circle, and increase their confidence and self-esteem. Discussing outcomes such as these and finding out what the athlete themselves want to achieve can help to provide a structure to an initial conversation and motivate the athlete to start becoming engaged.

- Coaches are there to **support** an athlete in their sport and help them to achieve their maximum potential, not pressure the athlete into doing something that they don't want to do. If an athlete expresses a sincere desire not to take part in something, a coach should not try to coerce the athlete, as this may put the athlete off the sport altogether. Providing support has been found to positively influence athlete motivation.

- Athletes appreciate **experience and expertise** in their coaches. Research shows that coaches with an extensive knowledge of their sport, proficient in assisting the learning of skills, were found to positively motivate their athletes. Athletes, regardless of ability level, tend to trust a coach's session if they believe the coach has valuable insights into their sport[(70)].

- Provide the athlete with choice and a voice in their activities. Providing an athlete with an element of choice over equipment, accepting help or whether or not to participate in an activity[(70)] gives the athlete a feeling of control over their own learning, and therefore increases their willingness to take part and give their all. This is known as a **cooperative coaching style** whereby the athlete is involved in the decision-making process[(50)]. A coach that only adopts an authoritarian leadership style (whereby they dictate all activities to their athletes) may not receive the same level of motivation from their athletes during the session.

- Give athletes opportunities to demonstrate initiative[(70)]. This can be achieved through providing athletes with **leadership** roles such as a responsibility to lead the warm-up routine, or to act as peer-trainers helping each other to achieve goals. Allowing athletes to call their own 'plays' or tactical moves during training matches can be beneficial, for example allowing athletes to decide for themselves when they rotate in and out of a game in volleyball.

- Provide **explanations** to athletes when giving corrections during feedback. This allows the athlete to better understand why they should make a change to their skill performance, rather than just following orders.

- Create a **task-oriented** environment whereby learning and improvement is encouraged over outperforming others.

- Encourage the athlete to **evaluate** their own performance after training or competition and set their goals for next time.

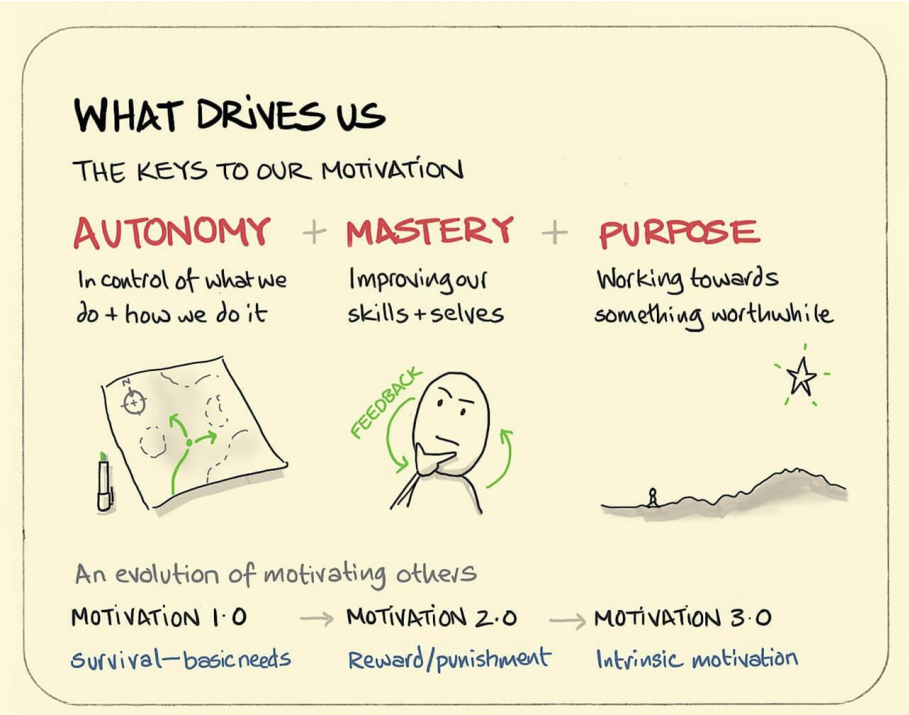


Figure 16:Keys to motivation

Competence

- Try to spark an interest in your athletes to learn a new skill or take part in a new activity. This requires creativity on the part of the coach and requires the skill to be introduced in a positive, risk-free environment.

- It is important for coaches to provide athletes with the opportunity to challenge themselves and accomplish their personal goals in a competitive environment. This allows the athletes to understand where they currently are in relation to their long-term goals. It is important to remember that this should be done in a careful manner, only introducing the athlete to competition when they are ready both physically and mentally to deal with a competitive environment. Under the right circumstances competition also provides intrinsic enjoyment for athletes.

- Once athletes have started to gain competency in their sport, give them an opportunity to assist or mentor new athletes. This can reinforce their athletic ability, self-worth and self-confidence, and encourages the athlete to stay involved through providing a new purpose.

- Feedback is important. It must be phrased in a way that allows the athlete to develop further but without appearing offensive to their current skill level.

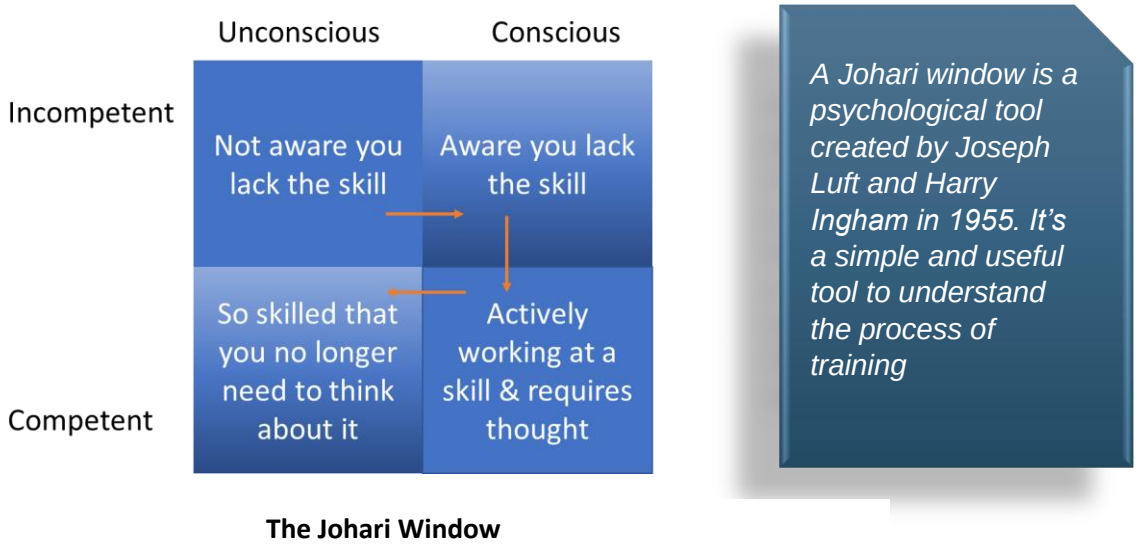


Figure 17: The Johari Window

- The **Johari Window** is worth keeping in mind to remind you of the different steps involved in learning a new skill, and how raising the consciousness about what the person **does not know** is a fundamental step to developing competence. Your task as a coach changes depending where in this cycle your athlete is situated.

- Listen to and accept athletes' suggestions where possible.

- Assign responsibilities to athletes, for example collecting the equipment at the end of a session or evaluating the condition of equipment. Try and increase this responsibility when the athlete is comfortable with the task.

- Set reasonable performance standards or goals that are challenging yet attainable for athletes – i.e. within the **zone of proximal development**.

- Find a way of logging progress in a visual and encouraging way. Each athlete may have their own logbook for recording training activities and accomplishments. The use of digital technology, such as fitness trackers where data is easily accessible and can be shared can help a sense of achievement and mastery.

- Introduce short, informal competitions, e.g. number of steps this week, how quickly all the equipment can be collected and stored, to instil a sense of friendly competition and allow everybody to achieve.

- Celebrate successes.

Relatedness

- Initial and ongoing social support is important to maintain an athlete's motivation. In addition to the coach, family, and friends, other athletes are also vital in encouraging the athlete to achieve their potential. The coach should encourage athletes to cheer for their teammates during practices and competition. It is important to remove negativity and focus on what an athlete can achieve, not what they can't. A coach may also raise awareness with care givers about the positive changes they have noticed in their athlete and of the benefits of physical activity in general[50]. A coach may also seek feedback from the caregivers about any changes they have noticed.

- Establishing a bond with your athlete and between athletes helps to increase enjoyment and provide another meaning to participation. Athletes are more likely to maintain participation if they also see training sessions as a platform to interact with friends.

  For example, build in team building exercises and develop a team identity, which may include not just the coach and athlete, but volunteers and other supporters[70]. Establish a Facebook page, Instagram account, give somebody the responsibility to manage social media.

- A coach's role cannot be underestimated, athletes view coaches as mentors or role models and so a coach must act in an appropriate manner[50].

- Build in social opportunities to the training schedule and between events. Establish a 'buddy system' for new athletes or between experienced and novice athletes.

- Support athletes to use social media appropriately so they can connect with each other outside of training if they wish.

Self-Determination Theory links to the idea of intrinsic and extrinsic motivation. Motivations that are more intrinsic in nature are more likely to fulfil an individual's need for autonomy. Therefore, a coaching style that achieves this, along with meeting the needs for relatedness and competence, will foster a more long-term, consistent motivation.

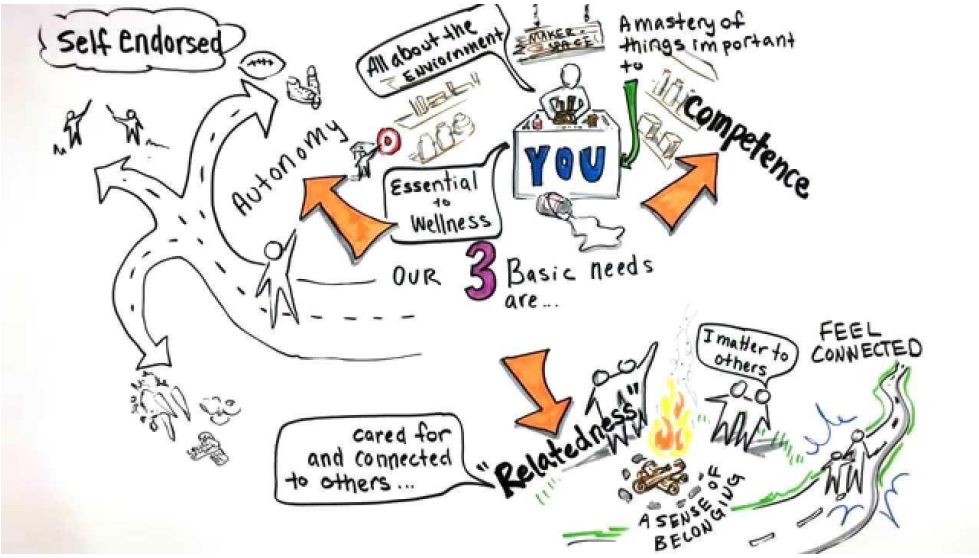


Figure 18:Self-Determination Theory

Goal setting[41] [42] [54] [70] [71] [74]

Goal setting can be a highly effective motivational tool. Setting, working towards and finally achieving a goal can provide a significant shift in an athlete's motivational mind set as they now feel that they have something to work towards and can develop greater self-confidence and enjoyment through accomplishing the goals. Goal setting can be particularly useful for athletes with ID as it provides them with a destination of where they want to get to in terms of performance or ability, but also provides them with a 'map' of how to go about achieving this. This added structure can greatly benefit an athlete's motivation. **Goal orientation theory**[75] suggests that there are two primary types of goals:

1. **Task-oriented goals** revolve around skill mastery and emphasise learning and self-improvement in sport to develop feelings of competence. Athletes that are task oriented are intrinsically motivated and evaluate success according to effort and improvement.
2. **Ego-oriented goals** are concerned with outperforming others, particularly comparisons with other similarly skilled athletes. More emphasis is placed on winning as opposed to skill development. Ego-oriented goals are therefore fuelled by competition. Athletes that are ego-oriented are more extrinsically motivated.

Coaches should attempt to develop a task-oriented environment to allow athletes to focus on skill mastery, learning and improvement rather than social comparisons or competition with others. This instils a perception of competence centred around self-development and can provide the athlete with a greater feeling of autonomy or control over their achievements[76]. Task-oriented sports environments also promote the athlete's need for relatedness, as enjoyment and cooperation are favoured over athletic competition.

Collaborative Goals

When setting goals with an athlete – it should be a collaborative activity - it is important to put thought into the goals being set. A framework which coaches might find helpful when setting goals for their athletes is that related to the **SMART principle.**

The SMART principle[77]

This provides structure and trackability to the goals being set and provides clarity on what exactly the goal involves.

Specific - goals should be precise and specific to what you want to accomplish.

For example, setting a goal of 'improving my shooting ability' does not provide a lot of information, whereas 'I want to focus my attention on shooting on target and increasing my accuracy percentage from 60% to 80%'.

Measurable - goals should be quantifiable so that it can be easily established whether the goal has been accomplished.

For example, a basketball player could set a goal of successfully shooting 20 free throws twice per week for the next 3 weeks to raise their free throw percentage.

Attainable - Goals should be achievable for the athlete but should also be set at a level that promotes development. This can be a difficult aspect of goal setting as it requires a good level of knowledge of the athlete, understanding their baseline (starting point), learning capacity and likely practice time. Setting a goal that is easily achievable for your athlete can have adverse effects on motivation, as can setting a goal that is too difficult.

For example, the coach knows that out of 10 serves in tennis their athlete will land in the box usually know more than 5 times. In the next practice the goal is to try and beat this and land at least 6 out of 10.

Relevant - Goals should be individual for each athlete, as athletes may have varying needs or ability levels.

For example, it would not be helpful to set a goal of scoring 5 goals during a tournament for both an offensive player and a defensive player. It would be more appropriate to ask defensive players to keep 5 clean sheets (concede zero goals in a game).

Time-bound - Each goal should have a specific time frame for completion. Some goals may be shorter term over the course of a few training sessions, or others may be long-term goals that are set for completion by the end of the competitive season. This helps to set a deadline for the athlete to complete their goals and maintains motivation.

For example, the basketball player has achieved throwing 20 goals twice a week, after three weeks, the next goal is to do this again in the next three weeks, but from the three-point line.

Figure 19: SMART goals

Motivational Determinants of Participation[74]

A systematic review of the research literature has previously been carried out into finding out what motivated people with ID to participate in sport and exercise[74]. **Social Cognitive Learning Theory**[78] was used to explain the results. This theory emphasises that individuals learn their behaviour from their social environment and motivations arise due to reciprocal interactions between personal, behavioural and social/environmental factors.

In terms of sport, examples of behavioural factors involve attendance at training, level of skill mastery, the intensity the athlete trains at, and their level of enjoyment. These behavioural factors can be influenced by personal and environmental factors

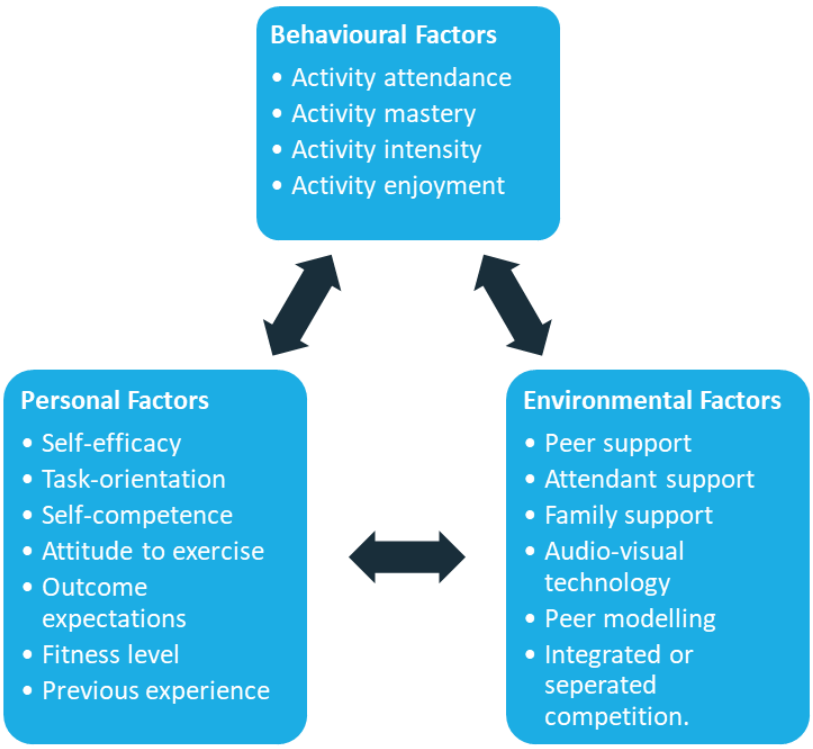


Figure 20: Social Cognitive Learning Theory

Behavioural factors that are linked to participation in sport and physical activity in athletes with are:

- **Activity Attendance.** The more frequently that an athlete attends training sessions, the more likely they are to maintain their participation in the sport.
- **Activity mastery.** This refers to the athlete's skill or ability level in the sport. A more proficient athlete is more likely to maintain participation while a less skilled athlete is more susceptible to discontinuing participation.
- **Activity intensity.** Athletes that train at a high intensity are more likely to continue their participation.
- **Activity enjoyment.** Those athletes that enjoy participating in training sessions and competition are more likely to participate regularly compared to those athletes that do not enjoy participating in the sport.

Personal factors that are linked to participation in sport and physical activity in athletes with ID are:

- **Winning ribbons and medals.** This links to the notion of external regulation mentioned previously. Providing positive reinforcement in terms of rewards for training or competing well can aid motivation but may be short lasting and is limited to only successful situations.
- **Playing with others on a team.** This links to the need for relatedness. Increasing team cohesion through bonding exercises and ensuring a good squad harmony can positively impact motivation.
- **Getting exercise.** This could either be because the individual holds a belief that they should be getting exercise (integrated regulation) or the athlete enjoys being active (intrinsic motivation). A coach can stress the importance of getting enough exercise and incorporate fun into fitness training.
- **Task-orientation** (see 'goal setting' section above).
- Other personal factors involve the athlete's **fitness level**, their **previous experience** in physical activity and the **expectations** they hold about the outcome from taking part in physical activity.

Environmental factors that are linked to participation in sport and physical activity in athletes with ID are:

- **Social Support** has been found to be a contribute significantly to motivation and can be present in many forms that a coach may influence;
    - **Peer Support** can help to raise athlete's self-efficacy. A coach is responsible for instilling an environment based around cohesion, support and teamwork within their coaching. If an athlete can bond and build friendships with their peers, they are more likely to be well motivated.
    - **Attendant/volunteer Support** can also affect an athlete with ID motivation. A coach should encourage anyone in attendance or volunteers to cheer and motivate athletes, without becoming involved in providing instructions to a team or individual, as this should remain as the coach's responsibility and too many people giving instructions to athletes can cause confusion.
    - **Family Support** has been consistently linked to motivation. Where possible, a coach should attempt to inform or include the family/care givers in the athlete's development. However, a careful balance needs to be struck between giving the athlete independence and autonomy, the authority of the

coach, and the involvement of the family. This should be discussed and an agreement reached about how the family/carers might best support the athlete.

- **Audio-Visual Technology** such as video demonstrations of skills to be learnt can also help to increase participation time. Many coaches and athletes will have their own phones and tablets on which to record and analyse their performance. There is also increasing software to use for these purposes such as Dartfish.

- **Peer modelling** through pairing participants together during training activities can enhance motivation levels. If paired with another athlete of a similar ability level, a healthy competition may develop that can promote higher levels of motivation. Alternatively, pairing a high ability athlete with a less developed athlete may provide additional support in situations where the coach's resources are limited.

- **Integrated or separated competition** may have varying motivational effects depending on the target audience (athlete in question). Integrated competitions such as the Unified Sports programme by the Special Olympics (whereby athletes with ID and individuals without disabilities comprise a single team and compete against other similar teams) have shown an increase in athletes' self-esteem, the development of friendships, self-efficacy and an improvement in skills[57] [79], all of which can aid motivation. However other integrated programmes have noted a reduction in an athlete's perception of their own athletic performance or ability, i.e. their confidence in their ability drops as they can only compare themselves to more able athletes (upwards comparison). It is therefore up to the coach to determine the best method or combinations for their athletes.

- Other environmental factors may include availability of facilities, transport to facilities, and availability of equipment.

A coach can make use of each of the personal and environmental factors mentioned above to improve the level of motivation of their athletes.

General tips for increasing motivation[41]

- Establish creative, competitive situations to prevent sessions from becoming stale or mundane.
- Encourage enjoyment[43] [50]. This is paramount to establish intrinsic motivation and increases the likelihood of continued participation.
- Refer to local teams or well-known athletes as role models or examples of showing skills. Sometimes it helps to ask the athlete 'now try it like [name] would do it'.
- Maximise engagement during training activities/minimise waiting time between drills or between each turn. This helps to maintain attention and keeps the activity salient in the athlete's mind.
- Use short term goals as it allows the athlete to notice progress regularly.
- Incorporate an athlete's skills and strengths into drills occasionally to allow the athlete to experience success in their given sport. This can also encourage the athlete if they have been struggling to learn a new skill.

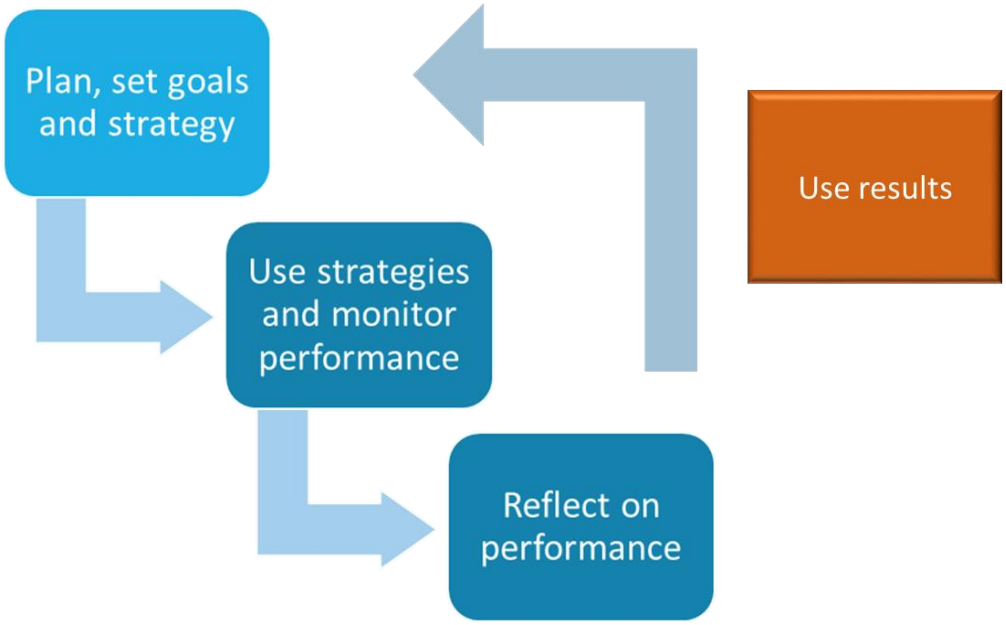
Section 6: Self-Regulation of learning and emotions in sport

Self-regulation refers to the process by which a person will guide their own thoughts, behaviours and feelings to achieve their goals. In the context of this Good Practice Guide, we will be looking at the role of self-regulation in relation to regulating emotions and increasing motivation to learn and attain goals.

Self-regulation of learning

There are 3 main processes to self-regulation of learning:

- **self-observation** involving knowing current levels of performance, setting goals and strategies to achieve these goals.
- **self-monitoring** how your thoughts, feelings and behaviours are aligning with your goals.
- **self-reflection** how to more effectively achieve your goals going forward by altering your strategies.



.Figure 21: Self-regulation

Goal setting and self-regulation

Similar to the earlier section on goal-setting, it is important to ensure that goals are achievable in order to maintain and promote self-confidence in your athletes[(35)].

Research has shown it is possible to teach self-regulatory skills to individuals with both ID and ASD in order to improve their ability to set effective goals and therefore can help to promote sustained physical activity[(80)] [(81)]. Training programmes have focussed on 3 self-regulatory skills including;

1. **Goal-setting** - Allowing athletes to set performance base goals (e.g., distance run, laps, time, weight, etc. – within safe margins), providing informative *feedback* (e.g., comparing performance to goals previously set by the coach) can help athletes to better understand the difficulty of the goals they are setting for themselves and better calibrate the incremental steps to their overall goal.

2. **Self-monitoring** - this can include athletes monitoring how many laps or circuits they have completed, exercise sets, time taken, weight lifted etc. There are various aids to help self-monitoring from more advanced digital systems such as fitness trackers to, using manual counters for laps, or sticker boards to chart progress. Working with an athlete to develop their own system is important as charting progress will be motivating to the athlete and so it must work for them.

3. **Self-reinforcement** – It is important to build in reinforcement for reaching a goal or possibly a consequence for not reaching a goal. Again, the coach can work with the athlete to decide what this could be. snacks or drinks can be used, but ideally it is best to build in rewards that can be continuously used and do not compete against training objectives, e.g., keeping hydrated and eating well. Rewards can be activities, or increased choice (e.g., decide next drill) or a points system can be introduced to build up to larger rewards. This can help to teach athletes when they should reward themselves for performing, while also teaching self-control and discipline.

Teaching these skills to athletes with ID and or autism can help them to develop necessary self-regulatory skills that can enhance motivation and increase the likelihood that they will continue to take part in sport or physical activity, while also allowing them to develop a greater sense of self-control. Returning to the earlier concepts of **intrinsic** and **extrinsic** motivation, this increases intrinsic motivation, meaning self-regulation will be exercised even when the coach is not there and is more likely to be sustained.

Self-regulation of emotions

Emotional regulation refers to the ability to effectively observe, manage and respond to an emotional experience. It consists of the same basic processes as self-regulation in learning. Essentially, being able to regulate our emotions requires us to be able to observe something that causes an automatic emotional response and use self-control to either inhibit or express our emotions in an appropriate way. Following this, we need to reflect on how we reacted and learn from this. Many people with ID or autism struggle to control their emotional responses effectively, and athletes may be prone to acting out, having mood swings or emotional outbursts[(41)]. Athletes may also suffer from poor **impulse control** (characterised by the inability to avoid temptation or an urge to behave in a certain way, perhaps in an unsuitable manner), which can lead to inappropriate behaviour. There are measures that a coach can implement to help both reduce the likelihood of this occurring, and to manage these issues when they arise.

- Set clear expectations and rules. Make all athletes aware of the standards that are always expected and required by the coach . These need to be strictly and consistently enforced to provide firm boundaries to what is or is not acceptable in training sessions or at competition. It may also be helpful to print out a set of rules or expectations and display this at the entrance of the training venue or another appropriate location to provide a visual reminder to athletes. Alternatively, the coach could provide each athlete with a copy of the rules when they first attend a training session. Asking athletes to sign their name may also serve to reinforce what is expected and this is seen as a form of contract [(41)].

- Use enforceable short-term consequences for violations of rules or inappropriate behaviour. An example of this would be the removal of a fun activity at the end of a training session or a 'time-out' period from the session[41].

- Provide a designated cool down area that coaches can utilise after giving an athlete a 'time-out' or encourage athletes to make use of when they have experienced a mood swing or outburst. The coach should make all athletes aware of where this cool down area is. This area should ideally be in a quieter environment away from the training session but still in close proximity to the coach[41].

- Reinforce acceptable behaviour or the absence of misbehaviour. This can be achieved through providing rewards such as allowing the athletes to choose their own activities[41].

- Find a replacement behaviour for inappropriate behaviour. For example, replace an athlete's inappropriate behaviour of constantly bouncing the ball at inappropriate times to the repetitive nature of practicing free throw shots[38]. For athletes with autism a coach should also try to incorporate repetitive behaviours into training sessions where possible. For example, for an athlete that likes to sway back and forth a lot, teach him how to do effective sit-ups[47].

- Provide a safe place for times of over stimulation. Again, this may be the same area as the cool down area mentioned previously. However, ensure that you make the athlete aware that they are not being punished if they are feeling over stimulated. In this instance it is paramount that the designated area is quiet and calm[31].

- Pair athletes which are prone to behavioural problems with partners. These partners can act as screeners for impulse control issues and help the athlete to behave appropriately[43].

- Offer athletes positive self-talk methods to replace self-defeating thoughts[82]. It is important to try to help the athlete to frame their thoughts and feelings in a more positive light. Help the athlete to see what they have achieved, rather than allowing them to focus on what they have not yet accomplished. Encourage the athlete to adapt a more positive mind set while attempting to learn new skills and frame communication in a way that the athlete is building upon their strengths to give them self-confidence[35]. Emphasis the influence that having self-confidence and self-control can have on achieving success. For example, teaching athletes to be graceful in defeat and bouncing back quickly from errors[82].

- Systematic desensitisation to manage fear and anxiety for athletes with ASD[37]. This consists of helping an athlete to relax while gently exposing them to an anxiety provoking stimulus. While this technique should only generally be used by trained psychologists, the concept of slowly exposing an athlete to an anxious situation such as increasing their exposure to the social group in a team sport by introducing them to a few athletes and building upon this could be used carefully by coaches.

Managing anxiety

Anxiety can be an issue for many athletes, and especially for those who find new places, activities, people and social situations challenging. Combining this with the stresses of competition and the expectations of coaches, teammates and families will the exacerbate the situation and can lead to poor performance and a lack of enjoyment. Anxiety may occur when these events are happening, but also may occur before managing these demands is required as the athlete anticipates coming events, this is called **anticipatory anxiety**.

Coaches might not expect this and anxious behaviour can then sometimes be misinterpreted as intentionally inappropriate or challenging behaviour. For example, at the start of a session or competition, perhaps in a group situation, taking instructions from the coach, the person may find this challenging and start to disengage and behave in ways that avoids the situation. Once the coach recognises this is what is happening it can be simply avoided by giving the athletes something more familiar and structured to do, give instructions in smaller groups, pairs or individually, or pairing more anxious athletes with more experienced athletes.

Other approaches to manage anxiety are as follows:

Goals setting – use the techniques described above to get the athlete to observe their emotional state, identify situations which provoke anxiety, set achievable goals and problem solve ways of either altering the situation to prevent anxiety occurring, or if that is not possible, managing the feelings of anxiety. Experiment how that works, reflect on the outcome and set new goals.

Make new situations familiar – some athletes, especially those with autism, may be anxious about doing something new such as travelling to a new stadium to compete. However, whilst these are new places there are features that are routine and standard. Identifying these will make this experience feel more familiar and controllable, and so less anxiety provoking.

Tips for making new situations familiar

- Pin a checklist to the bag of all the kit that goes in the athlete's bag, which they check off before they leave and before they return;
- At a new venue give them a routine they have to follow to show them that it is similar to places they know, e.g., *in an athletics stadium they have to walk around the track identifying the 100m start line, the finish line, the 200m start line, the results board, etc.*
- Travelling on a bus, train or plane has similar components: checking in, placing the baggage, choosing the seat (they might even prefer to sit in the same place if possible), putting headphones on, carrying a drink, etc. Again, a checklist could be developed so the journey becomes familiar and predictable.

Summary

Coaching an athlete with an ID requires adaptations to be made to your coaching style and method. This Good Practice Guide has aimed to provide you, as coaches, with the skills you require to work specifically with athletes with intellectual disabilities. It is hoped that the information and strategies discussed in this guide will help you to better understand your athletes' potential limitations and further develop your skills in overcoming these obstacles. Whether it is issues with **inclusion**, **cognition**, **motivation**, **self-regulation** or **communication**, this Good Practice Guide has provided information based upon the most current and relevant material in distribution to date to help you and your athlete break down these barriers.

It is important to remember that every athlete with an ID is unique and so you cannot adopt a 'one size fits all' policy while coaching these athletes. What works for one coach, with one athlete, may not necessarily work for another. You need to fully understand your athlete prior to commencing coaching, in terms of their abilities, their limitations and their patterns of behaviour. Where possible, use your athlete's support network. They will have had more experience with that person than you and will already understand their behavioural triggers, their likes and their dislikes. You must develop an open and honest communication stream between yourself and your athlete. Learn how your athlete best understands instructions and develop trust so that your athlete will feel comfortable discussing any training issues with you.

Good luck and we wish you every success!

Jan and Matt

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