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BSI Standards Publication

Playground equipment accessible for all children

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National foreword

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Équipements d'aires de jeux accessibles à tous les enfants

Barrierefreie Kinderspielplatzgeräte

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Foreword

This document (CEN/TR 16467:2013) has been prepared by Technical Committee CEN/TC 136 “Sports, playground and other recreational facilities and equipment”, the secretariat of which is held by DIN.

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0 Introduction

0.1 General

CEN/TC 136/SC 1 decided in September 2007 to develop a document to support the following statement taken from the introduction of EN 1176-1.

It is also recognised that there is an increasing need for play provision to be accessible to users with disabilities.

Germany made the proposal for a European document, as they had developed a national standard DIN 33942.

This CEN Technical Report is intended to provide guidance only.

0.2 The rights of all children

The Convention on the Rights of the Child (Office of the United Nations High Commissioner for Human Rights) declares: "States Parties shall respect and promote the right of the child to participate fully in cultural and artistic life and shall encourage the provision of appropriate and equal opportunities for cultural, artistic, recreational and leisure activity". Article 31 recognises the rights of the child to engage in play, and Article 2 states that there should be no discrimination of children irrespective of disability.

Since the introduction of EN 1176 it has been recognised that further guidance should be given on how to provide play spaces that are more accessible for children with disabilities, and encourage children of all abilities to play together. This guidance document aims to do that.

This guidance document will not mean that every play facility will be suitable for every child; the play provider may have many constraints such as a restricted budget or space limitations. However, it is hoped that, by adopting the information provided, all play spaces in some way can become more inclusive.

The document focuses on unsupervised play provision whilst recognising that carers bringing users to the facility will need to make judgements on the appropriateness of the items.

It also recognises that the person bringing the user to the facility may/could have impairments and without the ability to access the playground the non-disabled child may/could be denied the play opportunities provided.

There is a moral and legal duty upon us all to ensure that, whatever their ability, each child has a chance to reach their full potential. This will not come from focusing on the lowest common denominator of ability, but by offering each and every child a level of challenge that they can learn to manage and thus develop their skills and move on to further challenges.

It is recognised that there will always be conflict between the needs of children with different abilities and therefore we need to try to manage this conflict. The priority needs to be inclusion, and the encouragement of all children to come together through play in good quality play environments.

The alternative is exclusion – not only is this incorrect and undesirable but, as stated in "Able to Play" (Kellog Foundation, USA): "This exclusion affects children with disabilities, their siblings, and their families. Further, it affects all other children as they assign status to one another during play – those who contribute during play are expected to be contributors throughout life. This perception is established during childhood and is very difficult to alter as a youth or adult. The consequences of some children being excluded from public playgrounds has the effect of excluding them from the work of children, which sets the stage for how we interact as adults in society."

0.3 Play for all

The term "Play for All" is used to emphasise that this document is not about how to create play spaces and play equipment just for disabled children, it is intended to give guidance on how to make play spaces and play equipment accessible to children of all abilities. It asserts moreover that all children are different, and a good play space is one that will offer play opportunities and challenges for both disabled and non-disabled children.

Play for all is play for all children and not just play for specific groups of children with or without specific disabilities. Disabled children also need to be able to play in unsupervised but safe settings alongside their siblings and friends. To achieve this, disabled children need to be fully integrated into society and it is particularly important to create opportunities for this integration within unstructured and unsupervised play environments. Disabled children should be welcomed and encouraged to use play facilities jointly with other children. As such it is important that play areas are not "dumbed down" and that challenging opportunities for very able children are still provided. The need to provide challenging environments for disabled children is just as important if not more so, as quite often the rest of their lives is spent in very closeted environments.

This Technical Report is not intended to be design restrictive and aims to follow the Design For All principles.

> "Design for All is design for human diversity, social inclusion and equality. This holistic and innovative approach constitutes a creative and ethical challenge for all planners, designers, entrepreneurs, administrators and political leaders.
>
> Design for All aims to enable all people to have equal opportunities to participate in every aspect of society. To achieve this, the built environment, everyday objects, services, culture and information – in short, everything that is designed and made by people to be used by people – needs to be accessible, convenient for everyone in society to use and responsive to evolving human diversity.
>
> The practice of Design for All makes conscious use of the analysis of human needs and aspirations and requires the involvement of end users at every stage in the design process" (source: EIDD Stockholm Declaration©, 2004).

This document is not about universal access to all play equipment but more about creating places where children of all abilities can play together. If we look to "Developing Accessible Play Space – A good practice guide" (Office of the Deputy Prime Minister, UK Government) we will read: "All children do not need to access play spaces in the same way but they are all fundamentally entitled to go out to play. Good design of public play spaces is needed in order to make this possible. Each child is different – not every piece of equipment in a play space needs to be accessible to every child but access to the social experience of play is key".

This Technical Report does not focus on "impairment specific" issues but hopes to help identify obstacles to play for any child who might wish to access the play space and think about ways to circumvent them. It is also intended to highlight any conflicts between the accessibility issue and the actual requirements of EN 1176.

The UN Convention on the Rights of the Child states that disabled children have the right to be included in their local community and to do the kinds of things that non-disabled children do. Developing accessible play space is about enabling all children to be with and learn from each other. Moreover, enabling disabled children to access play spaces helps them and their families build relationships and neighbourhood networks that can bind communities and promote social inclusion. This is vital as disabled children do not want to be on their own playing by themselves on equipment labelled "disabled equipment"; they want to be out there with their non-disabled peers and brothers and sisters. As one non-disabled boy said “I want to be able to play with my brother. It makes me feel sad when I can play on things, say climbing up and he can’t. I like it when he can climb as well, maybe not so high but we are on the same things in the same playground and we can play together.” Steven, 12-year-old brother of Martin (see [1]).

0.4 Cost

Finance for providing accessible play can be an issue, often used as an excuse for not providing better play for all. Any increase in cost as a result of providing more inclusive play areas will be significantly reduced if the needs of all children are recognised from the initial design stage.

The sections in the document cover:

— The prevalence and categorising of disability – This section covers the complexity of impairments and the importance of not focusing on specific groups such as wheelchair users, when developing open access play spaces. Additional information on this subject can be found in Annex A.

— Challenge and Risk – Providing information on the importance of challenge for all children. Having impairment should not prevent children from reaching their full potential through risk taking, and the importance of incorporating this into play spaces.

— The aims of play for all – Overall aims and considerations for good inclusive play spaces.

— Play area design and layout – Guidance on making play spaces more accessible for all.

— Equipment and types of play – Covering equipment choice and general information about encouraging multi use and integration.

Many documents were referenced in the production of this guidance document. These could provide useful additional information for play providers, so they are listed in the bibliography.

Tolerable risk is determined by the search for an optimal balance between the ideal of absolute safety and the demands to be met by a product, process or service, and factors such as benefit to the user, suitability for purpose, cost effectiveness, and conventions of the society concerned. It follows that there is a need to review continually the tolerable level, in particular when developments, both in technology and in knowledge, can lead to economically feasible improvements to attain the minimum risk compatible with the use of a product, process or service.

1 Scope

This Technical Report covers open access, unsupervised play spaces. It does not cover adventure playgrounds or other play spaces which are used under supervision. The intention of this document is to enable users, to a large extent, to access play spaces and use the equipment independent of the help of others.

This Technical Report is intended to be used in conjunction with EN 1176 and provides guidance to those involved in the specification, provision and management of play environments. It is intended to help create spaces that will promote opportunities for children of differing abilities to have the opportunity to participate in unsupervised play, and with appropriate levels of challenge and risk.

The scope of EN 1176 (all parts) covers only the safety requirements for play equipment and play surfaces. When developing this Technical Report, however, it was realised that the scope for "play for all" needed to consider a wider context, covering not just the immediate play space but also provide information about the broader environment and other access and facility issues.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1
play for all
play for children regardless of their physical or mental capabilities

Note 1 to entry: There are other reasons why children can be excluded from play, (such as cultural and social differences), which are not covered in this guidance document.

2.2
unsupervised play areas
play areas that have no supervision provided by the play provider or operator

Note 1 to entry: Children are sometimes accompanied to play areas by a carer or helper, and this is more often the case for disabled children. The carer or assistant is often referred to in this document but is distinct from any supervision provided by the play provider or operator, as defined here.

2.3
inclusive
play equipment and spaces that can be used and accessed by a wide range of users with different abilities

Note 1 to entry: BS 7000-6 defines inclusive design as "design of mainstream products and/or services that are accessible to, and usable by, people with the widest range of abilities within the widest range of situations without the need for special adaptation or design." [6]

2.4
carer/assistant
person who exercises responsibility, however temporarily, for an individual child’s safety

Note 1 to entry: This could be either:

a) non-qualified carer: a parent, grandparent, older sibling who has been given a limited responsibility over a child, adult acquaintance, a young person who is a baby sitter, or

b) qualified carer: a person trained to exercise responsibility for the safety of children or young people, for example a trained/qualified teacher, childminder, youth leader or sports coach.

3 Prevalence and categorising of disability

Disability can be defined in many different ways but what is really important is how the design of products, services and facilities can exclude those people who have functional limitations or impairments by failing to take their requirements into account. It is important to bear in mind that such limitations or impairments are not confined to a small proportion of the population since many people will experience some minor functional limitation in their lives, either temporary or permanent. At the other end of the spectrum there are individuals whose disability is very profound or complex but such individuals are rare and society does not need to design everything for wheelchair users who represent a very small minority of the disabled population. There are also those who have sensory disabilities and cannot hear or see well, although again few of them will be totally without vision or hearing, and people with learning disabilities who could have little or no physical limitations but have difficulty understanding. This is the population who use playgrounds and whose needs have to be considered.

It is often stated that when someone loses their sight, or for that matter any of their other senses, their other senses become more sensitive. This is not true. In actuality, when a person is deprived of a sense, he or she will learn to use their remaining faculties more efficiently. In other words other senses do not become stronger; people just learn to obtain information through them that you would have obtained through the lost sense. However, this does not mean that providing alternative ways of imparting information or of interacting with things is not important; it is actually even more important as the child with impaired hearing or vision does not have heightened compensatory senses, they simply use what they have left and need all the help that can be provided.

Estimates are difficult to obtain but in Europe approximately 5 % of children are considered to be disabled. Of these children only about 10 % are wheelchair users and some of these children might well be able to walk short distances using other mobility aids such as sticks and frames. The concept, therefore, that accessible facilities are those specifically for wheelchairs users to use is incorrect, and concentrating on this small minority of wheelchair users could have the effect of reducing the play value of the playground to such an extent that children have no wish to use it. This could be either because it lacks challenge or is seen as a playground just for disabled children, who have no wish to be labelled in this way.

Enabling disabled children to access play spaces helps them and their families build relationships and neighbourhood networks that can bind communities and promote social inclusion.

By taking a person-centred approach, this document provides guidance for the design of play facilities that are as accessible and usable as possible by the largest number of children and adults. Their aims is to provide equality of opportunity for all and it attempts to look not at impairments but rather at what children are able to do and how they can be challenged. It also recognises the fact that some of the adults who accompany children to a playground could be disabled or elderly and therefore require accessible facilities to ensure that they and the children they care for can have access.

For further information on prevalence and categorising see Annex A.

4 Challenge and risk

Providing challenge for all children, including those with impairments, is important in good play environments. When developing an open access play space, the widest possible range of abilities need to be considered, as it is vital to retain different levels of challenge for all, the able and the less able, whether it depends on age, physical or mental conditions.

EN 1176 is a hazard approach standard, where requirements have been set to achieve tolerable injury risk, taking into account the value and the need of play for child development.

During play, children are often driven by the challenge to do things that take them to their limits, which in turn, lead to a better knowledge of themselves through experience. This challenge often corresponds to a sense of risk as there are chances for success or failure, even when the probability of an injury is minimal.

Trying new things, testing new skills by surpassing obstacles, is always perceived as a risk by the child, even though not necessarily as a risk of injury. The challenge is to succeed in a specific task even if it needs several attempts and going a little bit further each time. This is a way to develop one's full potential by exploring new skills (self-confidence, strength, balance, autonomy).

The big challenge for adults / designers / playground planners / providers is to find the right balance between the tolerable / acceptable and necessary residual injury risk in all playgrounds and the different levels of challenge required by a diversity of abilities. It is the adults responsibility to ensure all children have opportunities to experience different levels of challenge with the minimum likelihood of sustaining an injury, in a risk controlled / managed play environment, whilst always aware of the expectation that minor injuries will occur, particularly in the rough and boisterous activities that form part of active play.

Disabled children are in greater need of challenging opportunities, without being exposed to a greater or unacceptable risk of suffering a serious injury. Some types of challenge (such as climbing and heights – the ability to take your body higher) cannot be achieved without the risk of an accident such as a fall. It is part of the trial process that the child needs to go through to find out their own abilities and to develop further skills for self-confidence and autonomy.

The need to provide challenge for all and at the same time, an acceptable level of safety, means that not all play equipment can be accessible for all children.

The nature of the challenge can be different depending on the type of impairment / disability. Often, the desire to over protect disabled children from risk is not necessary or even beneficial.

When there is a necessary risk, in order to reduce exposure to the hazard for disabled children, it is important to increase / enhance factors or elements that can facilitate "good" risk perception and "good" or appropriate decision-making; any risk should allow for free choice and self-determination when deciding to take a certain risk or deal with a certain challenge.

5 Aims of Play for All

There is much more to a good play space than just play equipment; a good play space is a well-designed environment with an atmosphere that welcomes all children. Landscaping, planting, and creating intimate spaces as well as spaces for running around are just as important as the play equipment. A good play area will create an overall environment conducive to quality play for children of all abilities.

It is better for the child to be at the playground than not at all. If the play space is accessible and welcoming and all children can be in the same space together, this is better than not having access to the space even if much of the play equipment is not accessible for some.

It is also important to bear in mind that the child's carer may/could be disabled and experience difficulties accessing the play space. This will also restrict access for the child if their carer cannot support them in the use of equipment.

A truly accessible playground will have a range of equipment that can accommodate a range of abilities, since it is not possible to know the range of impairments or numbers of children who will want to use the equipment now and in the future. Not all equipment will be used in the same way by children with different abilities but the important thing is that they can access a variety of items. A good, accessible playground will attract children of all abilities from a wide area.

The exception to this is playgrounds associated with or within specialist facilities catering for children with specific disabilities. Such facilities may/can have specialist equipment aimed at a specific impairments but will also have assistants and supervisors who are able to help the children to access and use the play items.

All children need to be able to make choices about what items of play equipment to use, even if their choices result in failure to achieve their goals, good quality play is self-directed. Only in this way will they be challenged and develop their skills. Children also vary a great deal in their abilities and it is impossible to categorise them. Many disabled children have multiple impairments and so designing play items that are accessible to all can be very challenging and certainly there is no "one size fits all" solution.

6 Play area design / layout

In order to play on equipment, the disabled child has to be able to access it. Without easy access it does not matter how suitable or exciting the item is, it is of no use to them. This means that paths and access ways need to be provided for all children.

The following are requirements to reach the play area, enter it, and approach the main items:

A level access from the nearest public access path to and into the play area is advantageous, not only for wheelchair users but also pushchairs, other mobility aids, the sight impaired, or anyone who has difficulty walking, and are unsteady on their feet.

Any entrances, gates and access routes/paths need to be wide enough to accommodate those using mobility aids, the widest of which are motorised buggies, where a clear opening of at least 1,2 m is advisable.

Access routes/paths need to be of materials and construction that can be used throughout the year. Grass, for example, can be unsuitable because winter rainfall can turn it into a muddy, inaccessible route. Choice of construction and materials for the paths should consider intensity of use, climate, ground profile and ground soil/conditions, etc.

Design of the path should also consider the ability of users to use the access route using sticks, crutches, pushchairs/buggies, mobility frames or motorised wheelchairs. Access routes/path constructions should relate to local need and materials. Over specifying of these constructions could result in too large a proportion of the budget being spent on access routes rather than play equipment.

Surfaces should be selected carefully and can be used to both aid and restrict access to an item. If the item is to be accessible to all then a suitable surface should extend right up to the access point of each item of equipment although the surface might have to be changed to comply with any impact absorbing surfacing requirements across the play equipment’s impact area. Without such access for the child, or their carer, the child cannot even attempt to use it.

Impact absorbing surfacing often uses loose or easily dispersible materials such as timber chippings or sand and where these are used rather than synthetic surfacing, consideration should be given to ensure suitable access arrangements. Where loose material is retained in a raised pit, access will be restricted for some users. Providing the containment structure with a slope will aid access and prevent potential trip hazards and falls onto an obstacle for all. Alternative, more stable surfaces can be used to create a path to permit access through loose fill surfaces that are not stable.

Loose fill safety surfacing such as bark, sand, and also turf have added play value in their own right and should not be discounted because they can make access difficult for some users. This can be overcome by good design or by providing other play opportunities, which in turn will represent a wider diversity of stimulus for all.

A further issue to address is that of items of mobility equipment such as wheelchairs, crutches and sticks being left in the falling space around equipment. Impact absorbing surfaces will obviously be compromised if hard objects are left in the way. Careful design of access routes can prevent this from happening, for example by the use of sand in the fall area which will be difficult for wheelchairs to cross and therefore will minimise the chances of them being left their by their occupants.

Providing facilities adjacent to a play area can make a visit to the playground a much easier and more enjoyable experience for disabled children and their carers. One of the main reasons disabled children do not access play areas is because the child’s carers do not bring them. The availability of car parking close to the play area and the provision of toilets with changing facilities will encourage carers and helpers to bring disabled children to the play area.

Open sight lines provide carers with "distance" or "observation checking" so that children can play without unnecessary control or adult interference. Whilst traditionally this has had more to do with concerns regarding child protection and bullying, for disabled children there is as much concern about the child’s abilities, or their

use of items of equipment. Keeping sight lines open across the play space allows carers to supervise from a distance, a loose hand contact which can enhance a child's play opportunities.

With all playgrounds, the time a child spends at the play area is mostly determined by how long the adult accompanying them is prepared to stay there rather than by the excitement offered by the play equipment. The provision of accessible adult seating and, where appropriate, shelter (sun or rain), picnic tables to encourage family groupings and other such facilities will benefit all users and extend the time children spend playing.

Signage is always a secondary form of protection for children and where safety is an issue this should be addressed by the design of the item or area rather than by reliance upon a notice. In cases where signage is necessary, it should be aimed at adults rather than children and provided at the entrances to the play area so that the information is available from the outset. Although the wording of the sign should be aimed at adults, as the play area is specifically focused on children it is the needs of the child rather than the adult that take priority when considering what information should be provided to users or to those accompanying them. It is also important to bear in mind that signs or notices frequently have little effect on behaviour and might actually encourage the prohibited activity. Signs will also have little effect on children if they are unable to read the information, do not understand the information or fail to appreciate the consequences of not following the instruction.

Whilst pictograms can help, they are not necessarily always a suitable solution and only properly evaluated standard symbols should be used.

The use of a coding system, for example animal signage, or colour to indicate the suitability of an item of equipment for a specific age or ability also can be adopted but this can be counter-productive as the abilities of individual children can be very variable. In most cases, the child's carer will know more about their child's ability to use an item of equipment and so they are best placed to make choices.

However, it is important to bear in mind that some adult carers might have the belief that because it is an accessible play area all items of equipment are safe and suitable for their child, regardless of their ability and that they do not need to exercise any control over them. Unsupervised play areas do not have professional supervisors and it might be necessary to have a notice at the entrance to remind parents that it is their responsibility to ensure that their child only uses equipment that is within their ability. Signage also provides the possibility of providing tactile information for the sight impaired.

Although it is now recognised that fencing around play facilities can diminish play opportunities by reducing the amount of play space available, it might still be necessary to fence a play area or part of the perimeter if there are hazards such as vehicles or water in the area.

Preventing small children from running away from a play area can be achieved by having a small range of items surrounded by low fencing with entrances controlled by self-closing gates. Where older children with learning difficulties are using a play area, it might be necessary to provide fencing around a larger part of the area to prevent them from wandering.

Where a play area is fenced, access points should be provided which are sufficiently wide (at least 1,2 m) to allow users with wheeled mobility items (child or adult) and parents with child buggies to pass.

Water is a very important play element which offers significant play opportunities for children of varying abilities. Water play can be in the form of simple "squirt" jets, sand and water play table or a larger body of water. For this latter type of water, there should be no steep sided banks, underwater holes or sudden drops which could all constitute hazards. Access should be via a gently shelving gradient (< 5°) with a stable bottom under the water to simulate a gradual beach such as when entering the sea or a lake. This allows carers to see what the child is doing and, if necessary, assist them.

It can be very useful to carry out an audit of the local environment, demographic and get to know the local community before planning the play area. For example, are there any special schools in the location; if so are the children likely to access the play space and what are their needs? Caution is needed however to prevent over compensation in these situations – play spaces are still likely to be mainly populated by children with a wide range of abilities. In areas near to special schools for children with very severe or specific disabilities a

specific approach, in consultation with the school, might be needed so that there is real integration of these children into the community without taking away challenge from other children who will use the playground.

7 Equipment and types of play

7.1 General

One of the main purposes of playground equipment is to challenge children and allow them to develop their skills. It is also important to make playgrounds accessible to disabled children including that small minority of wheelchair users. This can be difficult to achieve as there needs to be a balance between making equipment that is accessible, enjoyable and challenging for disabled children whilst at the same time still challenging the rest of the child population who use the equipment. However, making playgrounds accessible does not mean making all play items equally accessible to children of all abilities. Rather, there should be a range of equipment and materials, some of which are accessible to all children, including wheelchair users, whilst other items or areas still present a challenge to the more able children and prevent vulnerable ones from having access to levels of challenge with which they might not be able to cope.

In publicly accessible unsupervised playgrounds, choosing particular items of equipment for a specific disability can cause problems. The impairments of the children using the playground will change over time and so flexibility is needed. It can also lead to an item of equipment being labelled as "special" and therefore not used.

The best equipment can be used by a range of children, some are better than others (e.g. waterplay is very good). Wheelchair ramps have limited play value for a very limited number of children. Equipment that meets the needs of only very specific groups of children such as wheelchair ramps is not always appropriate and can cause its own problems. Such items often have limited play value for a very limited number of users

Inclusion should be invisible as far as possible. Even if some equipment is aimed to stimulate a specific ability it should also be appealing to a majority of other users.

EXAMPLE A tactile panel for visually impaired children could also be full of colour.

Some products can be used in very different ways and by any child through thoughtful inclusive designing; it is inclusiveness can be invisible, such as a large seat for good body support on swinging items. Or sand boxes with upper body support at ground level. However, not all equipment has to be accessible to all, to ensure challenge remains for the most able users.

Consider the senses, touch, sight, sound, and smell. Each play type should allow for the stimulation of two or more senses, e.g. movement and sound this will increase accessibility for a wider range of users. Different tactile touch surfaces both on the ground and on the equipment should be considered.

Consider different play functions such as social, balance, upper body strength. The following categories are useful as a basis for choosing equipment that will provide opportunities for a range of play experiences:

— Agility: traverse walls and nets, wobble board;

— Balancing: beam, pole, step posts;

— Climbing: frame, wall, net, rope;

— Crawling: tunnel, narrow bridge;

— Hanging: overhead hoops/bars;

— Jumping: low or high height, close or far distance;

— Meeting: seat, boulders, shelter, tunnel;

— Rocking: see saw, springer;

— Rotating: carousels, roundabouts, spinning poles, disks;

— Sliding: traditional slide for backside/body, fire pole, runway/zip wire;

— Speed: sliding, swing;

— Swinging: single user, multiple user;

— Tactile: water, sound, sand, mud, grass.

The selections of specific items that offer opportunities are many and varied. In the case of rotating this can range from ground level carousels offering easy step free access with gentle movement to single point suspension or bird nest swings giving the experience of exhilarating speed and spinning motion.

In specifying the dimensions, gaps, entrapment and entanglement hazards the play equipment standard EN 1176 generally considers the known anthropometric and biomechanical properties of non-disabled children as this is the only data generally available to them (see for example Childata, DTI UK). However, some disabled children need to wear padded protective headwear which effectively increases the size of their heads and therefore presents at least the potential for head entrapment that would not happen without the helmet. This is a similar problem to that raised when children wear cycle helmets whilst using play equipment. Children, or at least their parents, are advised not to wear cycle helmets whilst on play equipment (see [3]) but this is not an option for a child who needs a helmet for protection at all times because for example they have epilepsy and may/could fall and bang their head at any time.

Reference to EN 1080 as helmets to this standard is safe for use during play.

There is also a potential entrapment hazard for children wearing external leg braces as they may/could become hooked on to protruding parts of the equipment. They could also present a hazard to other children for example when descending a slide that is still occupied at the bottom. Being hit by a child with rigid leg braces could potentially cause quite severe injuries.

None of these issues is insurmountable but they do need to be taken into consideration and may/might affect the design of specific items of equipment.

Below is some general information given regarding some of the different parts of EN 1176: It is intended to give guidance on how some of the different play types covered by EN 1176 can be applied in a more inclusive way.

7.2 General – EN 1176-1

Below are some suggestions to make general play equipment more accessible / inclusive.

Provide increased body support and additional hand grip positions, and more opportunities to sit and rest within play structures. Consider segregating very active parts of play structures which may be daunting to some children from more easily accessible parts. Roofs are important to provide shelter from rain and sun (but should not be easily climbable). Larger deck surfaces on equipment will help to accommodate carers who are helping the child. If designing a tower consider the space beneath the tower platform, so that playing can take place above and below, depending on ability.

Include escape routes and alternative exit possibilities on play structures, so that if a child tries an activity and finds it too challenging they can back down easily. Try to provide a range of access types with progressively challenging activities, such as stairs with good hand support at one position and a climbing rope in another position. These progressively challenging access types make play structures more inclusive.

Good lines of sight for carers will provide better remote supervision, allowing carers to let the child play freely, and also to give the child confidence and to feel safe. For barriers on walkways and platforms it is much better

to provide a more open see through construction to allow carers to see the child, and the child to see the carer. To aid this further, above ground walk ways should not be too high, so that the carer can reach out to the child if required. Also consider providing wider passing places on long bridges and walkways. Trip hazards should always be minimised, but take extra care at the transition of surfaces for children who are unsteady on their feet or are visually impaired.

Tactile information signs could be provided for the visually impaired. Additionally try to consider all the senses and allow for at least a combination of two senses to be used. This can be achieved by providing tactile surfaces, auditory stimulation, good use of colour and movement/vibration.

Consider the consequences of overlapping of falling spaces between items. Although this is allowed for some items in EN 1176, when making a more accessible play area, providing space between play items is more important for good circulation, carers, mobility aids etc.

Some children with disabilities have increased head dimensions, or need to wear a helmet. This should be considered when designing openings and how children may use them.

Providing access for disabled children can also provide easy access for very young children, in which case the requirements for easy access should be followed. There may be an increased risk of hard objects in the falling space such as walking aids, and wheelchairs.

Forced movement situations should be considered carefully. Some disabled children may take longer to clear the impact area at the end of the forced movement e.g. a slide run out. This potential hazard can be reduced by providing good sight lines between the start and end of the forced movement areas.

Consider structural loading carefully. Stronger structures may be required to accommodate the extra loads of mobility aids and adult carers. The loading calculations used in EN 1176 are based around a 14-year-old child and may need to be increased if structures are to be used more by adults and heavier users with mobility aids.

7.3 Swinging – EN 1176-2

Below are some suggestions to make swinging more accessible / inclusive.

Consider larger swinging seats and platforms, which can provide better body support, and can sometimes, accommodate a carer plus the child. A swing can also produce a gentle rocking motion as well as more dynamic play making it a good inclusive product.

Swinging is forced movement so consideration should be given to the space around the swing to warn children of the hazard of entering an area of moving items. Also the larger swinging platforms may have higher impact forces than a small seat.

If larger swing seats or platforms are being used, consider good body support and security to prevent users unintentionally falling from the seat while in use.

7.4 Slides – EN 1176-3

Below are some suggestions to make sliding more accessible / inclusive.

Sliding is forced movement so consider the space around the runout where users may be leaving the end of the runout at speed. Some form of warning that users are entering an area of forced movement such as a different surface texture could be considered.

The shape of the slide bedway can have a big effect on slides accessibility. Higher sides to provided additional lateral protection are advantageous. Also provision for a carer and user to slide in tandem so the carer can provide additional support. Wide sides are good for two users side by side, but with less lateral support a single user may find the wider bedway less supportive. A console in the middle of wide slides can be incorporated to improve support.

Provide ample room and support at the start section of the slide for carer and user. Cross bars on attachment slides are better placed at the highest position. Longer runouts are preferable, as the user will come to rest on the slide. Consider the type of access provided. Embankment slides can provide good access if a shallow ramp is incorporated and good handrails.

Wheelchair users will need to leave their chairs to use slides, consider how the wheelchair can easily be transported from the start to the runout and how the user will transfer from the wheelchair to the slide at both the start and runout.

It is advantageous for the user at the start of the slide to be able to see the runout to ensure it is free from other users, before starting to slide. For longer sides consider speed which can be very fast and disconcerting for some users. A shallower angle will help to keep speeds lower. Also changes in direction along the sliding section should not be too acute, so that good lateral support and good body control is maintained.

7.5 Cableways – EN 1176-4

Cableways have a long forced movement. The best type of seat of this type of equipment in unsupervised playgrounds is a small single user seat with good all round impact absorption. As a result users need good body control and a strong grip for this type of play activity.

A more supportive seat may be incorporated, but the hazard to other users who may be struck by the seat should be very carefully considered. Due to the long forced movement ways of reducing the risk to users near the cableway should be taken into consideration, positioning the cableway at the periphery of the play space for example and/or a change in surface type.

7.6 Carousels – EN 1176-5

Below are some suggestions to make carousels more accessible / inclusive.

Carousels cover many different design types. Hanging carousels require good upper body strength; lower level carousels with a larger platform area provide better accessibility and room for a carer as well as the user. Seating and hand rails can be provided to improve body support.

Carousels that are flush with the ground helps access further and can make the item accessible for wheelchair users. If access for wheelchairs is provided ensure the chair can be held in place during play. Also for inclusion, ensure that there is space on the carousel for all users not just those in wheelchairs.

Consideration should be given to the way the carousel is propelled and slowed, for self-determined play, ideally the user should have some control over the rotation of the item.

7.7 Rocking Equipment – EN 1176-6

Below are some suggestions to make rocking equipment more accessible / inclusive.

These play items can be made more accessible by incorporating more supportive seating and additional grip positions. Also consider how the user can access the seating position more easily.

Some rocking equipment can have either a dynamic or more gentle movement making them inclusive and suitable for children with different abilities.

7.8 Spacial Network – EN 1176-11

Below are some suggestions to make spacial networks more accessible / inclusive.

Spacial networks are very flexible in their design possibilities and can provide varying levels of challenge for users. A low starting point helps access, and controlled progression from more accessible areas to more challenging areas of the net can be incorporated.

Areas in the net where users can rest should be considered and a mesh density that provides plenty of grip and foot positions will help less able users.

Consideration should be given to carers who may need to access the net to provide support.

Annex A
(informative)

Prevalence and categorising of disability, additional information

A.1 General

Disability has been defined and categorised in many different ways over the years, often without success. Furthermore, individuals frequently have combinations of impairments making it difficult to place them in one category. The current enlightened way is therefore to consider the individual within the context of his or her environment. It is not acceptable to categorise a person on the basis of their diagnosis; it is necessary to look beyond this at what they are able to do and how society can provide what is needed to allow them to participate to the full extent of their abilities.

A.2 Social model of disability

The social model of disability proposes that systemic barriers, negative attitudes and exclusion by society (purposely or inadvertently) are the ultimate factors defining who is disabled and who is not in a particular society. It recognises that while some people have physical, sensory, intellectual, or psychological variations, which can sometimes cause individual functional limitation or impairments, these do not have to lead to disability, unless society fails to take account of and include people regardless of their individual differences. The model does not deny that some individual differences lead to individual limitations or impairments, but rather that these are not the cause of individuals being excluded.

The social model of disability is often based on a distinction between the terms "impairment" and "disability." Impairment is used to refer to the actual attributes (or loss of attributes) of a person, whether in terms of limbs, organs or mechanisms, including psychological. Disability is used to refer to the restrictions caused by society when it does not give equivalent attention and accommodation to the needs of individuals with impairments.

One method of considering disability is that of the International Classification of Functioning, Disability and Health (ICF), see [4]. The ICF puts the notions of "health" and "disability" in a new light. It acknowledges that every human being can experience a decrement in health and thereby experience some degree of disability. Disability is not something that only happens to a minority of humanity. The ICF thus "mainstreams" the experience of disability and recognises it as a universal human experience. By shifting the focus from cause to impact it places all health conditions on an equal footing allowing them to be compared using a common metric – the ruler of health and disability. Furthermore, ICF takes into account the social aspects of disability and does not see disability only as a "medical" or "biological" dysfunction. By including contextual factors, in which environmental factors are listed ICF allows to records the impact of the environment on the person's functioning.

One very constructive way of considering impairment and disability is that developed in the system called activity matching ability system or AMAS which was a system developed at Loughborough University in the UK to match working people’s abilities with the activity that a particular job required (see [5]). It does this by identifying the level of requirement for an activity in a job, for example standing up, (none, some, major) and whether individuals “can” do the associated ability behaviour, and then considering the “match” of activity and ability. AMAS addresses general ability to do the job, i.e. can the individual do the job, not how well they will do it. It was established on the ergonomics principle of providing fit for purpose work solutions through ensuring a harmonious relationship between who is doing the work, the tasks they perform, the equipment they use and the workplace itself. It is postulated that a modification to this system could usefully be applied to children using items of play equipment. For example does the equipment require a child to be able to balance, have good upper body strength or to be able to see. More work is clearly required but it could well provide a system for recommending specific items of equipment that will be suitable for children with different levels of ability and also to identify which items of equipment in a play facility should be accessible for a particular child. Such an approach works equally well when considering age-related abilities since younger children are less able than older children in numerous ways including strength, reach, balance, ability to read etc.

This person-centred approach is taken by this document to help in designing play facilities that are as accessible and usable as possible by the largest number of children and adults as possible. Like the social model of disability, its fundamental approach concerns equality of opportunity and attempts to look not at disability or even impairment but rather at what children are able to do and how their abilities, whatever they are, can be challenged. It also recognises the fact that some of the adults who accompany children to a playground could be disabled or elderly and therefore require accessible facilities to ensure that they and the children they care for can have access.

A.3 Numbers of children with disabilities

When considering accessibility issues there is a tendency to concentrate on access by wheelchair users, whereas in reality those who use wheelchairs, and certainly those who are completely dependent on them, are very much a minority, possibly as low as 0,5 % of children.

It is very difficult to obtain figures on the number of disabled children in Europe and even more difficult to establish how many of them are wheelchair users, either occasionally or all the time. Figures on numbers of disabled people in Europe are only collected for those over 16. Even national figures on numbers of disabled children tend to only start from the age at which a child starts school as it if often only when a child is judged to have special educational needs that they are included in the number of children considered to be disabled. There is also a great deal of variability over the different categories that are included in definitions of disability. For example across the United Kingdom about half of the local authorities consider attention deficit hyperactivity disorder to be a disability and about half do not. The differences between different countries are even more marked. Some information excludes children in residential care and finally the age ranges of the data also vary with the lower age being 0, 4, 5 or 6 years and the upper age limit being 14, 16 or 18 years. All of these factors make it very difficult to extrapolate across the whole of Europe.

Work in the UK has estimated that between 3,0 % and 5,4 % of children under the age of 18 years has impairment. This gives figures of between 288 000 and 513 000, with boys being about twice as likely to be categorised as disabled as girls. However, children under the age of 5 years will be seriously under-represented for the reason previously stated. Another UK estimate that includes children under school age but only up to 16 years gives figures of 770 000 disabled children. That equates to one child in 20 % or 5 %. Of these children it has further been estimated that 70 000 of them could benefit from customised mobility equipment, chiefly wheelchairs. This is therefore approximately 10 % of the total disabled child population and even these children will not spend all of their time in their wheelchair and might be able to access equipment using other walking aids or holding on to equipment.

Figures for Italy have estimated that 1,6 % of children aged 6 years to 14 years are disabled but this excludes any that are not living with their family such as those in special schools. There is no data for children under 6 years. This is obviously a lower incidence than that in the UK but the survey reports that the definition of disability was very restricted and only related to a total inability to carry out an activity of daily living. They estimate that for the whole population aged over 6 years the reported incidence was 4,8 % but a more realistic estimate would be 12 % or 2,5 times the reported level. If this factor is applied to the estimates of the number of disabled children then this would rise from 1,6 % to 4 % which is similar to that of the UK.

A European source estimates that there are around one million children with intellectual disabilities throughout the European Union.

As of 1 January 2010, the population of the EU is about 501,26 million people. Estimates of the total number of children is difficult to obtain but in 2005 the number of children under 16 was said to be 120 million or about 24 % but this varies across countries with the birth rate and is falling as the population ages. However it gives us some estimates of the total number of disabled children of school age in Europe of between 3,6 and 6,5 million of which perhaps 360 000 to 650 000 use wheelchairs.

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