DESIGN PRINCIPLES FOR CREATING THERAPEUTIC GARDENS FOR CHILDREN WITH AUTISM SPECTRUM DISORDER (ASD)
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OUR VISION

We’re on a mission to ensure every Australian has access to a therapeutic garden to support their physical and mental wellbeing regardless of their developmental, cognitive, psychological or physical challenges.

The evidence of the improved mental and physical health outcomes that can be achieved through interacting with nature is already well documented. Therapeutic gardens are a wonderful way of providing regular stimulating yet relaxing interaction with nature. They aren’t just a great place for those with special medical needs though, they are a beautiful and healthy resource for everyone. Therapeutic gardens can benefit family, friends, carers and the entire community.

Our consulting firm combines all the expertise, tools and professionals you need to bring your therapeutic garden vision to life. We are available to support the creation of therapeutic gardens at all stages, from consultation through to design and build for individuals and organisations of all shapes and sizes.

It is our vision to facilitate the building of these gardens throughout the community in hospitals, medical institutions, special needs childcare facilities, schools and aged-care residences, as well as public spaces and parks. We want to revolutionise Australia’s approach to health by seeing traditional therapies and treatments work hand in hand with regular access to nature through therapeutic gardens.

Bringing together all the advice, expertise and experienced professionals you need to create therapeutic gardens.
Our approach is both evidence based and holistic.

There are many types of therapeutic gardens that we can help to create, such as inclusive community gardens, dementia gardens, sensory gardens, gardens for children with special needs, edible gardens, autism spectrum disorder gardens or healing gardens for institutions.

We bring together teams of experts specially chosen to meet the needs of the garden users. These teams can help you assess your space and the needs of your users to develop the ideal tailor-made therapeutic garden. Many of our clients need assistance with the entire process from assessment and conception, through to implementation and maintenance, but others need our expertise for only part of it – either way, the choice is yours.

Our experts could include professionals such as:

- Landscape designers and architects
- Special educators
- Therapists
- Physiotherapists
- Pediatricians, and
- Landscape contractors.
No garden space is too big or too small. For larger community gardens we can assist with seeking funding, Council approvals and even provide a communications strategy for promoting the space. For all types of gardens, we can help with areas such as:

- Needs assessment
- Design
- Implementation, and
- Maintenance.

We recognise that not everyone has the resources or the desire to seek professional help to create their therapeutic garden, but our passion and vision remains the same. We want to see everyone have access to therapeutic gardens and help them to realise and harness the wonderful health outcomes that these spaces can achieve. For this reason we have also created an information hub where subscribers can read about the latest research and design principles for creating therapeutic gardens. We are also writing a series of e-resources with still more information on designing and implementing different types of therapeutic gardens and we have packed these resources with scientific research, tips and plant suggestions.

Our information hub is a place where we are building a community of people passionate about achieving healthier lives for themselves and others through therapeutic gardens. Please get in touch if you have an experience to share, or want to spread the word about wonderful work being done in the field, or there is a garden that should be featured on our site. Help us to change lives and bring joy and health to our communities.

I like gardening - it’s a place where I find myself when I need to lose myself. Alice Sebold
ACKNOWLEDGEMENTS

I am incredibly proud to have collaborated with extraordinary individuals to create this resource and would like to acknowledge the awesome people who have contributed their expertise to its production.

My heartfelt thanks and gratitude go to head writer and researcher Madeleine Stedman, designer and typesetter Kendra Stewart of Redhot Design, and the talented photographer Luisa Brimble.

I would also like to thank my soul sister, Landscape Architect and Horticulturalist Linda Ross and last, but not least, my business mentor and go to for most every facet of my new business, Ben McAdam of McAdam and Co. Without such a great team behind me this resource would never have been possible.

Jo Aquilina, Founder and CEO
Joanne’s love of gardening grew through working in the garden alongside her grandmother. Over time, gardens have become a place of peace and positivity for Jo, providing refuge in times of stress, or when she simply needs to regain a little perspective in life.

Jo’s connection with gardening, and her understanding of the therapeutic benefits of nature, became heightened when her four children were each diagnosed with a variety of special needs. Jo has worked hard to help her children overcome the challenges their conditions present and reach their full potential. She has seen her children, and many others, flourish as a result of the mental and physical benefits provided by gardens designed to meet their specific needs.

As the Chief Executive Officer of LNA Master Landscapers Association, Jo identified the need for a central information hub for individuals and organisations wanting to experience the benefits of therapeutic gardens. Her vision is to create a resource that brings together teams of people in collaboration to help design, develop, build and implement much needed natural spaces within our community.
The Australian Bureau of Statistics (ABS) Survey of Disability, Ageing and Carers showed that in 2012 115,400 Australians (0.5% of the population) were diagnosed as having autism spectrum disorder.

Staggeringly, this represents a growth of 79% from the previous survey conducted by the ABS which found 64,400 Australians to have Autism Spectrum Disorder (ASD). The 2012 statistics show a peak age for the number of individuals with ASD to be in the 5-9 age bracket. There are a number of possible reasons for the drop off after this age bracket, including diagnostic issues, survey methodology and scope, however, the increase in diagnosis does mean that more individuals afflicted with ASD will hopefully have access to the help they need to overcome their symptoms.

The ABS survey also indicated a much higher rate of prevalence in boys than girls. Boys were found to be four times more likely to have ASD.

Early intervention is key to helping those with ASD to live more easily with their condition and to improve their quality of life. The benefits offered by gardens and interaction with nature are extensive and early introduction and exposure to these environments is all the more important.
Gardening is any way that humans and nature come together with the intent of creating beauty.

May Sarton
WHAT IS AUTISM SPECTRUM DISORDER AND WHAT ARE ITS SYMPTOMS?

According to the Australian Psychological Society, autism spectrum disorder (ASD) is a term used to describe a group of disorders that includes autism, Asperger’s syndrome and pervasive developmental disorder (also known as atypical autism). Autism is the most commonly occurring form of ASD.

ASD is a lifelong neurological, developmental condition that usually appears in the first three years of life. The term spectrum is used because it describes the wide variety and differing levels of severity of symptoms found in children with ASD. For example, some ASD-diagnosed children have good language skills and high cognitive skills, while others are non-verbal and have significant social, cognitive and motor skills challenges. Individuals with ASD have difficulty understanding and processing information about their environment. The main areas that the condition manifests itself are:

1. Sensory integration

Sensory integration is the normal, neurological, developmental process that begins in the womb and continues throughout the life of the individual. The neurological system takes information in from the environment through the senses and, typically, the brain organises this information to enable the individual to use it and respond appropriately in the environment. It affects daily functioning, social and family relationships, behavioural challenges, emotional regulation, self-esteem and learning. In autistic individuals, the process of sensory integration is disrupted – either the brain does not receive the information, the information sent to the brain is wrong, or the information is sent to the brain but the appropriate response is not formed. The result of this is that normal adaptive responses in the environment are not achieved. The frequency, intensity, duration and functional impact of these symptoms determines the dysfunction.
2. Social interaction and communication

Children with autism do not socially interact or communicate in the same way as their typically developing peers. The degree to which this is apparent varies across a spectrum, ranging from low-functioning communication and interaction (entirely non-verbal and socially isolated/detached) to high-functioning communication, good language skills and some degree of social interaction. However, even high-functioning children on the autism spectrum experience some degree of difficulty in this area and can have difficulty reading facial expressions, anticipating the feelings of others, as well as trouble articulating their desires and feelings to others.

3. Activities and interests

Children with ASD have very different interests and activities compared to their typically developing peers. Again, there is a spectrum of behaviour here. Some children will show little or no interest in play, some become very attached to particular objects rather than people, others are very driven to organise objects in a specific order repeatedly, whilst some very high-functioning children (such as those with Asperger’s syndrome) will become particularly interested in a particular subject and focus on this intensely. Some also have excellent rote memories.

4. Repetitive patterns of behaviour

Some children on the autism spectrum develop very repetitive patterns of behaviour. These are sometimes manifested physically with repetitive spinning, rocking or hand flapping, for example, whilst others become overly fixated on particular routines and overly attached to sameness of behaviour.
CHARACTERISTICS OF ASD

Some of the characteristics indicating ASD include:

• Marked impairment in the use of multiple non-verbal behaviours such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction

• Failure to develop peer relationships appropriate to their developmental level

• Lack of spontaneous seeking to share enjoyment, interests, or achievements with other people

• Lack of social or emotional reciprocity

• Delay in, or total lack of, the development of spoken language (not accompanied by an attempt to compensate through alternative modes of communication such as gesture or mime)

• In individuals with adequate speech, marked impairment in the ability to initiate or sustain a conversation with others

• Stereotyped and repetitive use of language or idiosyncratic language

• Lack of varied, spontaneous make-believe play or social imitative play appropriate to developmental level

• An encompassing pre-occupation with one or more stereotyped and restricted patterns of interest that is abnormal either in intensity or focus

• An apparently inflexible adherence to specific, non-functional routines or rituals

• Stereotyped and repetitive motor mannerisms (eg hand or finger flapping or twisting, or complex whole-body movements)

• Persistent pre-occupation with parts of objects.
One touch of Nature makes the whole world kin.
Shakespeare
Children with ASD will often be more interested in objects than in other children, prefer being alone or detached and show a resistance to being touched or cuddled. They may be resistant to change and show an attachment or reliance on sameness, have an inability to engage in make-believe play and have difficulty with fine and gross motor skills.

ASD characteristics are often discussed in partnership with Sensory Processing Disorder (SPD) which is a neurological disorder that causes difficulties with taking in, processing and responding to sensory information about the environment and from within the individual’s own body. Individuals with ASD often have this disorder, but not all do, and individuals with SPD are not all autistic. Individuals with SPD live in a spectrum of sensory experiences ranging from hypersensitive (over-sensitive to stimuli) to hyposensitive (under-sensitive to stimuli).

As mentioned above, ASD is often characterised by difficulties with sensory integration and this frequently affects both the body’s vestibular system and its proprioception systems. Sensory integration is the neurological process that organises sensation from one’s own body and the environment and makes it possible to use the body effectively within the environment. Sensory processing is the brain receiving, interpreting and organising input from all the active senses at any given moment. The vestibular system explains the perception of our body in relation to gravity, movement and balance.

Proprioception is the sense of the relative position of neighbouring parts of the body and strength of effort being employed in movement. This sense is very important as it lets us know exactly where our body parts are, how we are positioned in space and to plan our movements. Examples of our proprioception in practice include being able to clap our hands together with our eyes closed, write with a pencil and apply correct pressure, and navigate through a narrow space.
There are two types of gardens that are particularly effective for children with autism spectrum disorder:

1. Therapeutic gardens
2. Sensory gardens.

**Therapeutic gardens**

Therapeutic gardens are spaces designed for wellbeing and, when designed properly, can improve the cognitive functioning, as well as the physical and emotional independence of the users. In the case of therapeutic gardens designed for children with ASD, the goal is to provide a safe outdoor setting that will enhance the therapies and care offered by special educators, therapists and other caregivers. Some of the types of therapies that can be employed to assist children using therapeutic gardens are horticultural therapy, play therapy, animal therapy, nature as therapy and sensory integration therapy. Therapeutic gardens designed for this cohort should address the special needs of those with ASD, including difficulties with social interaction, fine and gross motor issues, impaired communication, restricted and repetitive interests and behaviours, and sensory sensitivities.

**Sensory gardens**

Sensory gardens are therapeutic gardens that specifically focus on stimulating as many of the senses as possible. The five traditional senses include sight, sound, touch, hearing and smell but, in addition to these are other powerful, yet subtle senses, for example our haptic sense, ie our awareness of our body in space. Other senses include our sense of gravity, temperature and our sense of space and enclosure. Sensory gardens can be designed in different ways, either as stand-alone gardens or part of a larger garden.
Therapeutic gardens have been shown to have many benefits for children with ASD. These include but are not limited to:

- Taking a break from the demands of indoor environments and reducing sensory input, thus avoiding the sensory overload that many autistic children experience.
- The opportunity to work on both gross and fine motor skills.
- Engaging in activities that stimulate the vestibular and proprioceptive systems which are often impaired in children with ASD. Providing this opportunity for releasing this need can also help to reduce autistic behaviours that are not appropriate indoors, such as rocking, spinning and hand flapping.
- Engaging in physical activities which can release the energy and frustration that can build up as a result of the stress of living with autism on a daily basis.
- Spending quiet time alone away from the constant demands of living, learning and working, as well as the tension involved in having to get along with other people, which can be particularly taxing for children with autism.
- The chance to work on sensory integration strategies.
- Engaging in directed or free-play activities.
- A more natural environment that can lead to easier and more relaxed interaction with peers and carers.
- The opportunity to cater to different Multiple Intelligence Learning Styles, including: kinaesthetic, naturalist, interpersonal, intrapersonal, musical, linguistic, logical and spatial.
- Providing children with an opportunity to develop gardening skills and a hobby that they can enjoy for life.
Playing in the garden is good, playing with the garden is even better as it encourages a greater degree of interaction with nature. Gardens provide a hands-on experience that allows children to learn about the natural world they live in.

Sensory gardens are particularly strong tools for assisting some children with ASD to address issues with sensory integration. In some ASD children, hypersensitivity to sensory information can be particularly challenging and these children need to be gradually introduced to sensory stimuli and helped to learn to integrate this information through therapy. Other children with ASD suffer from hyposensitivity to sensory stimuli and need to have heightened degrees of stimulation to interact with their environment.

Given that sensory gardens can be such excellent tools for assisting with sensory integration, and that early intervention is key to helping children to overcome their ASD issues, these types of gardens can be a wonderful resource for children with ASD. However, given the spectrum and varying nature of ASD, particular care should be taken in designing garden spaces for this group of individuals.