

A young child with Down syndrome is hanging from a yellow rope, looking directly at the camera. The child is wearing a blue and white striped long-sleeved shirt. The background is slightly blurred, showing other people and yellow ropes.

EXERCISE FOR *Disabilities*

An eBook by



ESSA
Exercise & Sports
Science Australia



FOREWORD

DR EMMA BECKMAN

For the past 15 years, I have worked with athletes with a disability. During that time, I have met countless young people and their families, all with important stories to tell about how sport and physical activity have changed their lives.

They tell me about the benefits to their functional capacity and how it makes everyday life a little easier to get around, but they also tell me about the benefits to their mood, their friendship groups and their feelings of self-worth and confidence. Many of the athletes are dreaming about the possibilities of competing at the pinnacle of sporting competitions for people with a disability, such as the Paralympics, Special Olympics and Deaflympics and others are just happy to be able to get moving more and spend time with friends and family in an active way.

While the incredible benefits of sport and exercise are undisputed, there are also some challenges for many people with a disability to engage in exercise and sport and research has shown that the more severe the impairment, the more barriers there are to be involved.

One barrier that should be removed is access to good quality information, and this eBook aims to do just that. By having a central place to read about exercise and sport for a wide range of conditions, written by experts in their field, it gives people with a disability and their family and friends an easy reference point to get them started and set them on a path to safely and effectively enjoy the benefits that sport and exercise can offer.

DR EMMA BECKMAN is a Director of the Exercise & Sports Science Australia (ESSA) National Board. Emma also is a Teaching and Research Academic at the University of Queensland and is passionate about engaging in research to improve the lives of people with disabilities through sport.

WHO IS ESSA

ESSA

Exercise & Sports Science Australia (ESSA) is the nation's leading voice on exercise and sports science. We govern and represent approximately 10,000 degree-qualified professionals who support Australians to reach their health and performance goals.

Find your local accredited exercise professional www.essa.org.au/find-aep

EXERCISE RIGHT

Exercise Right is a public awareness campaign powered by ESSA. Our goal is to help Aussies to live more active lives and to understand where to get the “right” advice for their individual needs (regardless of age or health status).

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We thank all ESSA accredited professionals who contributed their time and expert knowledge to this publication, through chapter contributions and testimonials.



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If you find it useful, please do share this resource with anyone who might be interested in the topic. Please ensure the following source is cited – Exercise & Sports Science Australia (ESSA).

Always consult your doctor about matters that affect your health. This eBook is intended as a general introduction to the topic and should not be seen as a substitute for medical, legal or financial advice. Please refer to the advice within this eBook at your own risk.

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WHY EXERCISE IS GOOD FOR YOU

Being active and exercising is important to keep your body and mind happy and healthy.

Exercise can stop many health problems and helps keep your weight healthy.

People living with a disability are [less likely](#) to take part in regular physical activity than people without disability, yet they have similar needs when it comes to improving their health and preventing unnecessary chronic conditions.

Disability should not exclude someone from participation in appropriate sports and physical activity.

For people living with a disability, exercise or physical activity provides a wide range of benefits:

- » It improves stamina and muscle strength – this may really help with some forms of disability.
- » Keeping active will reduce the risk of chronic conditions (e.g., arthritis, osteoporosis, diabetes).
- » During exercise, the brain releases endorphins that delivers a feel-good high. This can help ease anxiety and depression, and additionally, lift your mood.
- » Exercising in a group is a great way to try something different, meet new people and become part of the community. This may help reduce the negative stereotypes around people with disabilities.
- » You'll gain the ability to maintain a higher level of independence, sense of freedom and quality of life.

This eBook will cover the more specific benefits of exercise on a range of physical, intellectual and psychosocial disabilities.

However, before you start adding more exercise to your life, make sure to talk to an accredited exercise professional who can help.

To find an accredited exercise professional, you can search for one here: www.essa.org.au/find-aep or talk to your support worker, family or friends who can help find one for you.

IS THERE A DIFFERENCE BETWEEN EXERCISE AND PHYSICAL ACTIVITY?

Physical activity is any movement that is carried out by the muscles which requires energy. In other words, any movement one does is actually physical activity. **Exercise** is planned, structured, repetitive and purposeful movement that is intended to improve or maintain physical fitness.

AUSTRALIANS LIVING WITH A DISABILITY

In Australia, around 1 in 6 (18%) people (or about 4.4 million) have a disability. This prevalence generally increases with age and doubles between the ages 65 and 85+.

For about 3 in 4 (77%) people with a disability, their main form of disability (that is, their main condition or the one causing the most problems) is physical. This includes diseases of the:

- » musculoskeletal system and connective tissue (30%), such as back problems and arthritis
- » ear and mastoid process (8.4%), such as hearing loss and tinnitus
- » circulatory system (6.3%), such as heart disease and stroke
- » nervous system (6.7%), such as cerebral palsy and multiple sclerosis

For the remaining 1 in 4 (23%), their main form of disability is mental or behavioural, including:

- » intellectual and developmental (6.5%), such as intellectual disability and autism
- » mood affective (3.8%), such as depression
- » dementia and Alzheimer disease (2.6%)

Nearly 1 in 3 (32%) people with disability – or about 1.4 million – have severe or profound disability. This means sometimes or always needing help with daily self-care, mobility or communication activities.

HEALTH & PHYSICAL ACTIVITY LEVELS

- » 24% of adults with a disability rate their health as excellent or very good (compared to 65% of adults without a disability).
- » 42% of adults with a disability rate their health as fair or poor (compared to 7% of adults without a disability).
- » 42% of adults with a disability indicate they experience low levels of psychological distress (compared to 70% of adults without a disability).

Based on measured waist circumference*, 76% of adults with a disability are more likely than those without (59%) to have an increased or substantially increased risk of developing chronic conditions.

However, exercise can be beneficial in managing or treating chronic conditions, regardless of a person's abilities.

The Australian Institute of Health and Welfare has found that 72% of people aged 15 and over with a disability do not do enough physical activity. This compares with about 52% of those without disability.

Exercise is for everyone, however, for some people with a disability, physical activity can be a challenge. This can be due to mobility issues or a lack of accessible and inclusive gyms and other exercise spaces. Others simply don't know where to start.

If you are living with a disability but do no physical activity right now, start by doing some, then slowly build up to the recommended amount prescribed by an accredited exercise professional.

Source: [Australian Institute of Health and Welfare: People with Disability in Australia Report](#)

*Waist circumference can be used to indicate health risk. However, it's important to note that waist circumference may not be accurate in some situations, including if a person has a medical condition or disability involving enlargement of the abdomen.

THE AUSTRALIAN PHYSICAL ACTIVITY GUIDELINES

While there are no formal physical activity guidelines for people living with a disability, being active is important to stay mentally and physically healthy.

If you can, try to meet the recommendations for your age group listed in the Australian Physical Activity and Sedentary Behaviour Guidelines.

Any activity is better than none, and it's important to do activities that are appropriate to your ability. An accredited exercise professional can work with you to ensure you are exercising correctly and safely.



HOW MUCH PHYSICAL ACTIVITY SHOULD YOU DO?

CHILDREN (AGED 5–17)

Children and adolescents should achieve the recommended balance of high levels of physical activity, low levels of sedentary behaviour, and sufficient sleep each day for optimal health benefits.

- » 60 minutes or more of moderate-to-vigorous physical activity per day involving mainly aerobic activities such as walking, swimming, or running.
- » Several hours of a variety of light physical activities.
- » Activities that are vigorous, as well as those that strengthen muscle and bone should be incorporated at least 3 days per week.
- » To achieve greater health benefits, replace sedentary time with additional moderate-to-vigorous physical activity, while preserving sufficient sleep.

ADULTS (AGED 18–64)

Each week, adults should do either:

- » 2.5 to 5 hours of moderate intensity physical activity – such as a brisk walk, golf, mowing the lawn, or swimming.
- » 1.25 to 2.5 hours of vigorous intensity physical activity – such as jogging, aerobics, fast cycling, or playing soccer or football.
- » an equivalent combination of moderate and vigorous activities.

It's important for adults to also include muscle-strengthening activities as part of their daily physical activity on at least 2 days each week.

OLDER ADULTS (AGED 65 AND OVER)

These recommendations for older Australians (those aged 65 years and over, or aged 55 years and over for Aboriginal and Torres Strait Islander peoples) state that older people should be active every day in as many ways as possible, doing a range of physical activities that incorporate fitness, strength, balance and flexibility.

It's recommended that they should complete at least 30 minutes of moderate intensity physical activity on most, preferably all, days.

HOW CAN I IDENTIFY THE INTENSITY OF THE EXERCISE I AM COMPLETING?

A quick way to test your exercise intensity is using the talk test. When exercising can you:



- » Talk comfortably and sing comfortably? You're probably moving at a **light intensity**. Examples include incidental exercises such as getting up to make a tea, walking to the mailbox, vacuuming, etc.



- » Talk comfortably but not sing? This is likely to be **moderate intensity** exercise. Examples include brisk walking, water aerobics, leisurely riding a bike, doubles tennis, hiking, etc.



- » Neither talk nor sing comfortably? You're working hard at a **vigorous to high intensity**. Examples include jogging or running, fast swimming, singles tennis, riding a bike or hiking up hill, etc.



MEET THE EXERCISE PROFESSIONALS

Sometimes it can be hard to know who the exercise professionals are. There's a lot of people who claim to be "experts", but in the exercise world, ESSA accreditation is a handy way to ensure your exercise professional is suitably qualified to assist you.

WHAT DOES "ACCREDITED" MEAN?

Accredited means the professional is registered with Exercise & Sports Science Australia (ESSA) and as such has been approved for meeting all of the requirements necessary to be considered an exercise health professional, as well as undertaking regular professional development to ensure their knowledge and skills are up to date.

WHICH EXERCISE EXPERT IS RIGHT FOR ME?

In Australia, there are three types of accredited exercise and sports science experts who can support individuals in many ways, from looking after their general health and fitness, to using exercise to manage and treat chronic conditions, to those working with sporting teams and athletes.

- » **Accredited Exercise Physiologists (AEPs)** complete a minimum 4 years of study at university in order to specialise in prescribing and supervising exercise for people who have complex health conditions. They work with clients living with cancer, diabetes, heart conditions, mental health conditions, other chronic conditions, as well as those with a disability or injury.
- » **Accredited Exercise Scientists (AES)** complete a minimum 3 years of study at university, providing them with a high level of training in exercise and sports science. They use exercise to improve the health, well-being, and fitness of their clients, and assist in the prevention of chronic conditions.
- » **Accredited Sports Scientists (ASpS)** complete a minimum 3 years of study at university and are highly trained professionals who provide sports science services and conduct research relating to sport in an elite environment such as the Australian Institute of Sport, state academy or professional sports club. They use exercise to improve sporting performance for individual athletes or teams.

HOW CAN I FIND AN ACCREDITED EXERCISE PROFESSIONAL?

Currently there are over 8,000 ESSA-accredited exercise professionals throughout Australia. You can find one close to your home by looking at the online directory provided by Exercise & Sports Science Australia (ESSA), the accreditation body for exercise and sports science professionals: www.essa.org.au/find-aep.

FINDING SUPPORT THROUGH THE NDIS

The [National Disability Insurance Scheme \(NDIS\)](#) provides support for Australians with a permanent and significant disability and their families and carers. It is designed to support people with disability to develop skills and capacity so they can participate in work and community life.

The NDIS is responsible for funding allied health and other therapy services related to a person's disability – this includes Exercise Physiology.

EXERCISE PHYSIOLOGY AND THE NDIS

Accredited Exercise Physiologists (AEPs) have expert knowledge on the human body and the role of exercise in health, fitness, and reducing the onset of chronic conditions symptoms and disabilities. AEPs develop exercise programs for people with a wide variety of disabilities to help them manage their condition and build capacity for activities of daily living. Their knowledge and extensive training also allows them to provide safe and effective, tailored exercise programs to any person that steps through their doors.

Accredited Exercise Physiologists (AEPs) can help people living with a disability to improve health and well-being, gain independence and participate at work and in the community.

Funding for exercise physiology can come from one of two budget areas in an NDIS plan:

- » **Capacity building** – Improved Daily Living
- » **Capacity building** – Improved Health and Wellbeing

If you have funds allocated to these categories, you can access these allied health support services. If your current budget is allocated to other categories and you'd like to receive allied health services, you can request to make changes at your next plan review.

If you would like to request access to an AEP at your next plan review, you will need to provide the planner with evidence that an AEP can help you achieve your goals. Speak to your support coordinator about what evidence you might need.

AEPs may also be able to provide services under Early Childhood Intervention.

NDIS services with an AEP can be provided as:

- » individual sessions
- » within small groups (including programs of support)
- » via telehealth

Seeking the services of an AEP is highly recommended for you as part of your NDIS plan if you are living with a disability and:

- » the disability makes it hard to maintain good health and well-being,
- » you are at increased risk of developing or already have an existing condition that impairs your physical movement, and
- » your management plan goals relate to moving independently, maintaining or improving mobility, and/or building strength or fitness. *For example, if you need to improve your upper body strength and overall fitness to improve your ability to self-ambulate and push yourself in your wheelchair.*

AEPs can tailor their programs for people with disabilities that address critical needs, such as:

- » improved daily living capabilities
- » improved mental and physical health and well-being
- » the ability to engage in the community, including social activities
- » overall strength and capacity improvements



HOW TO SEE AN AEP THROUGH THE NDIS

1. Preparing for your NDIS planning meeting.

Ensure that your requested support is ‘reasonable and necessary’ in order to be funded. This means making sure that your goals align with your support services.

Funding under the NDIS is based on evidence of need, your goals, and evidence for the effectiveness of a given treatment approach. Your treatment plan is your gateway to getting the support you need.

WHAT IS DEEMED ‘REASONABLE AND NECESSARY’?

The NDIS funds ‘[reasonable and necessary supports](#)’ relating to your disability to help you live an ordinary life and achieve your goals.

These supports will help you to:

- » pursue your goals, objectives and aspirations,
- » increase your independence,
- » increase community and workplace participation, and
- » develop your capacity to actively take part in the community.

During your plan meeting, your NDIS planner will gather information on what supports are reasonable and necessary for your situation by evaluating whether a support request is:

- » related to your disability
- » non-inclusive of day-to-day living costs not related to your disability support needs, such as groceries
- » value for money
- » likely to be effective and work for you, and
- » taking into account support given to you by other government services, your family, carers, networks and the community.

Funding for reasonable and necessary supports will also take into account any *informal supports* already available to the individual (informal arrangements that are part of family life or natural connections with friends and community services) as well as other formal supports, such as health and education.

Some examples that may be approved include:

- » support workers to help with personal care activities
- » therapeutic supports like behaviour support
- » aids and equipment
- » home modifications
- » mobility equipment

If you want to include exercise physiology in your next NDIS plan, you will need to provide evidence that exercise physiology will help you to achieve your plan goals. Some examples of evidence that you can provide your NDIS planner include:

- » allied health assessment reports with recommendations to access exercise physiology
- » published research

If you have a Support Coordinator, they can help you gather the evidence you will need to take to your next planning meeting to request exercise physiology.

2. Attending your NDIS Plan Meeting with your NDIS planner.

During your planning meeting with your NDIS planner, you will need to ask them to add exercise physiology to your NDIS plan. Provide them with the evidence that you have collected to demonstrate how the impact of your disability means that you require exercise physiology services. They may need time to assess the information, so try to send it to them prior to your planning meeting, if possible.

If you feel that you need additional support to ask for extra funding, you can take your support coordinator along to your planning meeting. If you don't have a Support Coordinator, you can ask a trusted friend or family member to attend.

3. Once exercise physiology funding has been added to your plan.

From here, you'll then need to find a provider that provides the necessary supports to help you achieve your goals. If you are agency-managed, you can [find your local provider](#).

If you aren't sure what services you are looking for or where to start, Support Coordinators and Local Area Coordinators can help connect you to the right services. Remember, you can only access a support coordinator for help if you have *support coordination* included in your plan budget.

AEPs can provide a personalised therapy approach combined with a commitment to exceptional client care through the use of evidence-based and best practice methods to help optimise what is possible with your NDIS plan.

4. Once you have selected an AEP in your area, make an appointment.

At your first meeting and before you commence using their services with your NDIS funds, you can request a service agreement from the AEP. A service agreement will outline the fees that the AEP will charge you (including fees to allow them to write your progress reports), how often you will see them, and details of the AEP's cancellation policy. Both you and the AEP will sign the service agreement to indicate that you both agree with the terms.

Your AEP will conduct a clinic-based assessment and develop an exercise plan tailored to your disability that will fit within your specific NDIS plan and goals.

The assessment will look at things like:

- » how you move
- » your posture and balance
- » fitness and strength
- » respiratory and cardiovascular fitness
- » diet and lifestyle
- » current medications
- » any limiting factors such as physical disabilities, injuries, or pain

The AEP will use this information to develop a program which might include group or private fitness sessions, exercises to practice at home or lifting weights. You may also be given diet, nutrition or lifestyle advice and be supported to make changes that will help you achieve your goals.

THINGS THAT YOUR NDIS PLAN WON'T COVER

NDIS funding doesn't cover general everyday living expenses that people without disability would be required to pay, such as train travel, rent, groceries, mobile phone, or movie tickets.

Every person is different so it's important that you are prepared to demonstrate why a request should be deemed 'fair and reasonable' in your situation.

HOW TO FIND AN AEP NEAR YOU FOR NDIS SERVICES

By heading to the ESSA website, you'll find the [online directory](#). Simply pop in your post code and hit 'Find'. If you want to find an AEP who is an NDIS Provider, you can select this option under 'Claiming' before searching.

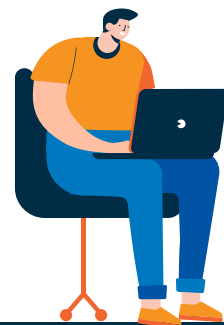
HOW TO SEE AN AEP THROUGH THE NDIS

1

PREPARE FOR YOUR NDIS PLANNING MEETING

To have exercise physiology services added to your next NDIS plan, you will need to provide evidence of how this will help you to achieve your plan goals.

If you have a Support Coordinator, they can help you prepare.



ATTEND YOUR NDIS PLAN MEETING WITH YOUR NDIS PLANNER

This is where you can ask your NDIS planner to add exercise physiology to your NDIS plan.



TIME TO FIND A PROVIDER

Once exercise physiology funding has been added to your plan you can find an Accredited Exercise Physiologist to help you. Head to the [online directory](#) and pop in your post code and hit 'Find'.

If you want to find an AEP who is an NDIS Provider, you can select this option under 'Claiming' before searching.



TIME TO MAKE AN APPOINTMENT WITH THE AEP

Once you have found an AEP in your area, make an appointment to meet with them. Your AEP will conduct an assessment and develop an exercise plan suitable for your disability to help achieve your specific NDIS goals.

DISABILITIES

Nearly 1 in 3 (32%) people with disability – or about 1.4 million – have severe or profound disability.



ACQUIRED BRAIN INJURY

Acquired brain injury (ABI) refers to damage to the brain that occurs after birth.

Causes include trauma from an external force (e.g., a direct blow to the head), hypoxia (lack of oxygen to the brain), substance abuse (e.g., alcohol), and tumours or infections (e.g., meningitis). Two other major causes of ABI are stroke and neurodegenerative conditions.

Consequences of ABI may include:

- » cognitive impairment (e.g., memory)
- » physical impairment (e.g., high muscle tone and impaired coordination)
- » behavioural impairment (e.g., impulsivity)
- » social isolation and poor mental health

However, the functional profile for a person with ABI can vary enormously, from someone who, for example, mobilises with a motorised wheelchair, is non-verbal and depends on personal support for self-care, to someone who is fully independent in employment, self-care and mobility.

ABI is common, with around 1 in 45 Australians (432,700 people) living with an ABI with activity limitations or participation restrictions due to disability. Almost three-quarters of these people are aged less than 65.

ABI prevalence increases with age, with people aged 65 years or over more than twice as likely to have ABI with activity limitations or participation restrictions. The rates of ABI are also higher for males than females at all ages.



THE BENEFITS OF EXERCISE

People with ABI are among the most physically inactive members of society, and those with severe brain impairments are less active than those with mild to moderate impairments. This physical inactivity is harmful for health, fitness and function, and compounds the primary impairments resulting from ABI.

There is strong [scientific evidence](#) to indicate that:

- » **Aerobic exercise** improves cardiorespiratory fitness in people with ABI. The quantity and intensity of exercise required for good health is similar to the general population.
- » **Strength training** improves muscular strength in people with ABI. While the quantity and intensity of exercise required for improvements is similar to the general population, it should be noted that no studies have specifically investigated the effects of strength training on people with ABI who are affected by spastic hypertonia, an impairment that could potentially affect outcomes.
- » **Regular functional exercise** (e.g., sit-to-stand, walking or climbing stairs) can improve performance on those tasks (e.g., ease of sit-to-stand, walking speed or walking duration).

Exercise can also alleviate depressive symptoms as well as improve other aspects of mood and quality of life for people with ABI. Importantly, exercise, particularly in [group settings](#), provides structured opportunities for social interaction and development of social skills.

TYPES OF EXERCISE RECOMMENDED

Because the effects of ABI are very variable and the quantity and quality of research on this population is limited, specific, prescriptive recommendations for exercise programs are not possible. However, some general recommendations can be made.

People with ABI are encouraged to be as physically active as they can. For optimal health, the recommended volumes of aerobic and strength exercise are the same as the general population:

AEROBIC EXERCISE

- » Greater than 30 minutes of moderate intensity aerobic activity on at least 5 days per week **OR**
- » Greater than or equal to 25 minutes of vigorous intensity on at least 3 days per week.

STRENGTH EXERCISE

- » Three sets of 8-10 repetitions of resistance exercises at moderate intensity using major muscle groups on at least 2 days per week.
- » People with altered joint mechanics (e.g., resulting from contracture or altered muscle tone) can undertake strength training with weights, but joint health (e.g., joint pain, swelling) should be monitored carefully.
- » For people with functional goals, exercise programs should incorporate functional activities (e.g., ease of sit-to-stand, walking speed or walking duration). Additionally, exercise which provides opportunities for social interaction should be encouraged where possible.

SPEAK TO THE EXERCISE PROFESSIONALS

These recommendations may initially be unrealistic for many people with ABI, particularly those with severe mobility impairments, multiple comorbidities and/or those who have been inactive for extended periods. Therefore, it is recommended that an Accredited Exercise Physiologist is involved in the program design and that they use their knowledge, skills and experience to ensure that initial training volumes and subsequent increases in training volume are individually tailored for the person with ABI.

FIND AN ACCREDITED EXERCISE PHYSIOLOGIST NEAR YOU

Expert Contributor **ASSOCIATE PROFESSOR SEAN TWEEDY**
PhD and Accredited Exercise Physiologist at the University of Queensland.

TESTIMONIAL

MARCELLE is a 57-year-old with an acquired brain injury. She had brain surgery as a child to remove tumours which resulted in damage to her cerebellum and frontal lobe. Marcelle has a right sided weakness, deafness in her left ear and reduced vision. As a young adult, Marcelle was knocked off her bike, resulting in another brain injury.

Marcelle was referred for exercise physiology services through her NDIS plan in late 2020 and has been attending regular one-on-one sessions ever since. Marcelle's exercise sessions always start with an outdoor walk to help clear her mind. Her sessions then focus on improving overall strength through a range of resistance exercises, aimed at keeping her active and doing the activities she loves!

"I had two quite large benign brain tumours removed at the age of 5. I had to learn to walk again and use the whole right side of my body. My sight, hearing, balance and memory were affected. I was involved in a range of different activities growing up. Being so active allowed me to feel accepted in the world and helped me feel 'normal', not 'disabled'."

My Accredited Exercise Physiologist has helped me because the exercises at each session cater to my specific needs. It helps me emotionally sort my busy and very erratic brain out so that I can again make sense of the world. We have a good old chit chat which helps bring me clarity. I like the fact I am given exercises I can do at home or from wherever, they're very adaptable. It's just been a good all round approach to exercise."

Testimonial provided by **DR KATIE-JANE BRICKWOOD** PhD, Accredited Exercise Physiologist

ATTENTION DEFICIT HYPERACTIVITY DISORDER

Attention deficit hyperactivity disorder (ADHD) is a neurodevelopmental disorder that is estimated to affect about [1 in 20 Australians](#) – which is about 1 million people.

Onset of ADHD commonly occurs during childhood, and is characterised by inattention, impulsivity, disorganisation, and forgetfulness.

People with ADHD experience a range of symptoms however the core symptoms are:

- » **Inattention** – inability to focus on something for a sustained period of time unless urgent and important or of significant interest e.g., often fails to give close attention to details or makes careless mistakes; often does not seem to listen when spoken to directly; often easily distracted; often forgetful in daily activities.
- » **Impulsivity-Hyperactivity** (Poor Inhibitory Control) – inability to inhibit a thought, action or movement e.g., often talks excessively; often blurts out an answer before a question has been completed; often interrupts or intrudes on others; often feels restless; often fidgets.

The precise cause of ADHD is a complex interaction between genetics and environmental factors that is still being studied. However, ADHD has a significant genetic component with the heritability [estimated](#) to be approximately 70-80%. For this reason, it is common to see ADHD running in families.

Unfortunately, adults with ADHD experience higher rates of a number of [conditions](#) including [mental illness](#) (i.e., depression, anxiety, bipolar), neurological disorders, respiratory conditions (e.g., asthma), cardiovascular and metabolic health conditions such as type 2 diabetes and hypertension, addiction and substance use disorders, [sleep problems](#) such as insomnia, [hypermobility](#), poor coordination, and [accidental injury](#).



BENEFITS OF EXERCISE

In children with ADHD, recent [reviews](#) have shown that regular exercise can improve attention, impulsivity, [executive functions](#), [motor skills](#), [anxiety and mood](#). We also know from other studies in adults, that exercise and physical activity can play an important part in managing physical and mental health conditions that are common in ADHD.

An Accredited Exercise Physiologist can support you in developing a regular exercise routine that will provide a variety of benefits:

- » improved attention
- » improved executive functions (planning, organisation, reasoning)
- » improved inhibition and impulsivity
- » improved working memory (ability to hold and manipulate information in your mind)

Exercise also plays a role in preventing and treating many conditions that are more prevalent in individuals with ADHD by:

- » improving mood and anxiety
- » helping regulate blood sugar and improve body composition to prevent and treat type 2 diabetes, obesity, and hypertension (high blood pressure)
- » improving sleep which can help manage insomnia and other sleep conditions
- » improving motor skills including the treatment of Developmental Coordination Disorder (DCD)

THINGS TO BE AWARE OF

MOTOR CONTROL AND LEARNING

Learning a new skill can be challenging, however, adults with ADHD often have greater difficulty learning motor skills due to atypical memory consolidation processes (making improvements permanent).

[Research](#) identified some strategies to help motor learning in adults with ADHD. It found that halving the amount of practice from 160 to 80 repetitions in one practice session and practicing a motor skill in the evening compared to in the morning resulted in better memory consolidation and learning.

Tip: Shorter practice sessions and/or evening practice may help improve learning for adults with ADHD.

SLEEP AND CIRCADIAN RHYTHM

Adults with ADHD experience high rates of sleep problems including insomnia and a delayed circadian rhythm (our bodies natural 24 hour clock).

Research investigated the effects of Bright Light Therapy on sleep, circadian rhythm (Delayed Sleep Phase Syndrome) and mood in adults with ADHD. It found that being exposed to 30 minutes of bright light (10,000 lux) every morning (before 8:00am in one study) for 2-3 weeks improved sleep and ADHD symptoms.

Tip: A 30 minute walk (or some other activity) outside every morning within an hour of waking up may help improve sleep and ADHD symptoms. Research suggests that it is best to do this without wearing sunglasses, however, it's best to check with your doctor or health professional.

TYPES OF EXERCISE RECOMMENDED

Any physical activity can be considered better than none, however, there are some more specific strategies and recommendations we can provide based on the available research.

MOVEMENT FACILITATES COGNITION

[One study](#) measured attention of two groups, one with ADHD and the other without, then had them walk on a treadmill and re-tested them while they were walking, not after. Unsurprisingly, the ADHD group performed significantly worse at baseline. However, while walking at 5km/h on a treadmill, the ADHD group showed improvements in their attention while the non-ADHD group did not. This meant that there was no difference in attention between the ADHD group and the non-ADHD group during walking.

Tip: Moving may help to improve attention. Listen to a lecture while you walk. Don't tell someone with ADHD to "sit still and pay attention", as the evidence suggests the opposite may actually be true!

AEROBIC EXERCISE

Multiple studies have shown that symptoms of inhibition, mood and motivation improve after a single bout of aerobic exercise such as [running on a treadmill](#) or [cycling on a stationary bike](#) for 30 minutes. This effect lasts for about 1-2 hours.

Tip: Go for a 20-30 minute run or ride at a moderate intensity before listening to a lecture or doing a task that requires better attention or impulse control.

SPEAK TO THE EXERCISE PROFESSIONALS

People with ADHD often require support starting and maintaining an exercise routine due to difficulties with organisation, motivation and attention.

Support from an Accredited Exercise Physiologist can be beneficial to implement a safe, effective and enjoyable exercise routine by facilitating changes in habits and behaviours, creating accountability, teaching new motor skills including proper technique, and addressing any other conditions that someone with ADHD may experience.

FIND AN ACCREDITED EXERCISE PHYSIOLOGIST NEAR YOU

Expert Contributor **CHRISTOPHER EWAN HANBURY-BROWN**

Accredited Exercise Physiologist and PhD Candidate at the University of Sydney: *Exercise in adults with ADHD*

AUTISM

[Autism spectrum disorder \(ASD\)](#) (also simply termed “autism”) is a complex neurobiological, developmental disorder that is typically diagnosed in childhood and often lasts throughout a person’s lifetime.

The characteristics of autism include an impaired ability to communicate and relate to others socially, a restricted range of activities, and repetitive behaviours such as following very specific routines.

Approximately [1 in 150 Australians](#) are estimated to be on the autism spectrum, with 83% of Australians with autism aged under 25. Males are also four times more likely than females to have autism.

THE BENEFITS OF EXERCISE

[Research](#) demonstrates that exercise can lead to a 37% improvement in symptoms of ASD, specifically behavioural and academic improvement.

The benefits of exercise include:

- » better emotional regulation and attention
- » improvements in behaviour (e.g., reductions in stereotypical and repetitive behaviours)
- » reduced developmental delays in gross motor skills
- » increased social behaviour and communication skills

Balance, postural stability, gait, joint flexibility, coordination and movement speed are often more challenging for those with autism, but they can be reduced by increasing levels of physical activity.

Motor improvements lead to better:

- » overall physical endurance (e.g., strength and aerobic fitness)
- » independence and function for daily tasks
- » self-confidence, self-esteem, and a sense of normalcy

[Research](#) also shows that increased aerobic exercise can have a short-term, dose responsive decrease in the frequency of negative, self-stimulating behaviours that are common among individuals living with autism, while not decreasing other positive behaviours.

Behaviours such as body rocking, spinning, head-nodding, hand flapping, object-tapping, and light gazing, that have been shown to interfere with positive social behaviours and learning, can thus be moderated by the use of exercise.

Additionally, exercise can discourage aggressive and self-injurious behaviours whilst improving attention span.

Exercise is also important for children, adolescents and adults living with autism as it [reduces](#) the negative effects of inactivity including, but not limited to, improving cardiovascular fitness, decreasing prevalence of bone and joint problems, as well as mental health conditions.

There are no specific physical activity guidelines for people living with ASD, and the recommendation is to follow the Australian Physical Activity Guidelines specific to the age of the individual.

THINGS TO BE AWARE OF

Participation of exercise can be challenging for someone with autism because of limited motor functioning, poor coordination, hypotonia, difficulty in self-monitoring, and increased auditory, visual and tactile stimuli.

Youth with autism also face a number of unique barriers to being active. These include sensory challenges and differences with information processing. They may also exhibit a lack of confidence due to motor planning, coordination or proprioception difficulties.

This is why it's important to work with an accredited exercise professional who can develop a safe exercise program to increase movement levels.

SPEAK TO THE EXERCISE PROFESSIONALS

An Accredited Exercise Physiologist can work together with a person living with autism (as well as their family) to design and tailor an engaging exercise plan to encourage regular participation.

AEPs are allied health professionals that have the expertise to prescribe appropriate exercise for autism. They understand the perceived barriers to physical activity in those with ASD and can provide a safe and specific exercise program.

An AEP will consider the following when prescribing exercise for those with ASD:

- » stage of motor development to target appropriate exercise interventions
- » common co-morbidities such as intellectual disability, ADHD, obesity and epilepsy
- » medication side-effects
- » cognitive ability and learning style to enhance motor skills

FIND AN ACCREDITED EXERCISE PHYSIOLOGIST NEAR YOU

Expert Contributor **LAUREN MCDOUGALL** Accredited Exercise Physiologist at Achieving Abilities Exercise Physiology

TESTIMONIAL

BAILEY, who is 14 years old, was originally referred to a Paediatric Accredited Exercise Physiologist for his ASD, behaviour and sleep difficulties. His paediatrician noted key elements to work on such as improving exercise tolerance, controlling weight and managing screen addiction. On weekends, Bailey would be spending large amounts of time gaming and using screens, and also struggling to sleep.

On assessment, Bailey reported to be struggling to sustain running during both P.E at school and extracurricular sporting participation. He also has hypertonia in upper and lower limbs. He had been noticing pain in his left thigh and finding his overall endurance wasn't as developed as his peers. Bailey's goal was to develop his overall physical health so that he can be inclusive with his peers and chosen physical activity.

Bailey has completed weekly exercise physiology sessions for ~10 months. His program consists of boxing, rowing, running, coordination work, strength and core endurance exercises. Bailey's commitment to his exercise therapy has been amazing, providing him the ability to establish and maintain a strong relationship with his AEP. He has improved all aspects of his physical capacity including endurance, core strength, upper and lower limb strength whilst reducing weight gain and BMI. However, perhaps the biggest improvement, has come in Bailey's behaviour and emotion regulation, where he is able to control himself and time spent on screens at home.

Testimonial provided by **BRAD HARVEY** *Accredited Exercise Physiologist*

1 in 700 children are born with cerebral palsy and it is considered to be the most common physical disability in childhood.



CEREBRAL PALSY

Cerebral palsy occurs when there is an injury to the developing brain either during pregnancy or shortly after birth.

Cerebral palsy results in a physical disability that affects movement and posture and is a permanent life-long condition, which does not worsen over time.

[1 in 700 children](#) are born with cerebral palsy and it is considered to be the most common physical disability in childhood.

Cerebral Palsy is classified via a system called the Gross Motor Function Classification System, commonly referred to as the GMFCS.

THE BENEFITS OF EXERCISE

People with cerebral palsy of all ages and all GMFCS levels can improve their function and gross motor skills through increasing their fitness levels and reducing sedentary behaviours. [Improved function](#) will then allow them to enhance their health and well-being and prevent them from entering a cycle of deconditioning.

The wide range of benefits elicited by regular physical activity include:

- » improved health and well-being (including decreased anxiety, depression and stress)
- » maintained mobility and range of motion
- » decreased sedentary behaviours
- » decreased risk of mortality due to cardiovascular and circulatory complications
- » improved sleep patterns and quality
- » increased circulation and movement of the bowels and therefore decreased likelihood of bowel obstructions and constipation

Exercise programs can be tailored to focus on specific, meaningful life goals and increasing capacity and independence, such as confidence to walk across the road, go swimming, or go grocery shopping.

In one [study](#), participants who were young people with cerebral palsy discussed the psychological benefits of participating in a strength training programme, of having more energy, of having a feeling of well-being, and the benefits of taking personal responsibility.

The social opportunities during exercise therapy are also important as it can result in increased opportunities for people living with cerebral palsy to engage in the community.

TYPES OF EXERCISE RECOMMENDED

Every individual with cerebral palsy is unique, as the type and presentation of their movement disorder depends on the area of the brain affected and therefore impacts the recommended type of exercise.

For example, [exercise](#) for a person with spastic cerebral palsy following botulinum toxin therapy would include targeted strength training in the antagonist muscles of the target limb, whereas [exercise](#) for the prevention of long-term chronic health conditions and metabolic dysregulation should focus on reducing sedentary behaviours through regular low to moderate physical activity.

Overall, a mixture of aerobic and strength training is recommended per week:

- » 150 minutes of moderate intensity exercise
- » 2-3 sessions of strength training

According to existing [research](#), exercise prescription for people with cerebral palsy should include:

1. a minimum frequency of 2-3 times per week;
2. an intensity between 60-95% of peak heart rate, or between 40-80% of the heart rate reserve (HRR), or between 50-65% of VO₂peak; and
3. a minimum time of 20 minutes per session, for at least 8 consecutive weeks, when training three times a week, or for 16 consecutive weeks when training two times a week.

Overall, greater gains are made with longer training programs (in terms of duration: 3 months plus of adherence to program) and participating in higher dosages of training.

Aerobic exercise is important for people with cerebral palsy as it allows them to complete everyday activities such as walking or propelling a wheelchair without being inhibited by fatigue. A range of research ([1](#), [2](#), [3](#)) reported that fitness training increased aerobic capacity in this population.

Maintaining strength through **strength exercise** is [important](#) to keep muscles healthy and reduce cardiometabolic risk factors and lower all-cause mortality. Strong muscles are helpful for daily activities like getting up and down from the couch, getting dressed, or leaning forward to put a sling on for hoist transfers.

As cerebral palsy results from an injury to motor regions of the developing brain, muscle weakness is a primary impairment and there is strong [evidence](#) showing that children with cerebral palsy are significantly weaker than typically developing children.

Resistance training promotes an increase in muscle mass and can be done in a variety of ways such as body weight training, resistance training machines found within a gym setting or free weights.

Some types of strength training are safer than others for different individuals. For example, individuals with ataxia with uncoordinated movements may not be recommended to use free weights due to the risk of dropping them or over-extending their joints. Fixed range resistance training machines are safer in these aspects.

Similarly, an increase in energy expenditure due to decreased efficiency of movements in individuals with dystonia can lead to increased fatigue, and therefore adequate rest breaks need to be considered when commencing strength training programs.

People with cerebral palsy are recommended to utilise both functional and progressive strength training. This technique involves using exercises that are made progressively more difficult through an increase in the amount of weight or the resistance over time.

Functional strength training involves doing everyday functional activities while the amount of resistance increases. Examples of this method include repetitively throwing and catching weighted balls or moving around in a self-propelling wheelchair to help increase arm strength.

Due to decreased lower limb strength, co-ordination and poor muscle control, and increased fatiguability of the muscles, falls risk can be high in individuals with cerebral palsy. **Balance exercises** are therefore important. Practicing both static and dynamic balance, in a range of different foot positions and environments, is a great way to maintain and improve balance.

Hydrotherapy involves training in a heated pool (32-34 degrees), completing exercise tailored to the individual's unique needs. Along with improving strength and mobility, **including** gross motor function and walking endurance, hydrotherapy is also frequently used as part of rehabilitation programs following surgery. For someone with severely limited mobility, hydrotherapy can be liberating – enabling much greater movement and range of motion than on land. Hydrotherapy programs can integrate aerobic, strength and balance training in a safe environment.

SPEAK TO THE EXERCISE PROFESSIONALS

There are many kinds of exercises and the 'best' type will depend on the person's age, family situation, health and mobility. The decision to undertake fitness training involves understanding the evidence, cost, time and resources required and putting plans and preparations in place to overcome any potential barriers.

For example, these associated impairments experienced by people with cerebral palsy may significantly impact upon opportunities to participate in physical activities:

- » 3 in 4 people experience pain
- » 1 in 4 has a behaviour disorder
- » 1 in 2 has an intellectual impairment
- » 1 in 5 has a sleep disorder

However, none of these should be a barrier to participation. There are a multitude of exercise and activity options for all individuals with cerebral palsy regardless of level of severity and physical disability. The important thing is finding the right approach for the individual.

The best way to do this is to consult with an Accredited Exercise Physiologist. These exercise professionals can also work with local community groups and sports clubs to provide education and training for increasing participation opportunities within local groups and programs for people living with cerebral palsy.

FIND AN ACCREDITED EXERCISE PHYSIOLOGIST NEAR YOU

Expert Contributor **LAUREN DADD** Accredited Exercise Physiologist and Clinical Educator at Cerebral Palsy Alliance

TESTIMONIAL

GISELLE, who is now 19-years-old, began seeing an Accredited Exercise Physiologist when she was 16. By the age of 16, her mobility and strength had deteriorated significantly as a result of having low tone cerebral palsy, and her weight had increased dramatically. Her mother could see her daughter needed specialist assistance to improve her health and prevent further deteriorations.

When Giselle first met her Accredited Exercise Physiologist, she needed assistance from two other people to stand from her wheelchair, couldn't lift up her own arms, and faced the prospect of developing chronic health conditions at a young age.

Through twice weekly appointments, Giselle has progressed from 30 minute appointments to 60 minute appointments. Through completing a variety of strength training exercises, Giselle can again walk with minimal assistance from others, can lift her arms above her head, can throw a ball to her dog again, and can stand from her wheelchair with no assistance. Importantly through improving her strength and beginning to lose weight, Giselle has reduced her risk of developing chronic health conditions such as type 2 diabetes and heart disease.

As her condition is long standing, Giselle's Accredited Exercise Physiologist is now an integral member of her ongoing care team. With the improvements achieved, Giselle is now attending disability-friendly discos, dancing to all her favourite songs.

Testimonial provided by **BRYANNAH DOWNWARD**
Accredited Exercise Physiologist

DEAFNESS

Approximately 3.6 million people in Australia are affected by hearing loss.

Older age and excessive exposure to loud noise are the leading causes. However, young people are also affected. Around [350 Australian children per year](#) are diagnosed with permanent hearing loss. It's estimated that by the age of 17, approximately 39 children in 10,000 will have some type of hearing loss.

Many people who are deaf or hard of hearing don't identify as having a disability – it is a personal choice. However, deafness is often linked with conditions, such as genetic syndromes, that lead to physical and/or intellectual disabilities. It's estimated that [between 30-40%](#) of children who are deaf or hard of hearing have an additional disability.

THE BENEFITS OF EXERCISE

While exercise cannot 'treat' deafness, it's a vital component of a healthy lifestyle – irrespective of your hearing ability. Regular exercise has well-known benefits to physical health, including improved weight, blood pressure and cholesterol management and reduced risk of developing health conditions such as heart disease, diabetes and some cancers.

Exercise also has important mental health benefits. It triggers the release of natural mood-boosting chemicals, enhances sleep, and has been shown to be effective for [managing depression symptoms](#).

Regular exercise also [boosts brain health](#). Given that untreated hearing loss has been linked with an [increased risk of memory loss](#), physical activity may be especially important for maintaining brain function in people who are deaf or hard of hearing.

Furthermore, if you have a disability associated with deafness, you may be at higher risk for developing a [long-term physical or mental health condition](#). Exercise is an important way to break the cycle of disability and poorer health.



POTENTIAL BARRIERS TO EXERCISE

People who are deaf or hard of hearing can face barriers to achieving adequate physical activity levels. For example, [research](#) found four common themes could become either barriers to, or facilitators of, physical activity in older adults who are deaf or hard of hearing:

- » **use of effective communication strategies** – such as lip reading and sign language
- » **access to visual and technical support** – such as the use of cards to illustrate exercises
- » **environment** – such as adequate lighting
- » **type of physical activity** – such as water-based exercises which require removal of hearing aids

Barriers like these can lead to long-term physical inactivity. For example, [research](#) found children and adolescents with a hearing impairment had reduced levels of physical activity compared to their peers without a hearing impairment. Another [study](#) found hearing loss was significantly associated with lower levels of physical activity, and more time spent in sedentary behaviours, in adults aged 60-69 years.

In turn, a sedentary lifestyle is linked with a higher risk of [many chronic health conditions](#), including cardiovascular disease, diabetes, high blood pressure, some cancers, osteoporosis and depression. It is therefore important that people who are deaf or hard of hearing find an opportunity to exercise, that overcomes the aforementioned barriers to physical activity, so that they are engaging in a sufficient amount each week to reduce the risk of lifestyle diseases.

TYPES OF EXERCISE RECOMMENDED

Because exercise does not reduce or reverse hearing loss, the type of exercise should be chosen based on your needs and goals. For example, a person who is deaf and has an additional disability that affects muscle tone will need a program that emphasises building muscle strength. A person who is deaf and doesn't have an additional disability may not need to focus so much on strength development.

Most people, including those who are deaf, will benefit from a range of exercises designed to build cardiovascular fitness, muscle strength and balance.

THINGS TO BE AWARE OF

Some thought is necessary when designing exercise programs for people who are deaf or hard of hearing. Firstly, the hearing loss itself may necessitate modifications to how exercise programs are delivered. For example, in team sports where coaches and umpires/referees normally rely on whistles, other means may be necessary. Additionally, for some people, group fitness environments may be difficult to engage with.

Secondly, care is needed when deafness is associated with an additional disability. More than 400 syndromes involve a hearing loss. These syndromes can also cause a wide range of other physical, mental, behavioural and social issues. Examples include heart defects, musculoskeletal conditions, vision problems, depression, and concerning behaviours.

This means numerous factors may need to be considered when designing a safe and effective program.

SPEAK TO THE EXERCISE PROFESSIONALS

ESSA accredited exercise professionals are trained to understand factors that can be associated with deafness or hearing loss in people of all ages. An Accredited Exercise Physiologist or Accredited Exercise Scientist can design an exercise program that takes your health needs into consideration, tailoring it to meet your needs, goals and exercise preferences. The important thing is finding a program that works for you, and an accredited exercise professional can help with this.

Your program will start at an intensity that matches your current physical condition and will progress as your fitness improves. The accredited exercise professional will ensure you're performing exercises safely and correctly and, if needed, can train your support people to assist with your program.

Some Accredited Exercise Physiologists have a special interest in working with people with disability. They will work alongside you, and your support people, to help you achieve optimal health, independence and quality of life.

FIND AN ACCREDITED EXERCISE PHYSIOLOGIST NEAR YOU

Expert Contributors **AMANDA SEMAAN** and **KARA FOSCHOLO**
Accredited Exercise Physiologists and Co-Directors of Active Ability



TESTIMONIAL

BEN* was diagnosed with severe to profound hearing loss, autism spectrum disorder, obsessive compulsive disorder (OCD), depression and anxiety. This combination of conditions coupled with significant medication-induced weight gain (for his mental health condition) led to poor levels of fitness, impaired mobility and ultimately decreased social and community participation.

Exercise physiology sessions initially began with Ben's specialist support worker present, who was also deaf and could assist with overcoming the communication barrier through using sign language. Unfortunately, the support worker was not always available for the appointments and communication with Ben was therefore challenging at times. Ben's Accredited Exercise Physiologist learnt a few basic signs (e.g., sit/stand), ensured that she was always standing in front of Ben when talking so that he could lip read, counted using her hands where Ben could see them, and got involved completing the exercise together with Ben for consistent demonstrations.

As a result of his exercise physiology intervention, Ben was able to improve his strength, endurance and functional capacity through completing an individualised exercise program involving strength, balance and aerobic exercises. These improvements translated to an improvement in his health and well-being and increased capacity for social and community participation.

Testimonial provided by **AMANDA SEMAAN** and **KARA FOSCHOLO**
Accredited Exercise Physiologists

* The client's name has been changed

DOWN SYNDROME

Down syndrome is a genetic condition that affects an estimated 13,000 Australians.

People living with Down syndrome have some degree of intellectual disability and developmental delay. They often need assistance from family and/or support people and different health professionals to experience the best possible health, function and independence.

THE BENEFITS OF EXERCISE

[Down Syndrome Australia](#) note that people living with an intellectual disability (such as those with Down syndrome) have higher rates of physical and mental health conditions than that of the general population. For example, people with Down syndrome are more likely to have heart defects, low thyroid levels, and overweight/obesity. Many of these physical and mental health conditions and risk factors are treatable, and potentially preventable, with the right lifestyle measures.

If you or someone you love has Down syndrome, regular exercise is an important part of leading a healthy life and reducing yours or their risk of developing a chronic health condition.

Importantly, [research](#) has shown regular physical activity can improve muscle strength and aerobic capacity in people with Down syndrome and have a positive impact on cardiovascular disease risk factors.

In addition to improving physical fitness, exercise is known to benefit mental health. This is important because at least 50% of children and adults with Down syndrome will experience a [major mental health concern](#) – such as anxiety or depression – during their lifetime.

TYPES OF EXERCISE RECOMMENDED

Every person is unique, so an exercise approach that considers each individual's needs, goals and preferences is best. That said, a combination of exercises to address cardiovascular fitness, muscle strength and balance will be of benefit for most people living with Down syndrome.

Aerobic exercise activities involve continuous movement of large muscle groups to raise the heart and breathing rate. When performed regularly, aerobic exercise helps to build cardiorespiratory fitness. Examples include walking, rowing, swimming, boxing, dancing, cycling and aqua fitness.

Adequate muscular strength is necessary to perform everyday activities like climbing stairs, getting on and off chairs, and opening jars. In other words, **strength exercises** and training is important for independence! Low muscle tone, or “floppy” muscles, are common in people with Down syndrome, making strength training an important part of any exercise routine.

Strength is built through resistance activities that challenge muscles. When performed regularly, resistance training helps muscles grow larger (to a degree) and stronger. Examples include activities performed with resistance bands, dumbbells, body weight, gym equipment, and even household objects such as tins of food.

Research has shown a combination of aerobic and resistance exercises can have beneficial effects for people with Down syndrome, including [improvements in memory](#), [exercise capacity and fitness](#), and, in young people aged 10-19, an [increase in lean muscle mass](#).

Balance problems are also common in people living with Down syndrome – in fact we know that high falls risk can be a problem for anyone living with an intellectual disability. **Balance exercises** are designed to train balance on the spot (static balance) and while moving around (dynamic balance) should both be incorporated to help.

THINGS TO BE AWARE OF

The effects of Down syndrome mean that care is required when designing exercise programs for people with the condition. People living with Down syndrome typically have a lower aerobic capacity and peak heart rate than those in the general population, so the usual measures of exercise intensity may need to be modified. Low muscle tone and loose joints can also pose a potential for injury with the wrong types of activity.

Other things that may need to be considered in prescribing exercise for people with Down syndrome include heart defects, vision or hearing issues, and a higher risk of osteoporosis and a rare condition that affects the upper spine.

SPEAK TO THE EXERCISE PROFESSIONALS

An ESSA exercise professional will be aware of all these things. [Accredited Exercise Physiologists](#) are trained to understand the health effects of conditions such as Down syndrome, and design exercise programs tailored to suit each person's needs and goals.

They will start your program at an intensity to match your current physical condition and make changes as you progress. They can supervise your exercises to ensure you're performing them safely and correctly and train your support people to do the same.

Some Accredited Exercise Physiologists have a special interest in [supporting people with disability](#). They will work alongside you, and your support people, to help you achieve optimal health, independence and quality of life.

FIND AN ACCREDITED EXERCISE PHYSIOLOGIST NEAR YOU

Expert Contributors **AMANDA SEMAAN** and **KARA FOSCHOLO**
Accredited Exercise Physiologists and Co-Directors of Active Ability

TESTIMONIAL

PAUL* has a diagnosis of Down syndrome with a mild intellectual disability, a kyphotic (rounded) upper back and significant contracture of both biceps (arm muscles), which limits Paul's ability to exercise with his upper body. His Down syndrome diagnosis has resulted in physical manifestations of low muscle tone, delayed development of gross and fine motor skill, poor mobility (movement), and coordination.

Paul has a happy, funny and witty personality. He loves to dance, sing and listen to music, so his exercise sessions are always incorporating music, dance and fun! When Paul commenced working with an Accredited Exercise Physiologist, he disliked exercise and was unable to perform many gross motor tasks that are expected of others his age. His exercise program has used a combination of strength training, aerobic exercise and motor skill development.

Over time, Paul has worked with his Accredited Exercise Physiologist to learn how to perform squats, lunges, star jumps, ladder jumps, soccer kicks, soccer skills with the ball such as dribbling, and improved balance and coordination tasks.

Now, Paul has expressed that he loves exercising and has noticed an improvement in his mobility (particularly his walking) and dancing skills! His assessment results show an improvement in his muscle tone, muscle strength, muscle endurance, coordination, gut health, and bowel function, which are all challenges an individual with Down syndrome will encounter.

Testimonial provided by **AMANDA SEMAAN** and **KARA FOSCHOLO**
Accredited Exercise Physiologists

* The client's name has been changed

Regular physical activity can improve muscle strength and aerobic capacity in people with Down syndrome and have a positive impact on cardiovascular disease risk factors.



FRAGILE X SYNDROME

Fragile X syndrome is a genetic disorder that affects approximately 1 in 3,600 boys and between 1 in 4,000 to 6,000 girls.

It is the most common inherited cause of intellectual disability. Fragile X syndrome is caused by a change in a gene on the X chromosome, which disrupts the production of proteins in the nervous system.

People with Fragile X syndrome may experience a range of developmental, physical, emotional and behavioural difficulties. Some of the most common effects include:

- » intellectual disability
- » developmental delay, including difficulties with gross and fine motor skills
- » attention deficit hyperactivity disorder
- » autism spectrum disorders (ASD) and autistic-like behaviours (such as hand flapping and difficulty with social interactions)
- » sleeping problems
- » sensory processing issues, such as aversion to loud noises, bright lights and touch
- » coordination problems
- » low muscle tone, loose joints and flat feet
- » vision and hearing problems
- » enlarged testicles (in post-pubescent males)
- » heart problems

The severity of these issues varies widely from one individual to another, and not everyone with Fragile X syndrome will experience all these characteristics.

There is currently no cure for Fragile X syndrome, but there are treatments and strategies that support people with the condition to achieve their potential and lead healthy lives. People living with Fragile X Syndrome will usually have a large team of health care professionals empowering them to reach their goals related to health and function. Support from [Accredited Exercise Physiologists](#), for example, can help with coordination, muscle strength and movement control.

THE BENEFITS OF EXERCISE

Regular physical activity is vital for good physical and mental health. For people with Fragile X syndrome, exercise can also assist with achieving better physical function, independence, and ability to perform everyday activities – and therefore quality of life. For example, the right type of exercise can support improved:

- » mobility and transfers
- » muscle tone, strength and stamina
- » cardiovascular function and endurance
- » coordination and balance
- » confidence and motivation
- » social skills

In addition to the physical benefits, recent studies have indicated that exercise can support enhanced brain health and behaviour in people with Fragile X syndrome. For example, a [review published in 2015](#) looked at studies exploring the link between physical exercise and autistic behaviour in individuals with the condition. The authors concluded that exercise promotes growth of new brain cells and production of neurotrophic factors (molecules that support nerve cell growth and health).

TYPES OF EXERCISE RECOMMENDED

Individuals with Fragile X syndrome will benefit from different exercise types that address different aspects of function and health. An Accredited Exercise Physiologist with experience supporting people with intellectual disability can create an individualised program designed to suit each person's needs and goals.

Aerobic exercise such as cycling, walking, boxing, rowing, swimming and dancing support healthy function of the heart, lungs and circulatory system. Aerobic activity also enhances sleep and causes release of the 'feel good' hormones that boost mood.

Low muscle tone and loose joints are common in people with Fragile X syndrome. This can lead to general weakness, poor coordination and difficulty with fine and gross motor skills. **Strength training or resistance exercise** using body weight, bands, dumbbells or similar help build muscle strength and stamina and support bone health.

Specific **gait, balance and coordination exercises** might also be used to develop a better gait (walking pattern) and improve balance and coordination.

THINGS TO BE AWARE OF

Individuals with Fragile X syndrome often need continued support to make positive health choices that go beyond a therapy session. Building the capacity of support people helps make sure individuals with Fragile X syndrome receive the assistance they need to engage in regular physical activity on most days of the week.

Additionally, the effects of Fragile X syndrome can make it difficult for people affected by it to achieve adequate physical activity levels. Sensory processing problems, for example, may make it challenging to exercise in bright or noisy environments, such as gyms. Other issues, such as low muscle tone, loose joints and heart problems, mean certain exercise may be unsuitable. Children with Fragile X syndrome may have trouble maintaining concentration, so exercise sessions need to be challenging and enjoyable to maintain engagement.



SPEAK TO THE EXERCISE PROFESSIONALS

Individuals with Fragile X syndrome have diverse and often complex needs. Getting guidance from an Accredited Exercise Physiologist, ideally one with experience working with individuals with intellectual disability, can ensure exercise is tailored to each person's needs.

FIND AN ACCREDITED EXERCISE PHYSIOLOGIST NEAR YOU

Expert Contributors **AMANDA SEMAAN** and **KARA FOSCHOLO**
Accredited Exercise Physiologists and Co-Directors of Active Ability

TESTIMONIAL

JONI is a 49-year-old female diagnosed with Fragile X syndrome, resulting in various physical and cognitive impairments that have impacted her communication, ability to independently perform functional tasks and participation in social and community activities.

Since commencing exercise physiology support, Joni has been engaging in an aerobic, resistance and balance exercise program over the last nine months. As a result of exercise physiology support, she has been able to significantly increase the amount of physical activity she engages in and is beginning to see improvement in lower limb strength, functional capacity and balance which will see positive effects to her physical independence and participation in community activities.

Testimonial provided by **AMANDA SEMAAN** and **KARA FOSCHOLO**
Accredited Exercise Physiologists

LOWER-LIMB AMPUTATION

More than 8,000 lower-limb amputations are performed each year in Australia.

Men are more than twice as likely to undergo a lower-limb amputation [compared to women](#), more than half will be over 60 years old, and half of these will also have type 2 diabetes.

The most common causes for lower-limb amputation include:

- » type 2 diabetes
- » cancer
- » vascular disease
- » trauma/accidents
- » infection
- » birth defects

Some individuals will also undergo amputation following multiple failed surgeries, in the hope of greater functional outcomes.

Depending on the circumstances, an amputation may be performed above-the-knee (transfemoral), below-the-knee (transtibial), partial foot (excluding toes), or at the toes.

THE BENEFITS OF EXERCISE

Regular exercise has a multitude of powerful health benefits for the general population, and these same principles and physiological benefits apply in the exact same way following an amputation.

One of the [primary complaints](#) following a lower-limb amputation is reduced balance, as well as inactivity and difficulty completing everyday tasks. Further, these individuals also tend to experience significant losses in lower limb strength, bilaterally.

However, individualised exercise treatment can help an individual with an amputation [in](#):

- » improved muscular strength
- » improved walking performance
- » greater quality of life
- » reduced use of pain medications
- » reduced pain severity
- » reduced impact of an amputation on daily life

THINGS TO BE AWARE OF

Many individuals with a lower limb amputation have difficulty engaging in daily and social activities, due to a commonly-shared [fear of falling](#). Following an amputation there are many physical [challenges](#), as well as increased stress. These commonly include musculoskeletal pain, avoidance of physical activity and lower back pain (occurring in over half of single-limb amputees).

For those with a single-limb amputation, individuals often [experience](#) movement asymmetry, increased wear and tear on joints, leg length differences, muscle loss and strength loss. Together, this increases the strain on the body to complete everyday activities. Further to this, limb and muscle loss changes movement strategies, reduces movement efficiency and increases the demand on remaining muscles to carry out movements.

The higher the [level of amputation](#), the harder the body has to work to move safely and effectively.

Individuals with amputation experience several [key changes](#) to movement including:

- » greater work by the hips, e.g., twisting, shifting and hiking the hips
- » increased work by the calf muscles on the remaining limb
- » greater side-bending and extending through the lower back
- » reduced knee range of motion on the side of the amputation
- » differences in leg length i.e., remaining limb vs. prosthetic leg
- » differences in lower limb weight i.e., remaining limb vs. prosthetic leg

TYPES OF EXERCISE RECOMMENDED

The long-term goal for individuals following amputation is to optimise physical function and [independence](#) with daily living activities, e.g., stair climbing, walking and prolonged standing.

The basic principles of exercise [recommendations](#) for individuals with an amputation are the same for those of the general population, and aim to improve function and reduce chronic disease:

- » **Aerobic exercise:** 30-60 minutes of moderate intensity exercise 5 days per week, or 20-60 minutes of vigorous intensity exercise 3 days per week.
- » **Strength exercise:** 2-3 days per week.
- » **Neuromotor training:** This is also known as functional training and is recommended 2-3 days per week. This includes balance, agility, coordination and body awareness training. This area of training is the most important component for an individual with an amputation.

Individuals with an amputation show the same ability to improve their overall [fitness](#) compared to the general population. [Research](#) has shown that for amputees, with the goal to return to running, regular and individualised exercise treatment improves hip strength and movement quality enough to allow safe running. However, more importantly, without ongoing training of these skills, these individuals show a loss of skill and commonly return to being prosthetic walkers only.

SPEAK TO THE EXERCISE PROFESSIONALS

Every individual with an amputation is different which means your exercise regimen should take that into account! If you are looking to rehabilitate after surgery, are only just returning to exercise, or need help with specific issues, an Accredited Exercise Physiologist will be your best source for information, guidance, and support to develop an exercise program that is safe, effective and enjoyable.

FIND AN ACCREDITED EXERCISE PHYSIOLOGIST NEAR YOU

Expert Contributor **JESSICA BITZIOS** Accredited Exercise Physiologist at Combined Wellness Solutions

TESTIMONIAL

BRETT is a 42-year-old above-knee amputee who initially came to see an Accredited Exercise Physiologist to work on his golf strength and abilities to allow him to play for a longer time. However, Brett's mental health wasn't in a great place either. When he first had his amputation, Brett was really struggling to cope and turned to alcohol.

In the beginning, Brett worked on improving his strength and walking patterns. More recently his sessions have focused on strength and power specifically in a golf setting as Brett is going for a world ranking in the amputee category. Brett has learnt a lot about what he's capable of doing – breaking personal bests, having recently deadlifted 260kg, as well as being able to walk 18 holes of golf, when he could only walk 3 holes when he first started seeing his Accredited Exercise Physiologist.

Testimonial provided by **CARL BRIGHT** Accredited Exercise Physiologist

[Watch this short video](#) of Brett opening up about his journey with exercise and how his Accredited Exercise Physiologist has turned his life around.

MULTIPLE SCLEROSIS (MS)

Multiple sclerosis (commonly known as “MS”) is an autoimmune disease that affects the central nervous system.

It's characterised by the formation of areas of demyelination (plaques) throughout the brain and spinal cord. This damage to the central nervous system results in slow or interrupted transmission of nerve impulses and causes a wide range of symptoms.

Symptoms of MS include physical and cognitive disability, extreme fatigue, temperature sensitivity, and depression. There is currently no known cause or cure for MS.

MS affects over [25,600](#) people in Australia. Most of these people are diagnosed between the ages of 20-40, but it can affect younger and older people too. MS is roughly [three times](#) more common in women than in men.

THE BENEFITS OF EXERCISE

Today, exercise is considered safe for people with MS.

Many of the symptoms associated with MS are reduced through physical activity and exercise. [Research](#) has indicated that persons with MS who engage in exercise have:

- » less relapses
- » increased mobility
- » increased strength
- » increased cardiovascular health
- » lower levels of fatigue
- » lower incidence of depression and anxiety
- » less pain
- » better balance
- » better quality of life

Any exacerbation of symptoms associated with exercise are normally [fully reversed](#) 30 minutes after the end of the exercise session. Including exercise in your life as soon as possible after diagnosis is expected to prevent early progression of the [disease](#).

TYPES OF EXERCISES RECOMMENDED

The [physical activity and exercise guidelines](#) for adults with mild to moderate MS are:

- » 30 minutes of moderate intensity aerobic activity, 2 days per week, and
- » strength training for major muscle groups, including the calf muscles, leg muscles, abdominal, and arm muscles, on 2 days per week.

If you are already undertaking exercise, the [guidelines](#) for mild to moderate MS are:

- » 40 minutes of vigorous intensity aerobic exercise, 5 days per week, and
- » strength training for major muscle groups, including the calf muscles, leg muscles, abdominal, and arm muscles, on 2 days per week.

You should also be completing exercise to work on your balance and flexibility as often as each day of the week.

Aerobic exercise can be performed in a variety of settings including individual and group training sessions on land or in water. Use of exercise bikes and elliptical trainers is preferable to the use of a treadmill when there is a risk of tripping and falls. [Research](#) has shown that walking is the number one choice of aerobic exercise by persons with MS.

It's best to start small and gradually increase your exercise intensity and duration. How fast can you already walk? How long can you walk for? Build this up to achieve your 30 minutes of moderate aerobic exercise.

For **strength training exercise**, slowly work up to doing two sets of 10-15 repetitions of each strength training exercise. Experiment with timing so that exercise does not tire you out for the rest of your day.

Some guidelines for strength training with MS include:

- » Exercises can be performed in a variety of settings including home, community centre or gym.
- » You can use resistance or machine weights, body weight, resistance bands, or water.
- » Progressive resistance with heavier weights and low repetitions is beneficial.
- » Frequent rest breaks and alternating muscle groups during training helps minimise fatigue.

Stretching and balance exercises can be helpful to improve posture and flexibility and can be done on most days of the week. You can do these strength and balance exercises using gravity or resistance bands, or by challenging normal sitting and standing posture.

GETTING STARTED

If you're new to exercise, it's important to start slowly. We recommend working up to the recommended volume of exercise over two to three months and break exercise into shorter bouts of 10 to 15 minutes at a time if necessary. Remember that all exercises can be modified by an Accredited Exercise Physiologist to suit your ability.

THINGS TO BE AWARE OF

1. **Fatigue** – fatigue is common in MS; exercise and fatigue management education strategies will actually [help your fatigue level](#) in the long term.
2. **Heat sensitivity and MS** – physical and sensory symptoms may temporarily increase with small increases in environmental or body temperature. People with MS should be encouraged to keep cool and well hydrated during exercise sessions.
3. **Spasticity and contractures** – A person with spasticity may find it difficult to walk or perform certain exercise activities. By performing stretching exercises daily, this can help make muscles longer, helping to decrease spasticity and prevent contracture.
4. **Finding support** – support to help you exercise is not to be underestimated. [Research](#) indicates that learning about exercise, working with others to overcome your barriers, and identifying facilitators to exercise will make you more successful in increasing your activity levels.

SPEAK TO THE EXERCISE PROFESSIONALS

A health professional, like an Accredited Exercise Physiologist, can help you tailor exercise so that they are safe and suit your individual needs. They can also show you how to gradually increase your training load so that you minimise the risk of injury or are able to better manage your fatigue.

Getting support from an accredited exercise professional can also help you with goal setting and motivation to help make regular exercise and physical activity a part of your day-to-day life.

- » [For further resources, download the Exercise is Medicine® Australia factsheet](#)
- » [Access the ESSA Position Statement on exercise for people with mild to moderate multiple sclerosis](#)

FIND AN ACCREDITED EXERCISE PHYSIOLOGIST NEAR YOU

Expert Contributor **DR YVONNE C LEARMONTH** *Physiotherapist, Discipline of Exercise Science; Centre for Molecular Medicine and Innovative Medicine, Murdoch University, & Perron Institute for Neurological and Translational Science*



TESTIMONIAL

MATT* was referred to an Accredited Exercise Physiologist through a friend to help manage his Multiple Sclerosis after a significant flare-up greatly affected his functional capacity and ability to mobilise. Prior to his flare-up, Matt was running regular marathons and had many more running goals set for the future.

“Meeting my Accredited Exercise Physiologist, Robyn has been a game-changer in terms of managing my MS. When I started seeing her my balance and coordination was poor, my ability to enjoy running was almost non-existent, and my confidence was shot. Through consistent hard work, being challenged weekly by an individualised program, and with wonderful personal support, I have seen substantial improvement in a number of areas of my life.

My mobility, and subsequently my running, has improved dramatically. My improved balance and coordination allows me to play an active role more readily in the lives of my children, and I am able to take part in more social activities. My overall well-being has improved considerably because of Robyn’s guidance and support. My long-term goals are becoming a reality.”

Matt is now running park runs consistently under 35 minutes and plans to attempt a half-marathon again in 2022!

Testimonial provided by **ROBYN MCARTHUR**
Accredited Exercise Physiologist

* The client’s name has been changed

The most important thing is to choose exercise that you enjoy, and remember, something is always better than nothing!



OSTEOGENESIS IMPERFECTA (OI)

Osteogenesis Imperfecta (OI), also known as “Brittle Bones”, means “bones formed imperfectly”.

It is a rare genetic condition that someone is born with and will always carry throughout their life. It is the result of a mutation in one of the two genes that carry instructions for making type 1 collagen; the major protein in bone and skin that helps strengthen bones. It primarily affects the bones, causing them to be fragile.

It is estimated that roughly 7 people per 100 000 are born with OI. It occurs equally among the sexes and affects people on every continent across the globe.

A classification system of different types of OI is commonly used to help describe how severely a person with OI is affected. For example, the condition can be mild, with only a few fractures during a person’s lifetime, or in more severe cases, it can involve hundreds of fractures that occur without any apparent cause.

Treatments can include bone-strengthening medication, **physical therapy**, and orthopaedic surgery.

Not so long ago, parents were advised to “protect” children who have OI by avoiding recreational activities. This well-intentioned approach did not protect children from fractures (broken bones) and may have hindered development and achievement of independent functioning.

Bone growth depends on muscle pull as well as loading or weight bearing through standing, walking and lifting. Immobilisation may result in loss of muscle and skeletal mass. Over the years, it has become clear that physical activity is an important part of managing OI in both children and adults.

THE BENEFITS OF EXERCISE

As well as medical treatment, safe exercise therapy is often recommended for people living with OI as prolonged immobility can further weaken bones and lead to muscle loss, weakness, and more fractures.

Although individualised recommendations typically depend on the type of OI, people with OI are encouraged to exercise as much as possible to promote muscle and bone strength, which can help prevent fractures and improve mobility, functionality, and posture, as well as to help maintain independence.

Social inclusion in sporting activities for OI children is also important as it optimises psychological and social well-being by improving self-confidence and the ability to interact socially with peers.

TYPES OF EXERCISE RECOMMENDED

- » Swimming and hydrotherapy are common exercise choices for people with OI of all ages, as water allows independent movement with little risk of fracture.
- » Walking is also excellent exercise for those who are able (with or without mobility aids).
- » Having fun and gaining a sense of accomplishment are legitimate goals for an exercise program. The optimal long-term goal for people with OI is good health and independence in all areas of function (social, educational, self-care, locomotion, and recreation) using adaptive devices as needed.

SPEAK TO THE EXERCISE PROFESSIONALS

People with OI, or their parents, should consult both their GP and an Accredited Exercise Physiologist to discuss appropriate and safe exercise.

Accredited Exercise Physiologists are qualified to understand the complexities around working with people living with OI. They also have the skills and knowledge to prescribe effective exercise interventions that are individualised to each person's specific needs as people with OI are all unique – no two people with OI display exactly the same characteristics.

As there is an increased risk of fractures in OI children with contact sport, parents should also seek advice an Accredited Exercise Physiologist if they are unsure if a sport will be suitable.

[FIND AN ACCREDITED EXERCISE PHYSIOLOGIST NEAR YOU](#)

Written by **EXERCISE & SPORTS SCIENCE AUSTRALIA (ESSA)**



PRADER-WILLI SYNDROME (PWS)

Prader-Willi Syndrome (PWS) is a rare and lifelong genetic condition that leads to physical and developmental disabilities.

Typical characteristics of PWS include abnormal growth, muscle weakness, behavioural challenges, intellectual disability, and insatiable hunger. People with PWS usually have less lean body tissue (bone and muscle) and more fat mass.

Individuals living with PWS can lead full, healthy lives. They can be involved in their families and communities, go to school, and find work. To achieve the best quality of life and reduce disability related to their condition, people with PWS need ongoing support – including help from health professionals like Accredited Exercise Physiologists.

THE BENEFITS OF EXERCISE

One of PWS's main issues is “hyperphagia”, or hunger that can't be satisfied no matter how much food is eaten. People with PWS are unable to feel that they're full and will continue to eat if food is available. This makes them prone to developing obesity.

Overweight and obesity in childhood has a significant effect on physical and psychological well-being. Children who are overweight or obese are likely to stay that way into adulthood and are more susceptible to developing diabetes and cardiovascular diseases at an earlier age.

Obesity in adulthood is a [risk factor](#) for numerous health conditions, including type 2 diabetes, cardiovascular disease, psychological issues, some musculoskeletal conditions, and some cancers. Obesity can also lead to [mobility problems](#) such as difficulty walking and climbing stairs.

These issues can impact the individual's ability to function and participate in family, school, work, and community activities. For example, obesity may make it hard to wash parts of the body or cause difficulty using public transport to get to work. With an associated cognitive impairment, it is then also more difficult for a person with PWS to manage these issues such as type 2 diabetes, leading to a negative cycle of poor function and health.

[Research](#) specifically into exercise for people with PWS has shown that most long-term exercise programs lead to improved physical performance and reduced body mass. Other reported benefits include improved control of blood glucose levels and lipid (fat) profiles and a better gait pattern. For people with PWS, exercise is a crucial part of managing their condition. It can support them to stay healthy, so they can remain involved in meaningful activities and enjoy a fulfilling life.

TYPES OF EXERCISE RECOMMENDED

PWS affects everyone differently. For example, some people with PWS will have lower muscle tone than others. For this reason, it's best to get an assessment with an Accredited Exercise Physiologist who can tailor a program to suit your needs and goals. Usually, this will include a variety of exercise types, outlined below, along with training of support people to ensure exercise can happen at the frequency required.

Regular **aerobic exercise**, such as walking, cycling, swimming, dancing, boxing, or rowing fosters healthy function of the heart, lungs and circulation. It also triggers release of the 'feel good' hormones, helping to boost mood. Aerobic (and strength) exercises can also balance out the individual's energy input from food.

Low muscle tone is characteristic of PWS. Along with general weakness, this can cause problems with co-ordination and motor skills. **Strength training and resistance exercise** are used to build muscle strength and endurance and improve function. They also support bone health, which is important as people with PWS are at higher risk for osteoporosis.

People with PWS may have balance problems related to muscle weakness and/or because overweight or obesity causes their centre of gravity to shift. A tailored **balance training program** can help someone with PWS deal better with the balance challenges of everyday life, such as staying upright on a moving bus.

Flexibility exercises can be helpful if the individual has movement restrictions, such as difficulty reaching to wash their back or put on shoes.

THINGS TO BE AWARE OF

Training formal and informal carers to help people with PWS to exercise is vital to ensure exercise occurs at the correct frequency required. The intellectual disability associated with PWS makes it hard for people living with the condition to complete an exercise program independently. They need lifelong support to make choices that support their health. Building the capacity of caregivers helps make sure health goals are met and reduces reliance on ongoing support from professionals.

Additionally, people with PWS may also experience difficulties in their thinking and behaviour, often presenting as mood swings and emotional outbursts, so working with a therapist that has experience working with behaviour support plans is a good idea.

People with PWS may have reduced aerobic capacity and need to start with lower intensity activities. Muscle tone issues may increase the risk of strains and sprains, so caution is needed with high-impact and resistance exercise.

SPEAK TO THE EXERCISE PROFESSIONALS

People living with PWS have complex and varied needs, so guidance from an Accredited Exercise Physiologist is crucial before embarking on an exercise program.

An Accredited Exercise Physiologist will consider all these factors in their assessment and planning. They will create a personalised program that accounts for the individual's function, goals and activity preferences. Safety will be the top priority, and they will update the person's program as their fitness and confidence improve. They will also provide training for support people to help exercise become an enjoyable part of the individual's routine.

FIND AN ACCREDITED EXERCISE PHYSIOLOGIST NEAR YOU

Expert Contributors **AMANDA SEMAAN** and **KARA FOSCHOLO**
Accredited Exercise Physiologists and Co-Directors of Active Ability

TESTIMONIAL

KIMBERLEY has been living with Prader-Willi Syndrome (PWS) and other conditions including intellectual disability, autism spectrum disorder, pica, mental illness, osteoporosis, and scoliosis. She has been engaging in strength training once a week with her Accredited Exercise Physiologist and walking with her support workers every other day of the week.

Coupled with her diet intervention, Kimberley's weight has reduced significantly and is now considered a healthy weight, which is a huge achievement! Over the past 12-months, she has increased her exercise tolerance – starting with 3 x exercises per session, Kimberley has now advanced to 7 x sessions. With an increase in physical activity, Kimberley has experienced improvements in her strength and aerobic capacity, better mood, and a lower frequency of behaviours of concern.

Testimonial provided by **AMANDA SEMAAN** and **KARA FOSCHOLO**
Accredited Exercise Physiologists

SCHIZOPHRENIA

Schizophrenia is a complex brain disorder estimated to affect approximately 1% of the population.

Onset usually happens in adolescence or young adulthood. While the cause isn't fully understood, it seems to involve an interplay between genetic and environmental factors.

People with schizophrenia experience a range of symptoms that impact their physical, mental and social function. These can be divided into:

- » **positive symptoms** – that is, symptoms that are added to usual everyday experience, such as hallucinations and delusions.
- » **negative symptoms** – those that take away from usual experience, such as social withdrawal and reduced motivation.
- » **cognitive symptoms** – those that affect cognitive functions, such as issues with attention and working memory.

There is currently no cure for schizophrenia, but almost all people living with schizophrenia will be treated with medication. The medications available on the market are generally very good at managing positive symptoms, but the negative and cognitive symptoms of schizophrenia are much harder to treat.

Mounting evidence is showing that physical activity plays a key role in managing all three types of symptoms and helps to reduce the gap in health and life expectancy experienced by people with schizophrenia.

THE IMPORTANCE OF EXERCISE

People with schizophrenia are at significantly higher risk for developing other health conditions. For example, a [study including over 1,800 Australians](#) living with psychosis found that three quarters of participants were overweight, or obese, and more than half had metabolic syndrome. Some of the key reasons for this elevated risk include:

- » the side effect profile of antipsychotic medications, which tend to cause significant weight gain,
- » the negative symptoms of schizophrenia make it more difficult for those living with the disorder to be motivated to engage in activities that promote good well-being, and
- » the cognitive symptoms associated with schizophrenia make it more difficult for those living with the disorder to sustain the organisation and planning required to engage in activities that promote good health and well-being.

As a result, people with schizophrenia have a life expectancy [10-20 years](#) less than people in the general population, much of which is related to preventable conditions such as cardiovascular disease and diabetes.

Physical activity plays a vital part in improving or maintaining cardiometabolic health and mental health, making it especially important for people with a condition such as schizophrenia.

THE BENEFITS OF EXERCISE

An increasing number of studies are showing that regular exercise can enhance physical and psychological well-being in people with schizophrenia.

For example, a [review of 20 studies](#) found that physical activity interventions led to improved physical fitness and a reduction in positive and negative schizophrenia symptoms.

The greatest benefit was seen in people who engaged in 90 minutes or more of moderate to vigorous physical activity per week. This is important, because improved physical fitness can reduce your risk for developing cardiometabolic disease and people living with Schizophrenia tend to have a significantly low baseline level of fitness.

Additionally, further [research](#) showed exercise could improve cognitive function in people with schizophrenia, with greater amounts of exercise linked to larger improvements.

TYPES OF EXERCISE RECOMMENDED

It is important to remember that any physical activity is better than none, and the type of activity you choose is less important than doing something. It's best to find a type of exercise you'll enjoy, so that you can keep exercising for the long term. You don't need to become a fitness junkie to reap the benefits of physical activity. Look for small opportunities to be more active, such as taking the stairs instead of the lift and walking rather than driving for short distances.

People living with schizophrenia should aim to meet the [minimum recommendations for physical activity](#), which can be achieved via 30 minutes of moderate intensity physical activity on most days of the week. You should also aim to complete activities that strengthen muscles (such as resistance training with bands, dumbbells, or body weight) at least 2 days per week.

THINGS TO BE AWARE OF

Engaging in regular physical activity can be challenging for people living with schizophrenia to achieve for the same reasons that optimal physical health can be challenging to achieve.

In short, negative and cognitive symptoms mean that motivation and organisation are typically key challenges for individuals with schizophrenia.

As there is currently no cure for schizophrenia, and exercise is good for you anyway, it's important to find an exercise routine you're likely to stick with. Exercise needs to become part of a long-term lifestyle that helps you maintain optimal physical and mental well-being and quality of life.

SPEAK TO THE EXERCISE PROFESSIONALS

People living with schizophrenia often have complex health needs. It's recommended to get some guidance from an Accredited Exercise Physiologist before starting an exercise program.

Importantly, [research has shown](#) that people with schizophrenia achieved greater fitness improvements [and lower rates of dropouts](#) when their exercise program was supervised by a health professional such as an Accredited Exercise Physiologist.

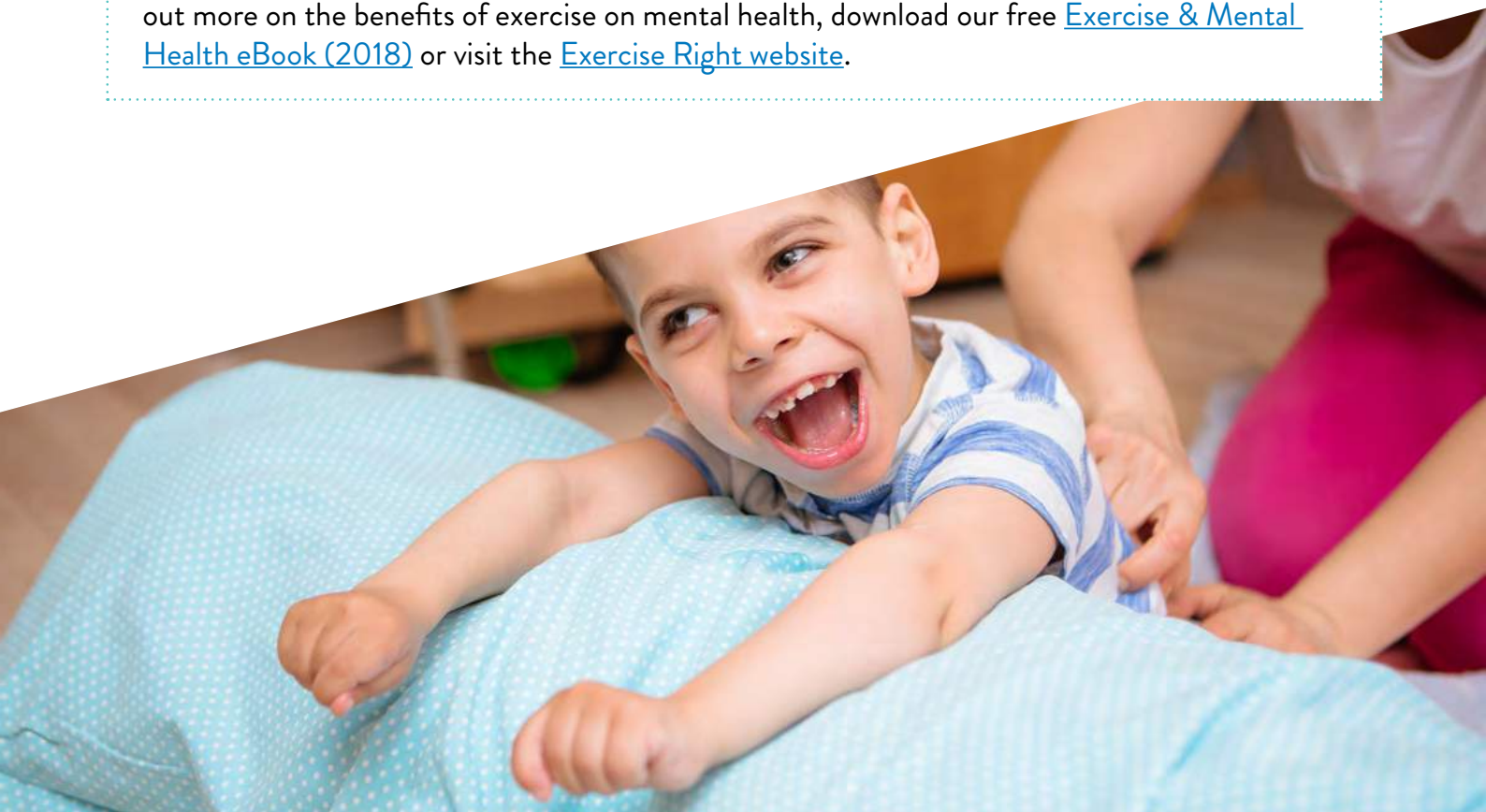
An Accredited Exercise Physiologist can tailor a program suited to your needs and goals, considering factors such as your health status, living and working situation, medications, and exercise preferences. As your fitness improves, they can update your program accordingly. If needed, they can also train your support people to ensure exercise becomes a regular part of a healthy lifestyle that helps you enjoy better physical and mental well-being.

FIND AN ACCREDITED EXERCISE PHYSIOLOGIST NEAR YOU

Expert Contributor: **AMANDA SEMAAN** and **KARA FOSCHOLO**
Accredited Exercise Physiologists and Co-Directors of Active Ability

EXERCISING FOR MENTAL HEALTH

Exercise is beneficial for not only other mental health disorders like schizophrenia, such as bipolar affective disorder, depression, anxiety and post-traumatic stress disorder (PTSD), but it plays a key role in improving poor mental health in all intellectual and physical disabilities. To find out more on the benefits of exercise on mental health, download our free [Exercise & Mental Health eBook \(2018\)](#) or visit the [Exercise Right website](#).





Exercise needs to become part of a long-term lifestyle that helps you maintain optimal physical and mental well-being and quality of life.

SPINAL CORD INJURY

The spinal cord is the pathway through which the brain sends and receives information to and from the rest of the body.

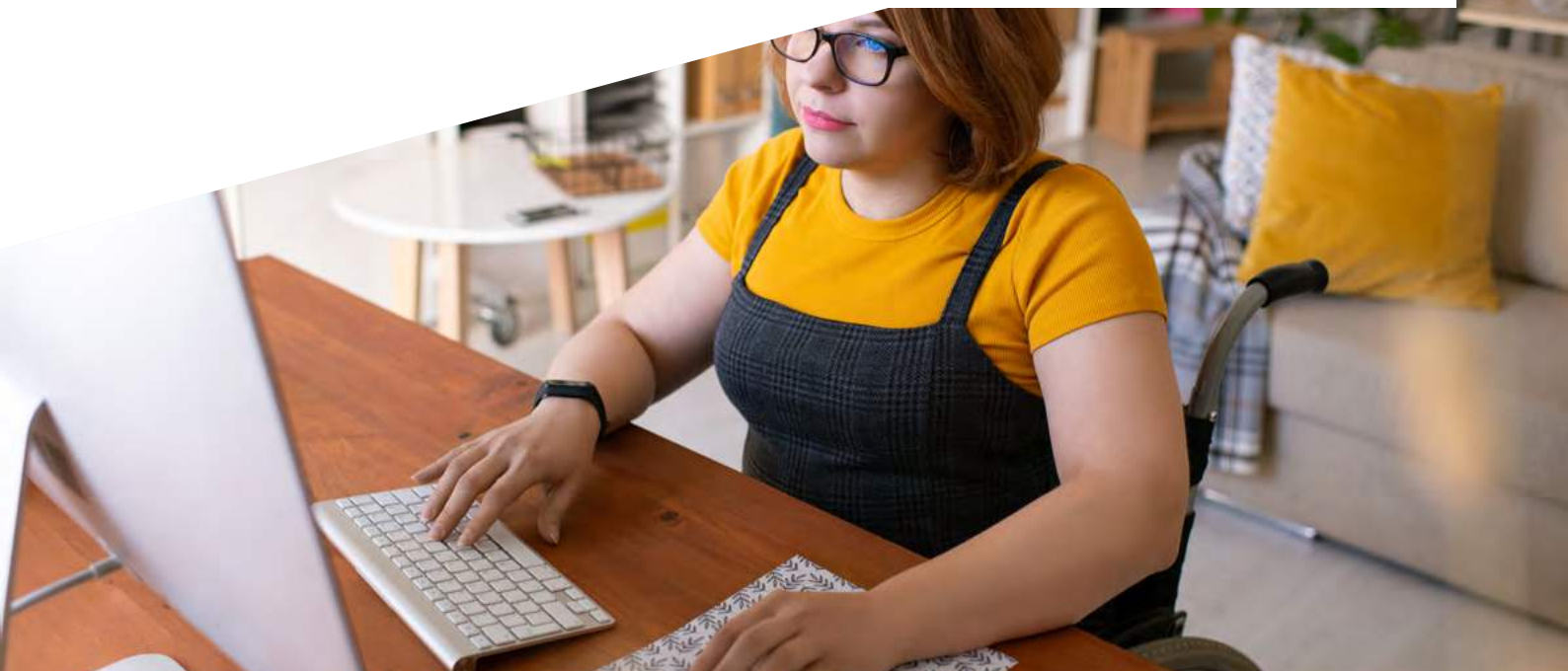
Spinal cord injury (SCI) results from trauma (e.g., motor vehicle accidents or falls) and can cause three types of impairments: completely paralysed or very weak muscles; reduced or absent feeling; and impaired autonomic functions such as reduced sweating or low blood pressure.

The functions that are impaired and how much they are impaired are determined by two things:

1. **How high the injury is.** The closer the injury is to the brain then the more function is impaired. Tetraplegia (preferred to the term 'quadriplegia') refers to injuries in the neck region and typically results in impairments of arm, trunk and leg function. Paraplegia refers to injury below the neck and while trunk and leg function is impaired, arm function is typically normal.
2. **The completeness of the injury.** When an injury does not damage the full thickness of the spinal cord, some connections with the brain remain intact and some function can be preserved below the level of the injury. The amount of function preserved is highly variable, even for people with injuries at the same level.

In Australia, [over 20,000 people](#) are living with SCI. Almost one quarter (23%) of people with an SCI are under 35 years old, and the vast majority are aged under 65.

Men are more likely to incur an SCI, with approximately 70% of new incidences reported in male patients. 42% of people living with an SCI are classified as tetraplegic.



THE BENEFITS OF EXERCISE

People with mobility impairments, including people with SCI, are among the most physically inactive members of society. This profound physical inactivity is very harmful for health, fitness and function, and compounds the consequences of SCI.

Exercise can help to [improve](#) the quality of life of those living with SCI. Exercise interventions can enhance functional independence (e.g., the ability to push around their community without help or get out of their wheelchair and into bed or into a car) and can also decrease levels of depression and anxiety.

Aerobic exercise (e.g., wheelchair pushing, hand cycling, or swimming) improves cardiorespiratory fitness, reduces the risk of cardiovascular disease and may reduce the incidence of urinary tract infections.

Strength training improves strength of non-paralysed muscles and may improve strength of partially-paralysed muscles.

Exercise interventions that avoid painful movements and include specific upper-limb strengthening can also reduce shoulder pain, a common problem for manual wheelchair users.

TYPES OF EXERCISE RECOMMENDED

The effects of SCI vary enormously. Some people can walk and live independently, while others require a motorised chair and personal support for activities of daily living. Therefore, specific exercise prescriptions that apply to all people with SCI are not possible.

However, in general, people with SCI should:

- » be as physically active as they can be, aiming to accrue at least 30 minutes of moderate intensity aerobic activity on most or all days of the week, and
- » they should also include strength training for major muscle groups and flexibility training for their major joints.

Exercise intensity and duration should start low and increase gradually, particularly for those with tetraplegia or a history of low blood pressure. Short interval training (5 minutes work followed by full physiological recovery) at low intensity may assist the very unfit to accumulate sufficient aerobic duration.

EXERCISE	INTENSITY	DURATION	FREQUENCY	
Aerobic exercise (for heart and lung fitness)	Moderate	30-60 minutes	Most, preferably all, days every week	A total 150-300 minutes of moderate
	Vigorous	15-30 minutes		A total 75-150 minutes of vigorous
Strength training (muscle and bone strength)	Light to Moderate	60 minutes per week	2 or more times per week (three sets of 8-10 repetitions of each exercise for the major muscle groups)	

SPEAK TO THE EXERCISE PROFESSIONALS

Because each SCI is so individualised, tailored exercise prescription is often needed to ensure the individual is moving safely and getting the most out of their training. Accredited Exercise Physiologists are uniquely qualified to support people living with SCIs to enhance function, improve their fitness and improve their quality of life.

- » [For further resources, download the Exercise is Medicine® Australia factsheet](#)
- » [Access the ESSA Position Statement on exercise and spinal cord injury](#)

FIND AN ACCREDITED EXERCISE PHYSIOLOGIST NEAR YOU

Expert Contributor **ASSOCIATE PROFESSOR SEAN TWEEDY**
PhD and Accredited Exercise Physiologist at the University of Queensland

TESTIMONIAL

SARAH is a 40-year-old who came to see her Accredited Exercise Physiologist to improve her ability to participate in daily activities with her family. Nine months prior, Sarah had experienced an ischaemic spinal cord injury, resulting in partial paralysis of the muscles in her legs. This had severely impacted her ability to walk independently, to work, and to complete everything she had previously done as a mum of two teenagers.

At the time of her initial appointment, Sarah was using a 4-wheel frame indoors, a wheelchair outside, and needed assistance with daily family chores. Over the past 6 months, Sarah has been attending 1 x 45 minute session per week focusing on strength training, improving muscle activation, and gait retraining. Sarah has also been completing a daily home Pilates and walking program written by her Accredited Exercise Physiologist.

Fast forward to now and Sarah has returned to part-time work, can complete most daily activities to maintain her home with her children, has returned to driving, and can walk for 20 minutes with a walking stick. With these improvements, Sarah can now get back to enjoying time with her family and being a mum.

Testimonial provided by **BRYANNAH DOWNWARD**
Accredited Exercise Physiologist

VISUAL IMPAIRMENT

Visual impairment is a broad term that refers to the partial or full loss of sight in one or both eyes.

Chronic eye conditions vary in their presentation, treatment and severity. Some people are born with a visual impairment, but it can also occur as a result of disease, injury or degeneration linked to ageing. In many cases, the severity of the impairment will progress over time.

It is estimated that over [13 million](#) Australians have one or more chronic (long-term) eye conditions. Almost all types of visual impairment are more common in older people, affecting 93% of people aged 65 and over, compared with only 12% of those aged under 14.

For this chapter, we're going to be focusing on exercise for people who suffer from severe visual impairment and are classified as legally blind or have low vision.

A person is considered “legally blind” if they cannot see at six metres what someone with normal vision can see at 60 metres, or if their field of vision is less than 20 degrees in diameter. A person is said to have “low vision” when they have permanent vision loss that cannot be corrected with glasses and affects their daily functioning. As our population grows, it is estimated that by 2030, [564,000](#) Australians will be blind or have low vision.

THE BENEFITS OF EXERCISE

People with visual impairment have a higher prevalence of chronic conditions and [lower levels](#) of physical activity. Exercise and physical activity have a wide range of benefits for those who are living with visual impairment. These benefits include:

PROPRIOCEPTION AND COORDINATION

For those who have grown up blind or visually impaired, it can be difficult to know where their bodies should be in space and what optimal movement looks like for different everyday tasks. Exercises such as strength training or yoga can provide the physical literacy needed to help with the movement puzzles of daily life.

CARDIOVASCULAR HEALTH AND BODY COMPOSITION

Due to the perceived intimidating nature of the gym and other forms of physical activity, it can be difficult for those with low vision to get moving. This lack of movement can lead to several comorbidities that certainly do not have to go hand in hand with poor vision. Regular physical activity will improve cardiovascular health, energy levels and improve body composition (increase in muscle mass and decrease in body fat).

CONFIDENCE AND SELF-ESTEEM

Of all the challenges that come with blindness or visual impairment, it is often the inability to keep up with peers at any age that can lead to feeling helpless and isolated. Gaining confidence in one's ability to move and become stronger then leads to greater feelings of empowerment and a boost in self-esteem. There's also the opportunity to improve social and emotional health as those with low vision are integrated into group class environments or team sports with increased movement challenges (where capacity allows).

TYPES OF EXERCISE RECOMMENDED

It's recommended that those with visual impairment aim to meet the [Australian Physical Activity guidelines](#), which includes being active on most days of the week. If you're new to exercise, it's important to start slow and gradually increase your activity levels.

In addition, the following types of movement can be beneficial for those with visual impairment:

Strength training is as beneficial for those with low vision and blindness as it is for any other person and should be incorporated at least twice a week. Initially it can be beneficial to start using machines and slowly integrate the use of more complex free weight exercises once the individual is proficient. As visual cues are of little to no use with this population, it's important to use task-oriented cues and movements.

Both yoga and Pilates provide great opportunities to develop balance and proprioception with bodyweight or low amounts of external load. If the client has previously engaged in very little physical activity, it will complement a well-rounded strength and conditioning program.

Barefoot training provides a great opportunity to develop balance for any visually impaired trainee, particularly for those who rely on the receptors in their feet for sensing uneven terrain. Often those who grow up with a visual impairment will take their shoes off at every opportunity. This helps to balance, navigate obstacles and strengthen feet and ankles.

It's also important for visually impaired people to be mindful of their training environment, as certain factors can increase the risk of injury. One of the biggest barriers to training can be the sensory chaos of a busy gym environment. Finding a quiet space where it's easy to communicate clearly, navigate easily, and focus energy on training without distraction is critical to sustained training success. It's also important to be aware of uneven surfaces and dimly lit spaces.

SPEAK TO THE EXERCISE PROFESSIONALS

An accredited exercise professional, like an Accredited Exercise Scientist or Accredited Exercise Physiologist, can greatly assist someone living with visual impairment to become more active and independent. They will be able to adapt the training program to include exercise modalities that are safe and effective for someone who is blind or living with low vision.

FIND AN ACCREDITED EXERCISE PHYSIOLOGIST NEAR YOU

Expert Contributor **MITCHELL FINN** *Accredited Exercise Scientist at Foresight Fitness*

TESTIMONIAL

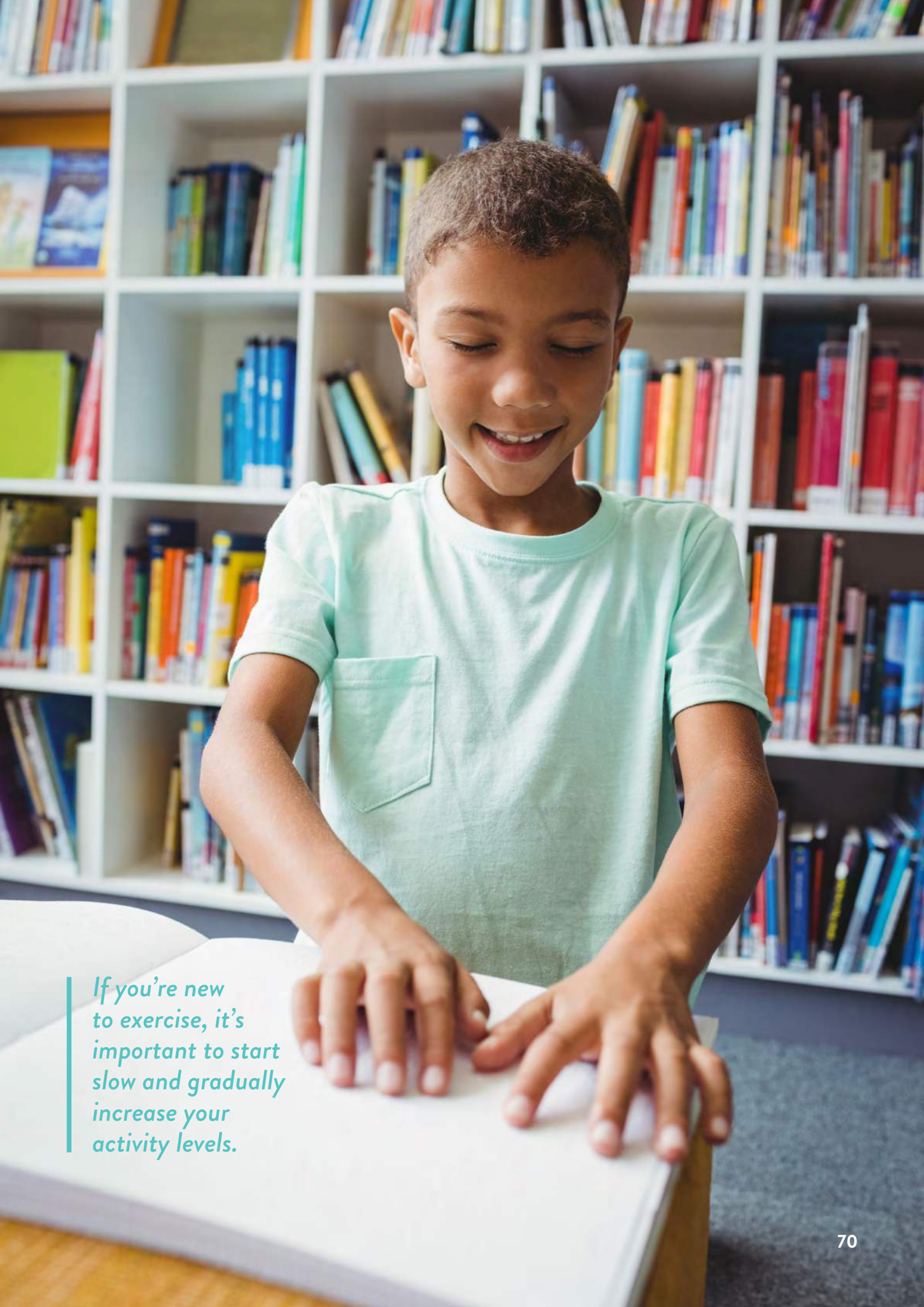
JACOB* is a 17-year-old boy living with a vision impairment. Jacob was initially referred to an Accredited Exercise Physiologist to work towards goals of improving his gross motor skill performance and posture and core strength, weight loss, and increasing his social interaction and participation within the community.

Jacob has completed weekly exercise physiology sessions over a four-year period, with sessions being held either in a clinic, at home or at Jacob's school. Sessions have involved cardiovascular exercise on a stationary bike, x-trainer and recently through boxing, which he has loved. Jacob has also performed upper body, lower body and core strengthening exercises with the use of free weights, kettlebells and resistance bands.

To Jacob's delight, he has been able to lose 16kg and has recorded improvements in all of his strength measures! He has also noted an increase in self-esteem and improved sleep, mood and social interaction skills. Jacob has appreciated the one-on-one nature of sessions and the in-depth feedback he has been able to receive, particularly in relation to technique which he finds difficult to monitor due to his vision impairment.

Testimonial provided by **ANDREW BRADLEY**
Accredited Exercise Physiologist

* The client's name has been changed

A young boy with short brown hair, wearing a light green t-shirt, is smiling and looking down at a large open book on a table. His hands are resting on the pages of the book. The background is a white bookshelf filled with many colorful books. The lighting is bright and natural, creating a warm and inviting atmosphere.

If you're new to exercise, it's important to start slow and gradually increase your activity levels.

ENGAGING IN SPORTS

Over the years, sport participation by people with a disability has [increased](#) from 18% in 2012 to 27% in 2015.

Participating in sport is a great way for a person living with a disability to not only receive the physical and mental benefits of being active, but it also encourages inclusion at a community level.

Research by the Australian Sport Commission (now Sport Australia) suggested that 75% of people with disability who already play sport want to play more, and that 83% of people who are inactive want to get active.

Whether it be participating in local, community sport, or competing at a higher, elite level, Australia is breaking down barriers that exist to empower more people living with a disability to engage in sport.

TESTIMONIAL

DR EMMA BECKMAN says she's "lucky enough" to work with athletes who have high support needs. For instance, within the University of Queensland [Para START Program](#), which Dr Beckman helped to co-develop, their team works with athletes who continuously smash goals and do amazing things.

Dr Beckman has also worked with RaceRunning athletes. RaceRunning is a sport designed specifically for people who are not able to run due to severe motor and coordination disabilities.

Watching these athletes find the freedom of running through RaceRunning is an incredible thing to watch.

One athlete includes Max who, at just 13-years-old, dreams of one day competing at the highest level, the Paralympics. He trains incredibly hard with his Accredited Exercise Physiologist and has a Sports Scientist in his team (and an amazing judo instructor!).

SPORTING RESOURCES

[Disability Sports Australia](#) has compiled a handy list of the new and innovative ways people with a disability are keeping active whilst practicing physical distancing and social isolation due to the COVID-19 pandemic. Make sure to contact your GP or Accredited Exercise Physiologist if you have any questions or concerns about the exercises listed.

Their website also offers a list of 'member organisations' which include state organisations that provide sport for those who use wheelchairs, for amputees and those with cerebral palsy and similar disabilities. This can be handy to further locate local support.

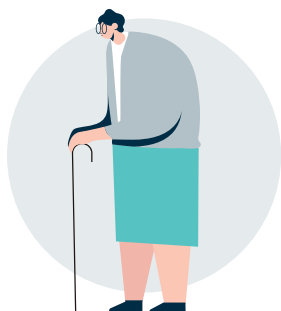
Disability Sports Australia's Activate Inclusion Sports Days (AISD) provide students with a disability the opportunity to try a range of sports. AISD are one day programs designed to promote the pathways for inclusion sport and active recreation programs in local community areas and encourage students with a disability to participate in community sport and active recreation on a regular basis.



[PlaySport](#) is an online directory that connects Australians to sports, recreation and well-being, and includes a wide variety of adaptive sport activities including wheelchair rugby and wheelchair basketball, para-athletics, and para-dance classes.



The [Adaptive Sports Program](#) by [Veteran Sport Australia](#) offers rounds of expressions of interest for serving and former serving Australian Defence Force members who are interested in being considered for competitors, coaches, and staff positions. Competitors will have the opportunity to nominate to compete in a range of adaptive sports such as athletics, archery, powerlifting, swimming, and more.



Another suggestion is to check out what the local community offers as exercise and sport businesses and centres can provide great opportunities for those living with a disability to become more active. Persons living with a disability have access to a high performance sport pathway through the Paralympic movement and other sport specific programs.

HOW TO START EXERCISING MORE

Sometimes exercise can make our bodies feel a bit uncomfortable and that can be completely normal. Exercise can also make us ‘huff and puff’ a lot more than usual and it is ok.

What is not ok is if you feel any strong pains, feel dizzy or have any pain in your chest. You should stop exercising if you feel this.

IMPORTANT TIP: Specific characteristics associated with some disabilities are important to consider when facilitating safe exercise participation. These could include atlantoaxial instability (unstable bones which can damage the spinal cord) and heart conditions in Down syndrome, or pain and epilepsy in cerebral palsy. Seeking advice from accredited exercise professionals may be important in these instances.

TIPS FOR EXERCISING MORE WITH A DISABILITY

- » **Ask for help.** It's always good to get advice from your GP and an accredited exercise professional to understand what exercises are safe for you and your ability.
- » **Start small.** It's always a good idea to start slowly and build up gradually. This reduces your chance of injury and will increase your chances of long-term adherence.
- » **Begin with a warm-up.** Warming up is important before exercising as it gets your blood flowing and can decrease the risk of injury when exercising.
- » **Don't focus on what you can't do.** Get creative and find opportunities to increase physical activity in ways that meet your needs and abilities.
- » **Don't compare yourself to others.** We're all different and have different strengths. Listen to your body and do what's right for you, not what others are doing.
- » **Do something you enjoy.** Exercise shouldn't be boring! Try a mix of different activities and focus on the things that you enjoy.
- » **Find support.** Getting a friend or family member involved in your exercise journey can help to keep you accountable and stick to it a regular routine.
- » **Something is better than nothing.** Remember, some movement is better than none at all! Every little bit counts.

HOW TO SUPPORT SOMEONE WITH A DISABILITY TO BE ACTIVE

- » **Ask before you help.** Sometimes people with physical disabilities appear to be struggling, when in fact they're just acting in a way that works best for them.
- » **Do your research.** Understanding the disability and the challenges they face will enable you to support them in the best way possible.
- » **Focus on their ability.** Try to focus on what they can do as opposed to what they can't.
- » **Plan ahead.** Planning will help to overcome additional challenges faced by those with a disability, like transportation, finding appropriate equipment and locating accessible facilities.
- » **Be respectful.** Always treat people with disabilities as equals. Everyone wants to feel heard and included and people with disabilities are no exception.
- » **Ask questions.** Finding out what types of exercise they enjoy and asking them about their goals will help you to keep them motivated.

AN ACCREDITED EXERCISE PROFESSIONAL CAN HELP MOTIVATE YOU!

Currently there are over 8,000 ESSA-accredited exercise professionals throughout Australia. You can find one close to your home by looking at the [online directory](#) provided by Exercise & Sports Science Australia (ESSA), the accreditation body for exercise and sports science professionals.

It's important to remember that any information you find online in videos, factsheets and other resources should be viewed as just a guide.

Everyone is different, and their exercise prescription should be individualised by an accredited exercise professional to suit any health conditions they may be living with. If you need extra support or have any concerns, talk to your local GP or accredited exercise professional where possible.



Get creative and find opportunities to increase physical activity in ways that meet your needs and abilities.

TESTIMONIAL

MATT became a single, below-knee amputee due to infection after a crush injury at work, originally on the top of his foot. The first time he put on his new foot, all Matt could think about was how he was going to walk on it due to his lack of strength.

Since working with his Accredited Exercise Physiologist, he has seen huge improvements in his lower limb strength alone, as well as a huge improvement in self-confidence and the confidence to engage in more challenging exercises. Since 2018, exercise has changed Matt's life, claiming that seeing an Accredited Exercise Physiologist has helped him both mentally and physically.

Testimonial provided by **JESSICA BITZIOS** Accredited Exercise Physiologist



Watch this short video of the role exercise has played in Matt's life with the support of his Accredited Exercise Physiologist.

TESTIMONIAL

LAURA was 53-years-old when she was referred to an Accredited Exercise Physiologist in October 2019. Laura wanted to access a team of qualified health professionals to better manage her diagnosed condition of spina bifida. Prior to engaging in exercise physiology services, Laura reported her functional capacity had decreased significantly, reducing her transfer capability and ability to complete many tasks around the house independently, which she was previously able to do.

During Laura's initial assessment in addition to identifying medical history and setting individualised goals, Laura underwent objective testing. Testing found various strength and range of motion deficits which were impacting Laura's ability to complete meaningful activities. Laura's initial exercise prescription aimed to reduce these deficits. Graded functional movements were also utilised to regain her capacity. Re-testing every 6-8 weeks was utilised to assess the progress that had been made and to create bigger and better goals!

Laura often states seeing her Accredited Exercise Physiologists is the highlight of her week. Laura can now do many things she previously couldn't, which is a testament to her hard work and strong relationship with her exercise physiology team.

Testimonial provided by **BENJAMIN GARTH** Accredited Exercise Physiologist

TESTIMONIAL

TERRY is a 56-year-old living with Friedreich ataxia – a progressive, degenerative neuromuscular condition that presents primarily in poor balance and coordination. Evidence exists that regular, varied exercise is associated with slower progression therefore Terry swims, cycles on a recumbent trike and visits an Accredited Exercise Physiologist regularly at the gym to achieve that.

Terry is fortunate and can still drive and live independently in his own home even with the use of a wheelchair full-time.

The exercise programme Terry follows involves strength and resistance training and works every muscle group from his shoulders to his toes. Through it, Terry maintains strength, stability and control. There's encouragement to push himself combined with an understanding of the limits his condition forces upon him and Terry says it's that combination that keeps him engaged.

Terry says that cycling and swimming are easily managed but the range of equipment and exercises possible at the gym can be both bewildering and unsafe. He's happy to work with his Accredited Exercise Physiologist who understands his needs and limitations and can design a programme to ensure the benefits Terry receives are comprehensive and ongoing.

Testimonial provided by **TONI TRINCA** Accredited Exercise Physiologist

TESTIMONIAL

MATT, a 44-year-old male with Stargardt's disease – a form of macular degeneration classifying Matt as legally blind – started working with an Accredited Exercise Physiologist to develop an in-depth home exercise program. With reduced central vision, exercising in a gym wasn't something Matt was overly confident with.

Initial exercise programming was based on upper limb mobility and low-level strengthening exercises to assist with neck and lower back pain because of his postural changes when trying to view things (T.V, computer screen for work, etc.). After two months this moved towards 3 days of 45-minute strengthening and aerobic exercise, with one day of mobility/stretching.

Matt started to notice positive changes in his body composition. He is now 12-months in and has lost 7kg, with drastically reduced neck pain, and his lower back pain is managed through an active lifestyle. Matt then started playing blind football shortly after starting exercise physiology sessions and he now feels like he can keep up with the team and goes out and kicks the football with his daughter, Sarah.

Matt understands how to effectively warm-up before starting exercise and this has given him the confidence to move without fear of injury. Matt can now complete deadlifts without any discomfort and plans on returning to playing tennis and football in the coming weeks.

Testimonial provided by **CASSIE HOVEY** Accredited Exercise Physiologist

TESTIMONIAL

JACK, aged 24-years-old and living with Diplegic Cerebral Palsy with a GMFCS Level 2, had a long-standing goal to climb the Sydney Harbour Bridge. To achieve his goal, Jack and his family realised that he needed more than a general exercise program.

Through creating an individualised, progressive and activity specific training program with his Accredited Exercise Physiologist, Jack was able to build up his capacity, strength, fitness, and confidence to perform the climb.

However, there was one more hurdle – the Bridge Climb administrators needed to be convinced that Jack could complete the climb. So, Jack and his Accredited Exercise Physiologist were given a Bridge Climb Checklist to be completed before the climb. Over the next 5 months, Jack worked with his Accredited Exercise Physiologist to achieve this goal by checking off activities on the Bridge Climb Checklist along the way.

The end result was that it couldn't have gone better! Jack successfully completed the Bridge Climb with his family by his side in September 2018.

Jack's mum reflected on Jack's experience completing the Bridge Climb: "The Bridge Climb was fantastic. It was raining in the morning but cleared up and we had a beautiful cool day; it was perfect. The climb was harder than I expected for Jack, heaps of stairs, and at one stage I was a bit concerned he mightn't make it, but the guide was lovely. She was encouraging without being patronising and very good at distracting Jack. He had a couple of rests on the stairs and the descent was much less strenuous for him so that was a relief. He was very chuffed and satisfied, though very sore the next day! It couldn't have gone better."

Testimonial provided by **JOEL BROMLEY** and **FREYA CLAYHILLS**
Accredited Exercise Physiologists

FURTHER RESOURCES

CONDITION-SPECIFIC RESOURCES

- » [Fragile X Association of Australia](#)
- » [Autism Awareness Australia](#)
- » [Down Syndrome Australia](#)
- » [ADHD Australia](#)
- » [Brain Injury Australia](#)
- » [Spinal Cord Injuries Australia](#)
- » [Cerebral Palsy Alliance](#)
- » [MS Australia](#)
- » [Prader-Willi Syndrome Australia](#)
- » [The OI Society of Australia](#)
- » [Limbs 4 Life](#)
- » [Vision Australia](#)
- » [Deaf Australia](#)

MENTAL HEALTH

- » [SANE Australia](#)
- » [Beyond Blue](#)
- » [Open Minds](#)

SPORTING RESOURCES

- » [Disability Sports Australia](#)
- » [Sporting Wheelies and Disabled Association](#)
- » [Riding for the Disabled](#)
- » [Blind Sports Australia](#)
- » [Deaf Sports Australia](#)
- » [Sports Ability](#)
- » [PlaySport](#)

OTHER SERVICES

- » [NDIS: State and Territory Disability Services:](#)



EXERCISE
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