

# Exercise and Spinal Cord Injury

# Contents

Why exercise?	2
Safety first	3
How does my spinal cord injury affect my ability to exercise?	3
How much exercise is right for me?	3
Exercise during rehabilitation	4
Locomotor training with partial body weight support	4
Upper body training	4
Functional electrical stimulation (FES)	4
So what gym-based programs are available in your community?	5
Burn Rubber Burn (NSW)	5
FitAbility (NSW)	5
Walk On (QLD and NSW)	5
Adapted Physical Activity Program (QLD)	6
Sporting Wheelies and Disabled Association Gym (QLD)	6
Gym-based programs in other locations	6
Can I exercise in my local gym or fitness centre?	7
Sports and recreation programs	7
Exercise in your own home	8
Interested in participating in a research initiative?	9
SCIPA Full-On	9
SCIPA Hands-On	9
SCIPA Switch-On	9
SCIPA Com	9
Equipment directory	10
Contact information	11

## Why exercise?

Physical activity is important for all of us. Exercise reduces the risk of developing chronic health problems such as heart disease, high blood pressure, diabetes and even some forms of cancer. For people with a spinal cord injury there can be added health benefits. If you are able to be physically active, you have a lower risk of developing secondary complications such as urinary tract infections, pressure sores and respiratory illness. Physical activity can also help you better manage problems such as spasticity, weight gain and chronic pain. It can help improve your strength and endurance, which in turn can improve your ability to accomplish everyday tasks such as transferring and pushing a manual wheelchair. In addition, research has now shown that people who are physically active are less likely to experience feelings of anxiety, loneliness and depression.

Adjusting to life after a spinal cord injury is difficult. Exercise not only contributes to continuing rehabilitation but also to a healthy lifestyle. Attending a fitness centre or taking part in a sport or recreational activity provides an opportunity to meet people, have fun and provide a real sense of accomplishment. This psychological aspect of exercise can be a great motivational tool for everyone and can go a long way in improving overall quality of life.

Exercise for individuals with a spinal cord injury can be divided into three broad categories:

- Aerobic exercise to maintain cardiovascular health
- Strength-based training to maintain the ability to perform activities of daily living and mobility, as well as preventing injury from muscle weakness or imbalance
- Flexibility training to improve range of motion and reduce spasticity.

Currently, exercise is the only known intervention that can have lasting effects on function after a spinal cord injury, both in promoting neural recovery and in reducing secondary complications. The role of physical activity on neuroplasticity (the ability of nerve cells to regenerate and make new connections) and improving functional recovery is fast becoming a key area of research.



## Safety first

Before starting an exercise program of any kind, you must seek professional advice. Talk to your doctor and physiotherapist to make sure that proposed exercises are safe for you. For example, your bones must be strong enough to avoid fracture during exercise and the possibility of large changes in blood pressure being triggered (autonomic dysreflexia) must be taken into account. Once cleared for exercise, there is a wide range of options available for you in the community.

## How does my spinal cord injury affect my ability to exercise?

Although a spinal cord injury can make physical activity and exercise much harder, it certainly does not make it impossible. The degree of functioning muscle after a spinal cord injury depends on the level and extent of the injury, and everyone is affected differently. Thus, your level of injury will determine the physical activities and exercise programs that are right for you. Exercise may be difficult for many individuals with high levels of impairment and fewer working muscles, and it may be that some forms of exercise would be limited by your mobility, but you still have options.

So, whether you are now settling back at home and readjusting to life back in the community or it is many years since you sustained your injury, what next? Remember, inactivity before an injury should not be an impediment to starting some form of exercise or activity afterwards. Undoubtedly, it is even more important now.

In deciding upon a suitable exercise program or activity, your own personal expectations and goals must first be taken into consideration. They should be realistic. Everyone has different personal commitments and the amount of time you have available and the cost of programs must be taken into consideration. Where you live will also play a role in what is available.

This brochure aims to provide clarity on what is currently available. It is not an exhaustive list but hopes to be comprehensive enough to provide the motivation to get you started or to re-embark on something that you enjoyed before your injury.

## How much exercise is right for me?

Until recently there has been no single prescription for the correct amount and type of exercise you should do if you have a spinal cord injury. Always seek advice from your doctor or physiotherapist to provide guidance on what is appropriate for your level of injury and fitness. It also depends on what your exercise goals are. You may want to improve your cardiovascular health or increase your wheelchair performance.

In March 2011 the Rick Hansen Institute in partnership with SCI Action Canada released the first ever evidence-based guidelines on exercise for people with spinal cord injury. The guidelines state healthy adults with spinal cord injury should participate in at least 20 minutes of moderate-vigorous aerobic activity twice a week, as well as strength training exercises twice a week to improve fitness. More information can be found at [www.sciactioncanada.ca/guidelines/](http://www.sciactioncanada.ca/guidelines/)

There are some physiological responses to exercise that are unique to a person with a spinal cord injury. Factors such as your age, time since injury, level of injury and your current fitness and ability, must be considered. To ensure you reach your desired outcomes safely, seek professional advice. Remember, don't over exercise. Also, how you actually exercise is important. It is essential to balance the need to exercise and achieve a training stimulus with the need to protect the upper limbs from overuse (refer to the consumer guide "Preservation of Upper Limb Function," Consortium for Spinal Cord Medicine and Paralyzed Veterans of America, 2008). Forces on the shoulder should be reasonably balanced by working muscles at the back and not just the chest muscles in front. A rotator cuff strength program designed by a physiotherapist should also be added into your fitness routine.

Regardless of the type of exercise you undertake, the best results, as for athletes, come from practice and from focussing the attention and the effort. In other words, you get much better results if exercise is as active as possible and not merely passive. There is also increasing evidence that mental practice and visualisation increases the brain's activity as well as overall performance. So be engaged!

## Exercise during rehabilitation

Rehabilitation following a spinal cord injury is a term used to define a treatment or treatments designed to facilitate the process of recovery from injury to optimum function. Rehabilitation also increases independence in activities of daily living. It encompasses a number of therapies, activities and support services of which physical therapy including exercise-based programs would be a part. Rehabilitation would have begun as soon as was safely possible after stabilisation of your injury and taken you through the initial in-patient stage before reintegration into the community. As part of your rehabilitation, you may have undertaken one, or a combination of, the three traditionally based rehabilitation exercise strategies. You will see from this brochure that some of the community-based exercise programs and/or research initiatives also use some of these strategies. So what are they?

### Locomotor training with partial body weight support

The focus of locomotor training is to move the paralysed legs to engage any remaining nerve circuits and drive neuromuscular recovery as well as improve blood flow, muscle tone and bone density. Traditional locomotor training is available in all spinal units. It encourages over-ground walking, either within bars or using crutches or a frame, and is used primarily for individuals with incomplete spinal cord injury who have sufficient upper body control and strength to support their own weight.

More advanced training techniques for those unable to support their own body weight use treadmills with the upper body being supported in a harness and stepping being encouraged as the treadmill belt moves. Such partial body weight supported treadmills are expensive to buy and to run, requiring trained personnel to assist the person with spinal cord injury. For both training approaches, whether supporting own weight using a bar, frame or crutches, or employing a treadmill with weight support, physiotherapists ensure that the lower limbs are placed correctly during stepping to encourage the best movement pattern possible. At present, treadmill training is used primarily as a research tool and is not available as a routine therapy within community settings. It is used for people with incomplete, and more recently with complete injuries. Research is still ongoing to establish its benefits but this type of training has the potential to improve stepping, as well as walking speed, endurance and fitness. Importantly, current research is focussing on the benefits of being upright and moving the legs, with possible improvements in trunk stability and therefore the ability to transfer. Also, there is a new focus on the potential benefits of such therapy in reducing a range of secondary complications and therefore improving quality of life.

### Upper body training

This type of training is beneficial as it provides upper body strengthening and a good cardiovascular workout. It is a preferred type of training for individuals with tetraplegia and complete paraplegia. Arm ergometry is used in a number of community-based programs and machines can also be readily purchased for home use. Think about combining forwards and backwards arm cycling to even up forces at the shoulder joint during this exercise. The “Uppertone” mentioned at the end of this brochure can also be used for upper body exercise.

### Functional electrical stimulation (FES)

FES is a means of producing useful contractions in paralysed muscles via electrical impulses which stimulate the peripheral nerves. Stimulation is applied either by skin surface electrodes or, very occasionally, by implanted electrodes. It allows your muscles to do the work despite loss of voluntary control of those muscles. The simplest and most widely used application of FES for an individual with a spinal cord injury is FES cycling, whereby FES technology is integrated with a cycling machine, such as a MOTomed or RT300 Bike. The order and strength of the muscle contractions are controlled by computer to generate the power to pedal a stationary cycle. As with locomotor training, the aim is not to provide passive motion but to actively engage the muscles to improve muscle strength and improve fitness. Research is still ongoing in this area, but some benefits of using an FES bike may include improved muscle mass, bone and joint health, along with improved cardiovascular health. There is also evidence that FES improves skin blood flow and therefore may help to reduce the frequency of pressure sores. There is also anecdotal evidence that it increases urinary output therefore possibly reducing the incidence of urinary tract infections.

FES is not suitable for everyone and research continues in this area to extend the findings on its benefits. It is not widely available in the community fitness setting or within the home environment at present, mainly due to cost. However, more studies are being undertaken on home-based units and patients can be readily trained in applying the electrodes. In addition, some models offer online support on training programs required according to need, with the ability to progress to more difficult levels as clients improve. There are also some risks associated with the use of FES, such as skin breakdown at the site of electrode placement, and these risks should be discussed with your specialist.

FES applications are moving into routine clinical practice in spinal units. It is used not only for exercise but also to assist with breathing, grasping, transferring, standing and walking. FES bikes are becoming available across all of the spinal rehabilitation units in Australia and some of the community-based fitness programs mentioned in this brochure.

# So what gym-based programs are available in your community?

## Burn Rubber Burn (NSW)

The first of its kind in Australia, Burn Rubber Burn is an exercise program in the community setting developed originally for individuals with a spinal cord injury. It has now been extended to other physical disabilities including multiple sclerosis and stroke. The program was developed to bridge the gap from rehabilitation to health and lifestyle management. It is a circuit-based exercise program incorporating resistance and cardiovascular training in a group training environment, focusing on health and wellbeing. The sessions are run by exercise physiologists and trained fitness professionals who have been trained in exercise management of neurological conditions. All equipment used is wheelchair accessible and the gyms are also equipped with MOTomed bikes, Monark arm ergometers and VitaGlide machines. Services provided include fitness assessments, weight loss exercise programs, strength and hypertrophy training, as well as boxing sessions and exercise nutrition advice.

The program is run in partnership with the Police Community Youth Clubs (PCYC) and is currently available at four centres across Sydney: Campbelltown PCYC, Eastern suburbs PCYC, Sutherland PCYC and Penrith PCYC. It is very affordable at \$150 for a six-month membership and PCYC membership starts from \$5 depending on location. For more information visit [http://www.pcywnsw.org/prime\\_spats\\_burnrubber](http://www.pcywnsw.org/prime_spats_burnrubber) and follow the Burn Rubber Burn disability fitness link or contact the Program Manager on 0402 776 868 or Senior Exercise Leader on 0447 737 858.

## FitAbility (NSW)

FitAbility is a modified gym at the University of Sydney (Cumberland Campus, Lidcombe) and forms part of the Exercise and Sports Science Department. Qualified personnel take an individual approach to rehabilitation and tailor programs to meet the needs of each client. The objective is to achieve maximum functional independence and abilities by improving strength, fitness, coordination and flexibility.

Services offered include a comprehensive health and physical assessment and a detailed exercise program, which is tailored to the individual. Home programs can also be developed to complement the exercise programs. The gym can be visited independently at any time following an initial assessment or during specified clinic times. As a private client, an introduction package will currently cost around \$200. This includes an initial consultation assessment, physical capacity assessment and a 10-visit session pass. Memberships are also available for one, three or twelve months. Alternatively, a casual visit costs \$22. A different pricing structure exists for compensable clients. Further information on FitAbility can be found at [http://sydney.edu.au/health\\_sciences/placements/disciplines/exercise\\_sport\\_sciences/fitability.shtml](http://sydney.edu.au/health_sciences/placements/disciplines/exercise_sport_sciences/fitability.shtml) or by contacting 02 9351 9615.

## Walk On (QLD and NSW)

Walk On is an individually designed intensive exercise program for people with a spinal cord injury at any level from C2, who must be able to breathe on their own. The program involves intense, dynamic, weight-bearing exercises and is designed to assist in maximising functional recovery. All Walk On exercises are performed out of the wheelchair, on the floor, a table or rehabilitative exercise equipment.

Walk On is an initiative of Spinal Cord Injuries Australia ([www.scia.org.au](http://www.scia.org.au)) and the program is based on the Project Walk® Dardzinski Method™ in the USA ([www.projectwalk.org](http://www.projectwalk.org)). All Walk On staff are tertiary qualified in either Exercise and Sports Science or Physiotherapy and undergo an intensive specialist training program in the USA. They are supported by ongoing professional development from Project Walk.

The Walk On program operates in two ways; an in-house (ongoing, long term) program over many months or a short term program ranging from 2-8 weeks. The short term program is supplemented by an individualised home-based prescribed program. Both are offered as a fee-paying service. The in-house program sessions are two hours in duration with up to three sessions a week. No overall timeframe is stipulated. The short term program is for clients who cannot attend one of the Walk On facilities on a regular basis. Before embarking on the program, consideration should be given to your own available time to attend the facility, what you want to realistically achieve, as well as the overall cost.

There are currently limited peer-reviewed data on the benefits, or otherwise, of Project Walk. A paper published in the journal *Spinal Cord* in 2008 found multimodal intense exercise can significantly improve motor function in subjects with chronic spinal cord injury. The study suggested an organised program may provide greater motor benefits than a self-regulated program and load bearing might be of particular value. It should be noted that further independent evidence is still required to conclusively support such benefits.

Walk On is currently available in Brisbane (in partnership with Queensland Sporting Wheelies, Bowen Hills Gym) and in Sydney (in partnership with the University of Sydney FitAbility Gym). The cost is \$75/hour + GST for private clients. A differing pricing structure exists for compensable clients. There are plans to open centres in Perth and Melbourne in 2011. For more information on Walk On, visit [www.scia.org.au/walkon](http://www.scia.org.au/walkon), email [wakon@scia.org.au](mailto:wakon@scia.org.au) or phone 02 9661 8855.

## Adapted Physical Activity Program (QLD)

The Adapted Physical Activity Program is a home- and community-based service provided through the School of Human Movement Studies, University of Queensland. It is provided free of charge by students enrolled in Exercise Science. The main aim is to assist people with a disability who are not physically active on a regular basis to find ways to increase their physical activity and therefore improve their health and functioning, as well as facilitating involvement in the community. The program can also assist those who are already active to ensure their activity is safe, appropriate and effective.

The program specialises in interventions for a number of disabilities including individuals with a spinal cord injury, of all levels. People who choose to be in this program benefit from the experience of exercise physiologists, who will help implement and maintain activities. These activities include (but are not limited to) prescribed gym programs, home exercise programs, community-based sport and recreational programs, helping to increase incidental physical activity and education about the positive benefits and opportunities available. Individuals interested in the program can find out more information by contacting the department on 07 3365 6117 or can self-refer by downloading a referral form from [www.hms.uq.edu.au/sean-tweedy](http://www.hms.uq.edu.au/sean-tweedy).

## Sporting Wheelies and Disabled Association Gym (QLD)

The Sporting Wheelies and Disabled Association operates its own fully equipped gym at Bowen Hills in Brisbane. The gym caters for any age and any disability, including individuals with differing levels of spinal cord injury. Health and fitness programs are offered to those who simply want to lightly exercise in a social environment or for those who are still in the process of rehabilitation and would like to use the gym to form part of their functional recovery. The gym is supervised at all times with appropriately trained staff and the equipment has all been modified to accommodate wheelchairs. Quad mitts are available to assist handgrip and aerobic equipment is available for both ambulant and wheelchair exercisers. The Bowen Hills gym prices involve an initial one-off fee for an assessment and induction, a casual visit will start from \$2.50 and approximately \$200 for a twelve-month pass, with other memberships available.

If this gym is not local to you, then the Association will help you locate a suitable gym close to your home. Furthermore, they can provide a personal fitness program for you based on equipment that is available at your local gym. The Association's regional centres include Cairns, Townsville, Mackay, Rockhampton and Gladstone, all of which have links to local wheelchair accessible gyms. Although it should be noted that specialised equipment may not be available.

The Sporting Wheelies and Disabled Association can also provide advice on home equipment. For information on any of the centres and fitness programs you should contact the Bowen Hills Office directly on 07 3253 3333 or visit [www.sportingwheelies.org.au](http://www.sportingwheelies.org.au).

## Gym-based programs in other locations

At present, we are not aware of other specialised community-based gym programs similar to those described across other States in Australia. This may change in the future as research continues to advance in the area of exercise and spinal cord injury. It is advisable to use the websites provided in the contact section of this brochure to keep up to date on programs as they become available, including [www.spinalnetwork.org.au](http://www.spinalnetwork.org.au)



Your physiotherapist could assist in putting together an exercise program that can be conducted within your local gym.

## Can I exercise in my local gym or fitness centre?

Within each State, opportunities in leisure, sport or fitness may also be facilitated by the relevant State Disabled Sporting Association, for which a listing is provided in the directory of this brochure. Your local gym or fitness clubs may provide wheelchair accessible facilities and would welcome an approach from you or someone on your behalf to discuss your involvement. You should either contact them directly or alternatively, your local council, library or disability contact groups can all be a great resource for what's available in your local area. It should be noted that a number of community-based gyms and fitness centres will provide wheelchair access but may not have specialised wheelchair accessible equipment or have specifically trained personnel on hand. This should not necessarily be a barrier to their use and it would be advisable to contact your local gym to discuss the facilities and staff available.

If suitable to your level of injury, then maybe you could visit your local gym to use free weights or maybe your upper body strength is sufficient for you to transfer from your chair onto equipment (remembering to take care of your skin). Individuals with an injury below C5 may find it possible to exercise at the gym. Using modified gloves, such individuals can probably exercise shoulders, biceps and triceps on some equipment. If you have paraplegia, you can probably exercise and do most forms of strengthening, stretching and other forms of exercise without assistance from others. In general, gyms can be a great way to at least provide social interaction and an overall improved sense of wellbeing. Maybe a family member or friend may even wish to join you. Your physiotherapist could assist in putting together an exercise program that can be conducted within your local gym.

When considering your local fitness centre, you may also wish to think about whether visiting your local swimming pool is an option for you. Many pools have hoists and staff can often provide assistance in getting in and out of the pool. Swimming is a great form of aerobic exercise and good for improving muscular strength. Contact your local pool to check out accessibility and resources. Always take extra care of skin after pool sessions because too-wet skin is fragile.

Wheelchair sports can provide an opportunity to meet new friends and have fun, improve your health and fitness, as well as your self-esteem

## Sports and recreation programs

Participating in a sport or recreational program can help maintain both psychological and physical wellbeing. First think about what activities you enjoyed before your injury or, if not before your injury, what would you like to try out now. Secondly, contact your local Disability Sporting Association. If you are unsure, then contact the national organisation or relevant sporting body and they can provide you with the appropriate contacts. The Wheelchair Sports Associations in each State offer a myriad of sports, anything from lawn bowls to wheelchair rugby, basketball or tennis. They may also coordinate a number of exciting recreational activities for those not so competitively minded. Wheelchair Sports organisations generally offer loan facilities for sports wheelchairs, saving you any additional costs.

In general, the numbers of sports, both competitive and recreational activities open to someone with a disability, including a spinal cord injury, has grown to rival that of sports offered to able-bodied participants. Many organisations can provide opportunities to "try out" different sports or activities. So don't think your physical activity is limited by your mobility and injury, the chances are there is someone already out there doing what you would like to do.

Remember, sport is not only a great rehabilitation from your injury or illness, but wheelchair sports can also provide an opportunity to meet new friends and have fun, improve your health and fitness, as well as your self-esteem. With access to correctly modified equipment and facilities, whether you have paraplegia or tetraplegia, you may still be able to participate in many other activities. Visit the [www.d-ability.org](http://www.d-ability.org) website to see a full range of possible activities and useful links.



## Exercise in your own home

Conducting some simple forms of exercise within your own home can have numerous benefits in addition to your community-based participation or if you are unable to reach a community program.

This may include incorporating simple things such as breathing exercises, which can offer great health benefits, in particular for some individuals with tetraplegia. Even conducting neck and shoulder exercises, such as shoulder shrugs, can improve your strength and endurance. Maybe a family member or carer could assist with some range of motion exercises for your arms and legs. Depending on your level of injury, purchasing light free weights or resistance (elastic) bands for arm exercises maybe an option. Speak to your physiotherapist to help set up a suitable program. You may wish to direct the physiotherapist to [www.physiotherapyexercises.com](http://www.physiotherapyexercises.com) to access over 750 exercises focussing on strength, fitness and flexibility for people with neurological conditions, including spinal cord injury.

It is also noteworthy that some overseas organisations, such as the National Centre on Physical Activity and Disability ([www.ncpad.org](http://www.ncpad.org)) are a great resource for information on a wide variety of topics relating to physical activity and a healthy lifestyle. DVDs and booklets on home-based exercise programs are available.

Maybe the purchase of home exercise equipment is an option for you. A number of pieces of equipment are readily available for purchase through suppliers in Australia, although the cost of equipment varies greatly. Some of the most commonly purchased equipment has been included in the Equipment Directory of this brochure.

## Take home tips

Remember that:

- Physical activity and exercise is for **EVERYONE**, even if you have a spinal cord injury
- It is important to talk to your doctor **BEFORE** starting or changing your exercise program
- **HAVE FUN** and recognise you have made a significant step towards a healthier you.



## Interested in participating in a research initiative?

As already mentioned, advances in research are now being made to help understand the kinds of physical activity-based rehabilitation that works best to restore both physical and neurological function. As such, you may wish to consider participating in a research study evaluating the role of exercise and physical activity following a spinal cord injury. A number of studies across the country may be underway at any one time and they do allow participation free of charge. However, before thinking of this as an option to undertake a “prescribed” exercise program, some points you need to consider:

- Every research study has a specific aim and may be a randomised controlled trial. This means that participants will not be able to choose the intervention they will receive
- Participation is based on meeting certain criteria; for example your particular level of injury may not be included or the program is designed for people who are at a certain time point post-injury
- A study may be conducted at limited locations across the country and so availability to you may be restricted
- A research study does not necessarily guarantee a positive outcome.

A research study may not be the right option for everyone. The number of research studies and individual university research projects are too numerous to mention. However, one of the larger initiatives currently underway and available at a number of locations across the country is the Spinal Cord Injury and Physical Activity (SCIPA) Program, which is funded primarily by the Victorian Neurotrauma Initiative. SCIPA is a research program, currently involving three clinical trials, looking at the effects of exercise on recovery, health and wellbeing after spinal cord injury. A summary of each is provided. However, more information on the SCIPA program and the individual trials, including eligibility to participate, can be found at [www.scipa.unimelb.edu.au](http://www.scipa.unimelb.edu.au) or by contacting the SCIPA Program Manager on 03 9490 7647. Alternatively, for information on other research initiatives and projects underway in Australia please see the list of useful websites at the end of this brochure.

### SCIPA Full-On

There is now evidence that regular and intensive activity-based therapies promote neurological improvement. Therapies include partial body weight-supported treadmill training (BWSTT), FES assisted leg exercise, and exercises to improve trunk and lower limb musculature. There is some evidence that these interventions may improve an individual's ability to move. However, to date, the combination of these three therapies to improve functional abilities, reduce secondary complications and improve quality of life has not been rigorously tested in a clinical trial. The Full-On trial is a randomised controlled trial designed to address the question of whether an intensive exercise program promotes neurological recovery. So who can be involved, where and when?

- People who have completed their primary rehabilitation and are living in the community may be eligible for this trial. There are certain eligibility criteria that need to be met and potential participants will need to obtain medical clearance from their spinal consultant
- The trial is expected to commence in 2011 and will be conducted in spinal units in Melbourne, Sydney, Perth, Adelaide and Christchurch.

### SCIPA Hands-On

The Hands-On trial is a randomised controlled trial already underway to examine early intensive hand rehabilitation to address loss of hand use in tetraplegia.

- This trial is directed to individuals who are early post-injury and who are still inpatients
- The trial is being conducted in spinal units in Melbourne, Sydney, Brisbane, Perth, Adelaide and Auckland
- The trial is currently open to recruitment and is expected to be completed sometime towards 2013. If the intervention being tested improves hand function, the equipment will eventually be available for purchase and home-based use.

### SCIPA Switch-On

The Switch-On trial is a randomised controlled trial investigating the effect of exercise commenced early after spinal cord injury. Intervention will commence as soon as it is safe to do so after injury, sometimes in intensive or acute care.

- This trial is expected to commence in 2011
- The trial is directed to individuals with complete or incomplete injuries and who are in the early stage post-injury and still inpatients
- The trial is expected to be conducted in spinal units in Melbourne, Brisbane, Perth and Christchurch, and potentially Sydney.

### SCIPA Com

This is an additional program designed to train community exercise instructors in the provision of tailored exercise programs to people with spinal cord injury in the community. People with spinal cord injury might be interested in volunteering to work with an exercise instructor. The program will be evaluated by examining the differences/similarities in expectations, goals and outcomes for service providers and people with spinal cord injury. Centres in Western Australia, South Australia, Victoria, Queensland and New Zealand will be involved.

# Equipment directory

This is not an exhaustive list of equipment or suppliers.

Prices are approximate based on base models and have been provided as a guide only (end of 2010).

They will vary depending on accessories, delivery, installation as well as other specific requirements.

## Access Xpress Weight Machine

- The Access Xpress wheelchair accessible modular home gym is available through Access Solutions National Pty Ltd in Victoria ([www.asnpl.com.au/node/89](http://www.asnpl.com.au/node/89)) and Problem Management Engineering in NSW ([www.pmeautoconversions.com.au/solutions/moreproducts/xpressweightsgym](http://www.pmeautoconversions.com.au/solutions/moreproducts/xpressweightsgym))
- The 68kg weight stack and comprehensive adjustable pulley system allows exercise of a wide range of muscles
- The approximate cost is \$3,000.

## Monark Range of Ergometers

- One of the most affordable pieces of home equipment is the Monark Rehab Trainer, starting from approximately \$1,200. It can be used as either a leg or arm ergometer and is suitable within the home (more information on the various models available from [www.monarkexercise.se](http://www.monarkexercise.se) and Australian distributor BodyTastic at [www.bodytastic.com.au](http://www.bodytastic.com.au))
- Can be used seated in a wheelchair
- Good cardiovascular upper body workout for persons with paraplegia or tetraplegia (straps or mitts can be used for those with poor grip)
- Simple chain mechanism requires minimal maintenance and servicing
- Other upper body cycle machines include the Collins Lite, Saratonga Cycle and Colorado Cycle all of which have various features and vary in price from \$1000 upwards
- The Magneciser is a budget arm ergometer offering graded magnetic resistance. Cost varies with supplier, but is usually under \$300
- Various models of these ergometers are generally available within the specialised community program settings
- BodyTastic is offering members of the Spinal Cord Injury Network 25% off the recommended retail price for the 881E model (approx. \$2054 incl. GST and delivery) and the 871E model (approx. \$1335 incl. GST and delivery).

## MOTOMed Movement Therapy Systems

- Specialised rehabilitation movement therapy equipment, which offers both upper body and leg functions. A number of models are available, including in simple terms the MOTOMed bike (more information available from [www.motomed.de](http://www.motomed.de))
- Suitable for those with paraplegia or tetraplegia
- Multipurpose, incorporating passive, assistive and active training
- Unique design detects spasms and has functions such as automatic direction change, detection of weakness which may lead to a favouring of one side of the body and changes to passive training if no force is detected on the pedals
- Depending on how often such equipment is used at home it can assist in maintaining flexibility, easing spasms and improving circulation
- No transfer from the wheelchair is necessary
- Popular and easily accessible piece of home equipment
- A number of models are available with a starting price of \$6,999 for the leg trainer without handlebar (MOTOMed VIVA 1).

## RehaMove

### (MOTOMed in combination with FES)

- MOTOMed is also available in combination with a Hasomed FES system, known as RehaMove
- By adding the FES to the Motomed system it allows someone with no or minimal muscle control to actively train their muscles, resulting in improved strength and providing a cardiovascular workout
- Special considerations would need to be taken into account using this equipment within the home environment, including the technical aspect of positioning the pads and associated risks with using FES. The cost is also a consideration with the RehaMove Leg trainer. Price starts at \$23,000.

## RT300 FES Systems

- The RT300 is a specially designed, purpose built system for FES cycling (more information can be found at [www.fesbike.com](http://www.fesbike.com) or by calling 02 8011 3492)
- RT300 series are available in three models; with FES motorised leg ergometer; leg and arm ergometer or FES motorised arm ergometer only
- Delivers tailored stimulation to your arms, legs and core muscle groups for either one or both sides of your body. The RT300 provides automatic therapy progression, spasm management, asymmetry monitoring and works for individuals with sensation
- Cost is about \$18,000, due to the FES system and technology in these products
- Has the advantage of being able to track training sessions and look at improvements with time.

## UPPERTONE

- The only product of its kind, a gym system for quadriplegics, allowing people with C4-C5 and below quadriplegia to do upper body exercises without any assistance ([www.quadriplegia.com/upprtone.htm](http://www.quadriplegia.com/upprtone.htm))
- Adjustments can be made, including resistance, without hand grip strength, cuffs, or assistance
- UPPERTONE starts from \$9,500 without various attachments, is made in the USA and is supplied in Australia through a company called Walk on Wheels ([www.wowspd.com.au](http://www.wowspd.com.au))
- This equipment is currently available in many rehabilitation centres, including the FitAbility Gym in Sydney and Bowen Hills Gym in Brisbane.



# Contact information

## EXERCISE AND REHABILITATION

A selection of suppliers of exercise and rehabilitation equipment in Australia includes, but is not limited to:

### Access Solutions National Pty Ltd

Phone: 1300 668 985

Website: [www.asnpl.com.au](http://www.asnpl.com.au)

### Achievable Concepts Pty Ltd

Phone: 03 9370 0217

Website: [www.achievableconcepts.com.au](http://www.achievableconcepts.com.au)

### BodyTastic

Phone: 03 9877 5088

Website: [www.bodytastic.com.au](http://www.bodytastic.com.au)

### Rehab Technology Pty Ltd

Phone: 1300 60 99 50

Website: [www.rehabtechnology.com.au](http://www.rehabtechnology.com.au)

### Restorative Therapies Inc

Phone: 02 80060939

Website: [www.restorative-therapies.com](http://www.restorative-therapies.com)

### Walk on Wheels Specialist Products Division

Phone: 07 5448 1753

Website: [www.wowspd.com.au](http://www.wowspd.com.au)

### Xtra Care Equipment

Phone: 08 8266 7000

Website: [www.xtracareequipment.com.au](http://www.xtracareequipment.com.au)

## GYM-BASED PROGRAMS

### Adapted Physical Activity Program

Phone: 07 3365 6117

Website: [www.hms.uq.edu.au/sean-tweedy](http://www.hms.uq.edu.au/sean-tweedy)

### Burn Rubber Burn Program

Phone: 0402 776 868

Website: [http://www.pycnsw.org/prime\\_sparts\\_burnrubber](http://www.pycnsw.org/prime_sparts_burnrubber)

### FitAbility

East Street, Lidcombe, NSW 2141

Phone: 02 9351 9615

Website: [http://sydney.edu.au/health\\_sciences/placements/disciplines/exercise\\_sport\\_science/fitability.shtml](http://sydney.edu.au/health_sciences/placements/disciplines/exercise_sport_science/fitability.shtml)

### Walk On

Phone: 02 9661 8855

Website: [www.scia.org.au/walk-on](http://www.scia.org.au/walk-on)

## DISABILITY SPORTING ASSOCIATIONS

### Australian Athletes with a Disability

Phone: 02 8116 9720

Website: [www.sports.org.au](http://www.sports.org.au)

### Disability Sport and Recreation

341 George Street, Fitzroy, VIC 3065

Phone: 03 9473 0133

Website: [www.dsr.org.au](http://www.dsr.org.au)

### The Sporting Wheelies and Disabled Sport and Recreation Association of Queensland Inc

60 Edmondstone Road, Bowen Hills, QLD 4006

Phone: 07 3253 3333

Website: [www.sportingwheelies.org.au](http://www.sportingwheelies.org.au)

### Wheelchair Sports NSW

600 Victoria Road, Ryde, NSW 2112

Phone: 02 9809 5260

Website: [www.wsnsw.org.au](http://www.wsnsw.org.au)

### Wheelchair Sports South Australia

Gate 2 Folland Avenue, Northfield, SA 5085

Phone: 08 8349 6366

Website: [www.wheelchairsports-sa.org.au](http://www.wheelchairsports-sa.org.au)

### Wheelchair Sports WA Association

Unit 6, 443 Scarborough Beach Road, Osbourne Park, WA

Phone: 08 9443 4833

Website: [www.wheelchairsportswa.org.au](http://www.wheelchairsportswa.org.au)

## ADDITIONAL USEFUL SPORTS AND LEISURE WEBSITES

### Active Places

Website: [www.activeplaces.com.au](http://www.activeplaces.com.au)

### Australian Electric Wheelchair Hockey Association (NSW):

Website: [www.aewha.org.au](http://www.aewha.org.au)

### disABILITY Leisure, Arts, Sports and Lifestyle Web Guide

Website: [www.d-ability.org](http://www.d-ability.org)

### Disabled Surfers Association of Australia

Website: [www.disabledsurfers.org](http://www.disabledsurfers.org)

### Disabled Winter Sports Organisation:

Website: [www.disabledwintersport.com.au](http://www.disabledwintersport.com.au)

### NSW Sport and Recreation

Website: [www.dsr.nsw.gov.au](http://www.dsr.nsw.gov.au)

### NICAN

Website: [www.nican.com.au](http://www.nican.com.au)

### Sailability Australia

Website: [www.sailability.org/au/australia](http://www.sailability.org/au/australia)

### Tasmanian Sport and Recreation Association for People with a Disability

Website: [www.tasrad.com.au](http://www.tasrad.com.au)

### Virtual Sailing

Website: [www.virtualsailing.com.au](http://www.virtualsailing.com.au)

## RESEARCH AND CLINICAL TRIAL WEBSITES

### Spinal Cord Injury and Physical Activity (SCIPA) Program

Phone: 03 9490 7647

Website: [www.scipa.unimelb.edu.au](http://www.scipa.unimelb.edu.au)

For more information on clinical trials relating to spinal cord injuries including exercise-based spinal cord injury trials:

### All registered clinical trials

Website: [www.clinicaltrials.gov](http://www.clinicaltrials.gov)

### Australia New Zealand Clinical Trials Registry

Website: [www.anzctr.org.au](http://www.anzctr.org.au)

### The Spinal Cord Injury Network

Website: [www.spinalnetwork.org.au](http://www.spinalnetwork.org.au)

## USEFUL INTERNATIONAL ORGANISATIONS

### Christopher Reeve Foundation

Website: [www.christopherreeve.org](http://www.christopherreeve.org)

### National Centre on Physical Activity and disability NCPAD

Website: [www.ncpad.org](http://www.ncpad.org)

### National Institute of Neurological Disorders and Stroke

Website: [www.ninds.nih.gov](http://www.ninds.nih.gov)

## REFERENCES

Preservation of Upper Limb Function: What You Should Know. A Guide for People with Spinal Cord Injury. Consortium for Spinal Cord Medicine and Paralyzed Veterans of America. Copyright 2008.

Effects of intense exercise in chronic spinal cord injury. ET Harness, N Yozbatiran and SC Cramer. Spinal Cord, 46(11):733-7, 2008.

# Contact us

For more information on the  
Spinal Cord Injury Network

 VISIT: [www.spinalnetwork.org.au](http://www.spinalnetwork.org.au)

 PHONE: +61 (0)2 9029 5220

 EMAIL: [info@spinalnetwork.org.au](mailto:info@spinalnetwork.org.au)

 MAIL: PO Box 1067  
Glebe, NSW 2037  
Australia

ABN 47 130 772 851

This brochure is proudly supported by



We thank our friends at Spinal Cord Injuries Australia, Burn Rubber Burn and Imaginelt for images used in this brochure.

This information has been compiled from public data available at the time of production. The Spinal Cord Injury Network accepts no liability for errors. Printed March 2011 © The Spinal Cord Injury Network is a bi-national network of leading researchers, frontline clinicians, key stakeholders and people with a spinal cord injury who are committed to a coordinated approach to advancing treatments for spinal cord injury.