

# DOWNLOAD PDF PRESCRIPTION OF WHEELCHAIRS AND SEATING SYSTEMS

## Chapter 1 : Wheelchairs, Wheelchair Seating & Mobility Products | Sunrise Medical

*To evaluate the effect of backrest height on wheelchair propulsion kinematics and kinetics. An intervention study with repeated measures. University laboratory.*

If the client is elderly and wheelchair bound, the first priority may be comfort. If the client has had a spinal cord lesion and has insensitive tissue, the first priority would be pressure management. An eight year old child with cerebral palsy who attends school may need to have functional use of a computer and therefore must be seated so that control of the keyboard is as efficient as possible. Adults at work may need seating not only for functional considerations but also for the aesthetics of presenting themselves well in the marketplace. Of course, all the above clients would wish to be as comfortable as possible, but other priorities may come into play in the decision making as to which system is best, especially if any compromise is necessary. Each of these areas of evaluation is presented below in more depth.

**Neuromotor summary** The neuromotor summary includes an evaluation of tone and the presence of primitive postural reflexes, particularly as they influence tone during functional activities. The reflexes usually involved include the asymmetric tonic neck reflex, symmetric tonic neck reflex, tonic labyrinthine reflexes and positive supporting reaction. In evaluating tone one determines if the individual is generally hypotonic, hypertonic, athetoid, or if they have a mixture of tone present. Most individuals diagnosed as being spastic quadriplegics actually have hypertonic extremities with a hypotonic trunk. Also noted are the changes in tone which result from functional activities. For example, a marked increase is seen in tone in some persons with neuromotor disabilities when they attempt speech or when they reach for the controls of their powered wheelchair. If a person with an asymmetric tonic neck reflex ATNR to the left looks to the left, there will be an increase in extensor tone in the left upper limb and an increase in flexor tone on the right upper limb. Finally it is important to note if the person is able to alter tone voluntarily through postural adjustments or alternatively is locked into the abnormal patterns with no volitional control once reflex patterns occur. This decision is often based on whether the deformity is fixed or flexible, what the underlying cause of the deformity is and the degree of the deformity. If a rotational scoliosis is part of a total ATNR pattern that is reinforced constantly during the day, it is unlikely that the magnitude of the problem can be lessened by seating. In many cases, the line between accommodation and attempts at correction is a fine one. If correction is the goal, then realistically orthotic intervention or surgery must be considered. Individuals with normal sensation and severe orthopaedic deformities with many bony prominences who cannot accomplish weight relief are treated as if they have no sensation. Also of concern are the forces applied to the trunk by the back components of the seating system. For persons with scoliosis, especially when there is a rotational component, the seating components can put tremendous pressure on non-weightbearing surfaces of the trunk. The risk of pressure problems should be avoided or minimised by the design of the seating components including shape and materials used. The length of time that an individual sits in one chair during the day, the responsibility for the supervision of skin care and how frequently this is carried out are additional issues to consider. A person who stays in their seating system for the entire day requires a different type of sitting surface than one who is in their system for only a half hour at a time. People who can alter their position are at much less risk than those who must rely on others for position change. For example, if the person can independently pivot transfer forward out of the wheelchair from a certain seat height from the floor, it would be essential to ensure that the seat height is maintained when modifying the wheelchair with a seating system. Occasionally, there must be compromises between the clients independence and the therapeutic goals which have been established for the seating system. In almost all cases, independence must be maintained unless long term complications of considerable magnitude are anticipated if seating goals are compromised. For example, a person with a severe rotational scoliosis should be discouraged from using an ATNR to accomplish reach if over years it is anticipated that the scoliosis would worsen to the extent of precluding sitting at all. Once an appropriate seating system is implemented, the ADL and fine motor

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skills can be re-evaluated to determine possible strategies in the performance of functional activities. Severely physically disabled clients without the abilities to communicate, write, or independently access a computer should be given opportunities to interact meaningfully with their appropriate academic environment. Transportation to and from school must also be considered. If a child is to be transported in the seating system several issues must be considered. The wheeled base must be crash tested and an approved tiedown system must be used to ensure compliance with safety standards. Many school districts and colleges provide vans or buses with lifts and wheelchair tie downs. If the child is in a stroller base, then an alternative mode of transportation such as a safety approved car seat and a secured storage space for the base is recommended. If powered mobility is a consideration, both school and home transportation must be able to accommodate the device and environmental accessibility must be evaluated. If the client has entered the work place, both the environment and the job characteristics are evaluated to ensure that the recommended technical aids will be compatible. This is particularly important in reference to wheelchair height versus work space heights, transportation accessibility and environmental considerations for ADL such as entrance ramps, accessibility of bathrooms, location of eating facilities. Psycho-social considerations Functional seating systems, must be "user friendly". Systems which require continuous adjustments, which come out of adjustment easily, have removable parts that are easily lost, or are difficult to transport, are less likely to be used in the intended manner. Cosmesis is an important consideration especially when dealing with children. Choices such as the colour of the seat, the fabric of the cover and the material of the tray are very important to the clients and their families. There are established therapeutic guidelines of positioning in sitting Bergen and Colangelo, Guidelines assist in establishing a systematic approach for the seating team. Professionals ultimately rely upon observation skills, evaluation results, the ability to try the client in a number of positions simulate during the evaluation process and also rely upon the input from the client. Positioning principles The general goals of seating have already been stated. The decision making process as to the specific seating components and the body position, almost always begins with the pelvis. The pelvis With few exceptions, positioning begins with support at the pelvis as this generally dictates what happens in the rest of the body. The pelvis is positioned and held as close to midline as feasible. This will encourage a stable base of support on which the remainder of the body may be positioned. Fixed deformities about the pelvis should, for the most part, be accommodated within the seating system with the goal of a balanced trunk and head position. More flexible deformities should be addressed by unilateral seat height buildups, custom contouring or with other unique solutions. At all times, care should be taken not to compromise trunk and head position through creative problem solving at the pelvis. This is especially noticeable in clients with increased lower limb extensor tone. Because the hamstring muscles pass over both the knee and hip joints, knee flexor tightness hamstring tightness is accommodated to avoid posterior rotation at the pelvis. If efforts are made to place the feet on wheelchair footrests when the hamstrings are tight, the stretch on the muscles will pull the pelvis into a posterior tilt. Deformities such as a "windswept" deformity adduction contracture of one hip, abduction of the opposite hip are all too often present in the lower limbs. If correction is not feasible, the deformity is accommodated at the pelvis and the head and trunk are positioned as forward facing as possible. Tendencies toward adduction of both hips is discouraged by positioning in abduction. This is particularly important in clients with the potential for, or history of, hip dislocation or subluxation. Pommels abductors are placed distally, so as not to facilitate adduction by stimulating the medial thighs. The feet are optimally positioned at a neutral ankle angle. This inhibits elicitation of the positive supporting reaction. Extreme deformities are either accommodated or braced. The trunk Depending on the degree of active trunk control, midline support can range from a "low profile" trunk support, for those who simply need a tactile reminder of where midline is, to rigid trunk support for those who have little or no trunk control. Support for those with spinal deformities, such as scoliosis and kyphosis is carefully evaluated to ensure that corrective forces applied to the individual are tolerable. Scoliosis is managed with the three point pressure technique. Support pads are placed under the apex of the curve, high on the opposite side and bilaterally at the pelvis. Severe deformities should always be accommodated

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comfortably, using a seating technique that allows for contact with as much surface area as possible. Also, if the client is not forced to counteract gravity, the lateral supports do not need to be as aggressive and can be made more comfortable and tolerable. Persons with a flexible kyphosis are managed with a custom contoured back component and an anterior support, usually a flexible anterior harness. The custom component is particularly important in the region of the apex of the curve. If the curve is fixed, the spine is accommodated. In either case it is often advisable to tilt the system in space to decrease the effects of gravity. Anterior trunk support is necessary for individuals who cannot maintain an upright position independently for an extended period of time, but require a more upright position for functional or therapeutic reasons. Chest belts are helpful for those who simply require a gentle assist into upright. Chest panels, harness, or other four point supports over the shoulders and laterally around the trunk are useful for those who tend to come forward with their shoulders, or who tend to elevate at the shoulders to obtain stability. Shoulder protraction "wings" added to the back or the lap tray, encourage a more midline upper limb posture. If this is the case, the tilt of the seating system should be altered probably brought closer to the vertical and often the degree of protraction is lessened. Reclining or tilting an individual often results in increased trunk and shoulder girdle extensor tone, because of the effects of the tonic labyrinthine supine reflex. In addition, the symmetrical and asymmetrical tonic neck reflexes can affect positions of the trunk and upper limbs. In situations where the ATNR is very dominant, the overriding abnormal tone and asymmetries must be dealt with before any pelvic positioning can be started. A hyperextended position of the neck, with a kyphotic posture of the upper trunk is a difficult positioning problem. This indicates overall trunk hypotonicity, resulting in a tiring and non-functional position of the head. Tilting the individual, maintaining hip angle and at the same time bringing the head to a more upright position can alleviate the effects of gravity on a hypotonic spine, while providing a more functional head position. Another difficult functional problem is when a child has a flopping head or a head that pulls into flexion. Individuals with this problem are observed with their heads "hanging down", no matter what the angle of tilt. Some individuals cannot be reclined or tilted because their functional position is vertical. Many devices, including snugly fit head straps, chin cups, and soft cervical collars have been used to resolve this problem. Any device about the head needs to be carefully applied and observed, as it can affect tone, neck position, and swallowing. In unattended situations when the lap belt is not well secured, the resultant problems can prove dangerous. The seating simulator The ability to simulate postures and positions in space is an important part of the evaluation for a seating system. Holding someone on an examining table or taking measurements in the lying position is an inaccurate assessment and does not provide adequate information. The use of a seating simulator helps provide the seating team with the technical information required for assembly of an individually designed seating system. Simulators should have angular adjustments, adjustments in thigh length, hip angle, and back height, as well as varying shapes and sizes of seat and back components, both planar and contoured, lap belts, head rests, chest supports and footrests. In addition, a variety of powered and manual chairs should be used for the evaluation. Manual or powered bases should not be recommended purely on the basis of catalogue information. Especially when dealing with evaluating powered wheelchair controls for the severely physically disabled, the patient should be allowed to actually try the proposed solution.

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## Chapter 2 : Prescription of Wheelchairs and Seating Systems - D-Scholarship@Pitt

*Wheelchair Prescription - Seating Evaluation What Is a Wheelchair Prescription? A wheelchair is a moving chair with wheels that an individual is able to control manually or electronically.*

A wheelchair and seating team is usually comprised of: A consumer and maybe someone from their family or an advocate. The whole point of the evaluation process is to get the right or the best wheelchair into the hands of the person who will use it everyday. It is something that must function in many environments: A wheelchair however is not a car or a bicycle that will be parked somewhere and used only to move beyond the house. It must be appropriate for full time use because it must either substitute for or augment moving around on legs. It needs to just right for you. It needs to be easy to maneuver, well fitting, comfortable, durable, safe and it must not contribute to future problems like shoulder injuries. The wheelchair that is chosen at the end of the process should be something that allows you to do the things you want to do in your every day life. For that reason it is good to think of a few things ahead of time. Where will I use my wheelchair most? What will I use my wheelchair occasionally? What kinds of activities that I do or did everyday are most important to me to get back to doing? How will I get my wheelchair and myself from place to place? How much of the day will I be spending in this wheelchair? How will I transfer from the wheelchair to other surfaces? If I will need help with my wheelchair who will that come from and what features about my wheelchair are important to them? How will I get my wheelchair around my neighborhood or yard? What kind of surfaces or slopes are involved? These members should be registered in their profession or licensed by your state government. If your clinician is certified as an Assistive Technology Provider ATP this is an excellent credential and means that they have complete additional training and passed a certifying examination from RESNA. You can even use their WWW page at <http://www.resna.org>. Years of experience and the "word or mouth" reputation of a therapist among people who use wheelchairs can also be helpful indicators about expertise. It is their job to help determine exactly what type of wheelchair is right for you, to assess your strengths and limitations and to find out about your lifestyle and your expectations for activities. It is also their job to write the letter of justification that makes the insurance company understand the relationship between your mobility needs and the equipment that is recommended for you. This person is sometimes called a "vendor" or a "durable medical equipment" dealer. This means that they have gotten additional training and are committed to a code of ethics. It is their job to know all about specific kinds of wheelchairs, to know the equipment features and manufacturers and to be able to compare the characteristics of wheelchairs or cushions. Occasionally, a Rehabilitation Engineer is on the team, especially in an evaluation center that works with clients with more complex physical disabilities. Rehabilitation engineers are professionals are experts at customizing equipment that is commercially available or at fabricating something completely unique. It is their job to know about loads, forces, torques, moments, and the interaction of those things with your body and your wheelchair. These are all of the things that affect how your wheelchair will perform for you over the long run. It summarizes the findings and the recommendations from the evaluation team. It is probably sent to your physician with a copy to stay in the evaluation teams files as well. After that one of two things can happen the doctor can write a letter of Medical Necessity or the therapist can write a Letter of Justification. Letter of Medical Necessity or Justification A letter of medical necessity is usually written by a physician and is addressed to the third-party payer. It tells them that a piece of equipment usually some kind of medical equipment is needed because of an authentic or verifiable medical condition or impairment. Usually it is a therapist but in some cases experienced rehabilitation technology suppliers write them. This kind of letter takes the recommendations that come out of the evaluation and correlates them to the features of a recommended wheelchair or seating system to "paint a picture" for the payer. It is a letter that helps the third-party payer understand why certain features or characteristics of the recommended equipment are important. It describes the relationship between product features and the anticipated functional outcome for the individual or the consumer. It should tell what the

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consumer will be able to do as a result of having the equipment. It is important that the items being requested really are medically necessary. This might sound obvious but the letter writer would be abusing the funding system or third-party payer if they requested equipment that a client just wanted to have, but did not actually need. A letter of justification also helps third-party payers realize why it might be better to spend a little more money for a certain feature on a wheelchair now in order to avoid a more costly expense later. A letter of justification is an expert opinion about what is best for a particular consumer! If a therapist or supplier is good at writing this kind of a letter that makes them a very valuable resource for helping you get the kind of equipment that you really need.

## Chapter 3 : calendrieldelascience.com: WC19 and those who prescribe wheelchairs and seating systems

*Prescription of Wheelchairs and Seating Systems Koontz, Alicia M and Cooper, Rory A and Ding, Dan and Spaeth, Donald M and Schmeler, Mark Raymond () Prescription of Wheelchairs and Seating Systems.*

## Chapter 4 : Wheelchairs and Seating Systems | Clinical Gate

*Wheelchair seating and mobility is a technical and specialized area of rehabilitation medicine. [] The unique characteristics of the individual and the current technology must be taken into account in order to choose the best type of mobility assistive equipment (MAE).*

## Chapter 5 : Seating Evaluation and Wheelchair Presc Publications | PubFacts

*Seating is the foundation for optimal outcomes in the spinal cord-injured population, especially for those who use wheelchairs for full-time mobility. There is an intimate and obligatory relationship between the posture of a paralyzed body and the support provided from the seating system.*

## Chapter 6 : WheelchairNet: Wheelchair and Seating Evaluations

*With walking and mobility issues or limitations, individuals may require a specialized wheelchair and seating system. Most insurance companies require a Wheelchair and Seating Evaluation in order to provide funding for the necessary equipment.*

## Chapter 7 : Prescription of Wheelchairs and Seating Systems - CORE

*Prescription of Wheelchairs and Seating Systems By Alicia M Koontz, Rory A Cooper, Dan Ding, Donald M Spaeth and Mark Raymond Schmeler Publisher: Elsevier Limited.*

## Chapter 8 : Manual Wheelchairs

*Overview of Basic Power Wheelchairs for the Part-Time Wheelchair User. p.m. Overview of Complex Power Wheelchairs for the Full-Time Wheelchair User. p.m. Break (provided) p.m. Seating Principles and Introduction to Off-the-Shelf Cushions and Backs. p.m.*