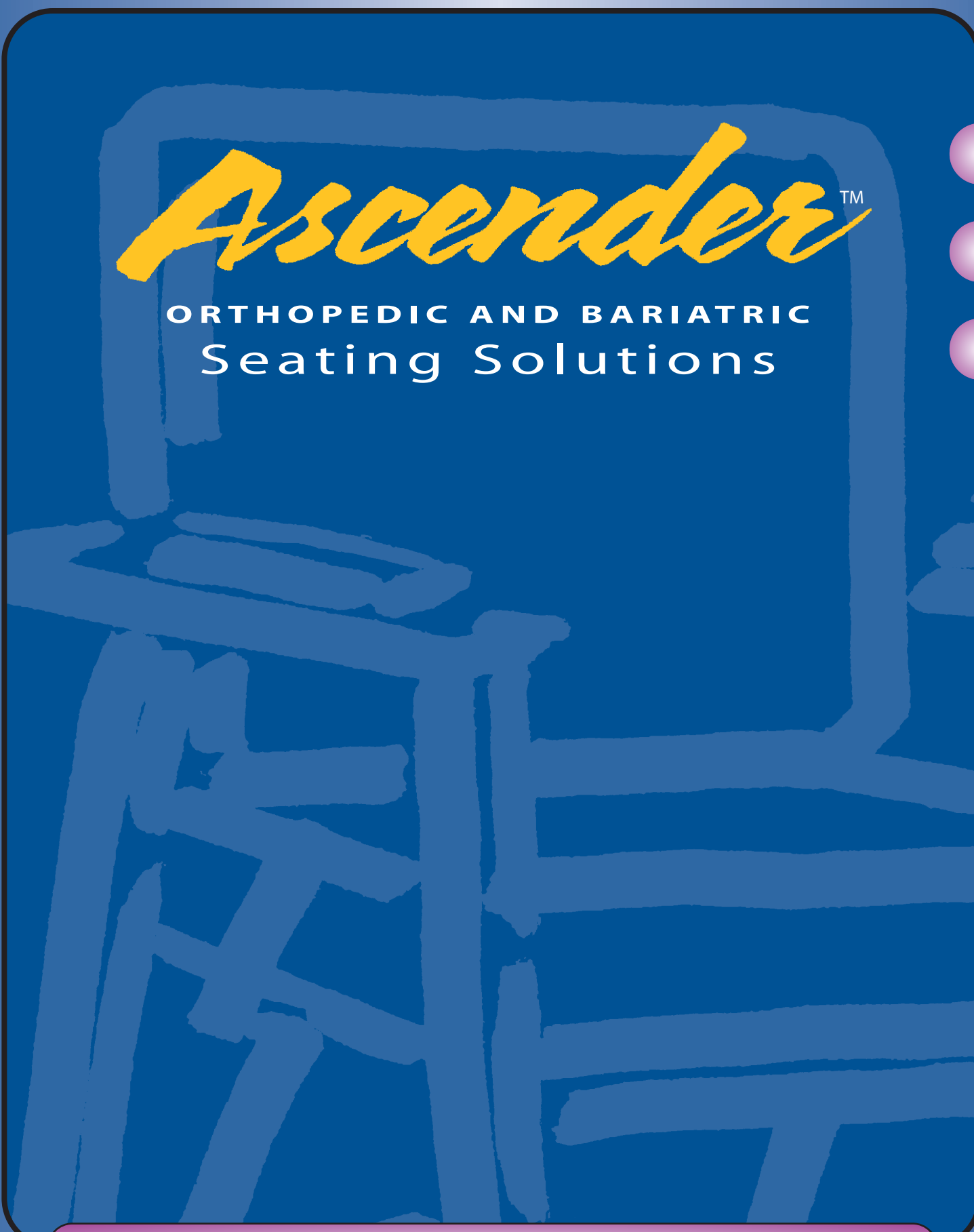




*Ascender*TM

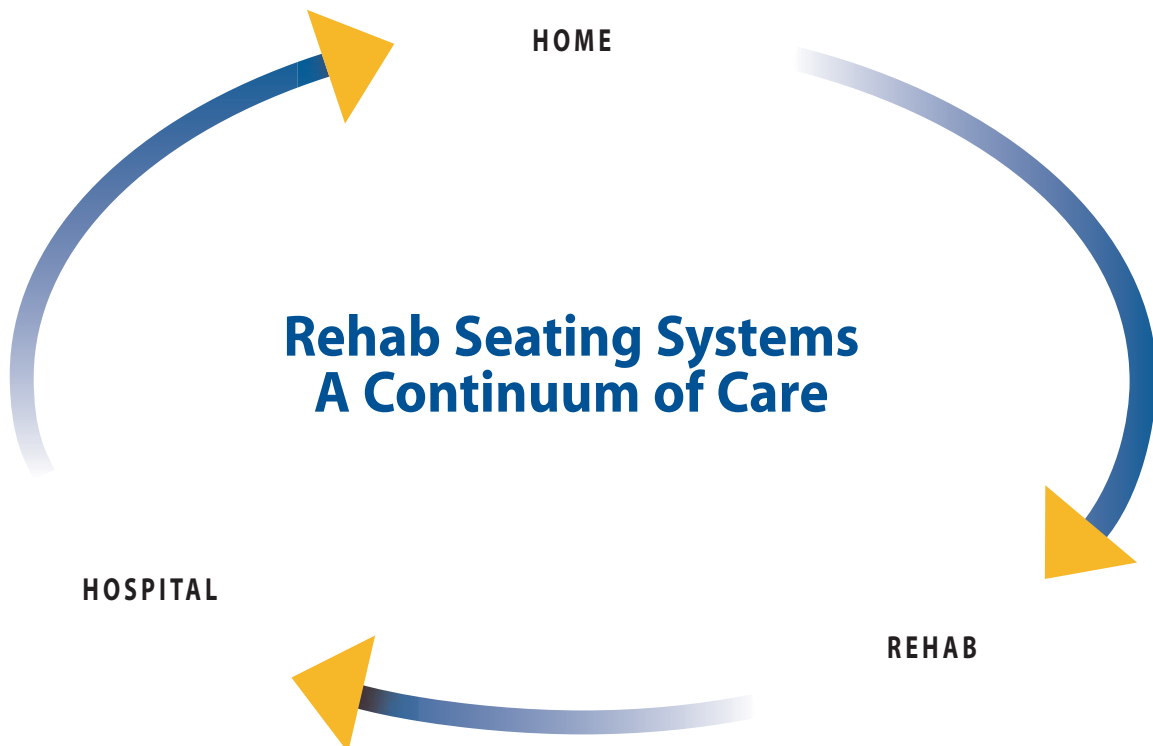
ORTHOPEDIC AND BARIATRIC
Seating Solutions

COMBINING PATIENT POSITIONING, COMFORT, AND MOBILITY WITH CAREGIVER SAFETY

WRONG



RIGHT



**Rehab Seating Systems
A Continuum of Care**

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www.rehabseating.com

Maximizing the patient's ability to "sit to stand"

the ASCENDER product line reduces patient effort and risk associated with rising from a chair while lessening the chance of a "lifting" injury to the caregiver. Rehab Seating Systems "hip" chair technology establishes a new standard in seat height, seat width, and footrest design which combines to protect orthopedic post surgical joints during rehabilitation. The ASCENDER bariatric chairs offer obese patients a new standard in weight capacities while combining the same biomechanical advantages found in the orthopedic products.

Engineered to be comfortable and functional, ASCENDER chairs enhance the patient's ability to achieve a higher level of independence. From post-operative acute and sub-acute rehabilitation to at-home recovery to follow-up physician office visits, the ASCENDER orthopedic and bariatric seating solutions deliver clinical efficacy as well as patient and caregiver safety.



(A) From a biomechanically proper sitting position, the patient uses the armrests and footrests for support to prepare to move forward in the chair. (B) After moving to the forward edge of the chair, the foot rest is manually retracted and the feet are firmly planted on the floor. The patient is positioned to rise from the chair. (C) From a partial standing position and with little effort, the patient easily achieves a stable standing position.



Promoting patient self-reliance

- New standard in seat height maximizes patient's "sit to stand" capability
- Extended armrests and secure hand grips provide greater support when rising and sitting
- Patented GLIDE-A-WAY™ footrest facilitates patient positioning when seated or during entry and exit
- Hardwood frame provides stable seating platform and lab-tested weight bearing support

Ergonomic versatility

- Spacious and firm seating available in three width models and weight capacities
- Patented seating technology that maintains hip flexion below 90 degrees
- New seat height standard of 25 inches proven in scientific study and published in peer reviewed journal †
- Adjustable four position back and three-position footrest ensures comfort and proper skeletal alignment
- Seat and back cushions are interchangeable for modification of seat height and/or depth to meet the needs of a varied patient population

† Burdett RG, et al. Biomechanical comparison rising from two types of chairs. *Journal of American Physical Therapy Association*. 1985;65(8):1177-1184.

OBESSE PATIENTS THROUGHOUT THE ENTIRE CONTINUUM OF CARE.

POSTOPERATIVE ACUTE CARE REHABILITATION

SUB-ACUTE AND AT-HOME REHABILITATION

OFFICE VISITS



**ASCENDER 500
Transporter**



**ASCENDER 300
Ultra Hip with Leg Support**

POSTOPERATIVE ACUTE CARE REHABILITATION

The ASCENDER product lines provide the patient with a comfortable ergonomically designed chair for accelerating rehabilitation. These specialty medical devices are also available in models for transporting patients within any medical facility.

Ascender™
ORTHOPEDIC AND BARIATRIC
Seating Solutions



**ASCENDER
M.P. 1000**



**ASCENDER
M.P. 500**

OFFICE VISITS

The ASCENDER Multi-Purpose (M.P.) chairs are designed with an exclusive seat deck control that allows for a flat or forward slope seating position. This product line delivers all the important product benefits of the rehabilitation models while meeting the unique design requirements for waiting rooms, physician offices and patient homes.



**ASCENDER 300
Standard Hip**

SUB-ACUTE AND AT-HOME REHABILITATION

The ASCENDER helps the patient exit and enter the chair more easily and independently, while at the same time providing unparalleled comfort, support and proper seating alignment.



**ASCENDER 300
Slant Hip**

Rehab Seating Systems

Medical Specialty Seating



INTRODUCTION

Rehab Seating Systems (RSS) is a manufacturer of specialty medical seating serving three market segments; orthopedics, bariatrics and patient transportation. The company office is located in Brookline, MA and the manufacturing facility is in

Clinton, MA. The company is privately owned and was incorporated under RSS in 1995 but has been in business since the late 70s under a different name. RSS has chairs placed in over 1,000 hospitals, including many of the most prestigious orthopedic programs in the USA.

The ASCENDER line contains five categories of products. They are,

1. Orthopedic chairs
2. Transporter chairs
3. Multi-purpose (MP) chairs
4. Home care chairs
5. Recliners

Each category can include the following options,

1. Leg support attachments (Ultra designation)
2. Slant seat option (standard on MP chairs)
3. IV pole
4. Food tray
5. Oxygen bottle carrier
6. Head rest extension

The ASCENDER line serves the needs of the following clinical needs,

1. Orthopedics
2. Bariatrics
3. Combined Orthopedic-Bariatrics
4. Neurology
5. Arthritis
6. Amputation
7. Patients with other mobility deficits

The ASCENDER line are used in the following applications,

1. Post-operative care
2. Extended rehabilitation (hospital)
3. Extended rehabilitation (home)
4. Patient transport
5. Common waiting areas



The ASCENDER Ultra Hip Chair



The ASCENDER MP Chair



The ASCENDER Transporter

All RSS products revolve around a simple core concept i.e. the combination of seat height and width. High seats are important during the post-operative phase of hip replacement surgery. The ASCENDER orthopedic line comes with a patented retractable footrest that facilitates entry and exit from the chairs (the important 'sit to stand' maneuver). Using seat cushions of different thickness and adjustments to the footrest mechanism, the chairs can accommodate a wide range of patient heights. Additionally, the chairs are available in three standard widths to allow patients of various girths and weights to comfortably fit into the chair. RSS is the only company with seating that offers this clinically significant combination of features to serve a wide array of orthopedic, bariatric and other mobility challenged patients.

THE SIT-TO-STAND MANEUVER

Proper seating includes two distinct steps, each with biometric and ergonomic consequences. They are forward thrust and forward extension, termed 'Sit to Stand'. Each step can profoundly effect the critical joints at the hip, knee and ankle.



The Sit-to-Stand Maneuver

Critical measures of a chair's efficacy to facilitate sitting and standing include torque, maximal muscular activity, joint flexion (angles) and center of gravity. Other factors include the subject's age and medical condition.

Different types of chairs can significantly effect the sit to stand task. Seat height, back and arm support, seat slant and cushioning are important factors with seat height perhaps the most important. Standard seat heights are typically in the 14 to 16 inch range.

The **ASCENDER** line of medical specialty seating addresses each of these factors. Seat heights are adjustable to 23 or 25 inches by simply swapping the seat and back cushions. The cushions themselves are firm but comfortable and effectively support the lumbar back. The back is typically shoulder high and has four adjustable positions ranging from 90 to 75 degrees. The lower positions allow post reconstruction hip patients to maintain hip flexion well below 90 degrees.

Seat orientation is horizontal with the floor, or can be optionally positioned at a 10-degree forward slope. This feature reduces torque and flexion on all critical joints during forward thrust and extension. The slightly longer arm supports of the **ASCENDER** allow subjects to better manage the momentum transfer that follows the forward thrust during standing. This has the salutary effect of reducing both lower extremity joint torques and hip and knee range of motion needed to rise from the chair. And with the center of gravity firmly established following forward extension, caregivers will avoid the lifting injuries that too often accompany pulling patients into the standing position.

Only the **ASCENDER** line of medical specialty seating provides all of these key features. The following list of current reviews related to proper seating requirements provides additional confirmation that the ASCENDER line is at the forefront of proper seating.

STUDIES & REPORTS

Are You Sitting Comfortably? *Arthritis Research Campaign*

It is far easier to get out of a high chair than a low one. A high chair can be just as comfortable and probably more so if you suffer from back pain. A high chair makes getting up so much easier.

SEAT HEIGHT

Choose the highest chair you can that allows you to place your bare feet flat on the floor while sitting in it. If you follow this guideline, a footstool should not be necessary. It is too easy to trip over them or stub your toes on them.

ARMRESTS

Research has shown that the proper use of armrests can be twice as effective in helping you get up from a chair. The first point is to look for a good handgrip. You will find the armrests easier to grip if they are made of wood and protrude a few inches forward. This will allow you to wrap your fingers around the end. The best armrests are padded for comfort and warmth; and the protruding wooden ends should not have sharp edges to hurt your hands. Ideally the front of the armrests should be 9 inches (23cm) higher than the seat.

EASY RISING

The way you get out of a chair makes a big difference. If you tuck your feet back close to the front of the chair it will be easier to rise. Therefore a chair should have a space in the bottom front of the chair to place your feet.

COMFORT

- First the cushion should be made from high quality firm foam.
- Second, try to avoid seats that sag or are too soft. This can cause pain to your joints.
- Third, the dimensions of the seat are also important. This depends on your individual size. You must have room to move about.
- Fourth, never get a chair with a seat that is too deep. A deep seat means that you have to exert a lot more muscle power than usual to get out: The same occurs if the seat slopes backwards too much. You may find that a deep seat digs uncomfortably into the back of the legs. The seat should be just deep enough to give full support to the thighs when you sit back as far as possible.

BACKRESTS

It is important that your back is fully supported. Not too upright or slope too far back.

PRACTICAL ASPECTS OF SITTING COMFORTABLY

A properly designed chair should enable you to sit comfortably without having to resort to extra cushions. You may find that if your disability progresses it becomes increasingly difficult for you to move your chair. Therefore a chair should be easy to move. If you have a disability, or if you have difficulties in getting out of a chair, *function is always more important than fashion*.

Sit to stand from progressively lower seat heights – alterations in angular velocity.

Schenkman M, Riley PO, Pieper C. Duke U. Medical Center

Synchrony of body segment; maximum extension angular velocities was altered for the older subjects at the lowest chair heights, suggesting that older individuals begin to change their performance as the task becomes more demanding. Relevance; sitting to standing is one of the essential physical tasks used frequently throughout the day. Clinicians are frequently called upon to improve chair rise performance for those with functional limitations.

Chair design affects how older adults rise from a chair. Alexander MB, Koester DJ, Grunawalt JA. 1996

Objective: To determine how modifications of key chair design aspects, such as seat height, posterior seat tilt, backrest recline, seat compressibility and armrest placement affect how older adults rise from a chair and the seating comfort they experience. Conclusions: aspects of chair design such as lower seat height, increased posterior tilt, increased back-recline and increased compressibility interfere with chair egress in older adults. While decreasing ease of egress, however, these same factors may increase seating comfort. Furniture designers and manufacturers must find a balance between the degree of sitting comfort, ease of egress and the degree to which the seating device facilitates functional independence, particularly to meet the needs of disabled older adults.

Association between subject functional status, seat height and movement strategy in sit-to-stand performance. Mazza C, Benvenuti F, Bimbi C, Stanhope S. 2004

The effectiveness of the compensatory strategies decreased rapidly as a function of seat height and functional status. Across the three least functional groups, 11.8%, 30.6% and 83.3% of the subjects, respectively, were unable to stand at the lowest seat height.

Analysis of the effect of lower limb weakness on performance of a sit-to-stand task.

Klein M, Talaty M, Esquenazi A, Whyte J, Keenan MA 2001

The sit-to-stand task was performed under four different conditions that varied by chair height and/or use of armrests. Rising from a chair is a common daily activity, and there is evidence to suggest it may be actually be one of the most mechanically demanding functional tasks that people perform on a routine basis. Research has shown that standing from a seated position requires more leg strength and greater joint ranges than walking and stair climbing.

Therefore the purpose of this study was to examine the compensation strategies used to perform a sit-to-stand task by subjects with unilateral knee extensor weakness.

Our objectives were: 1) to determine how the use of upper extremities to assist during a chair rise affects lower extremity loading; 2) to examine how task difficulty affects performance when weakness is present; and 3) to compare the compensation strategies utilized by individuals with chronic weakness to those used by patients with acute weakness. We hypothesized there would be less preferential loading when the chair was high than when the chair was low.

Procedure: The subjects included polio and surgical patients. All subjects had to be able to stand up from a chair safely.

The subjects performed the sit-to-stand tasks under four different conditions. The conditions varied in terms of chair height and whether or not the subjects were allowed to use the armrests.

low chair (18") no armrests.

low chair using armrests.

high chair (23") no armrests.

high chair using armrests.

The results showed a significant main effect of chair height. In both armrest conditions, the anterior-posterior velocity was higher for the lower chair height, as predicted. The same pattern was seen for both surgery and post-polio subjects. The results showed that this velocity was significantly affected by chair height (i.e. the velocity in the "low" conditions was higher than in the "high" conditions for both groups) and the armrest use (i.e. the velocity in conditions with armrests was lower than in the conditions without armrests).

Results: For the leg on the weak side, the peak vertical force was greater when the chair was high than when it was low. The opposite was true for the leg on the strong side. In other words, there was less of a difference

between the peak vertical forces in each leg when the chair was high, which translates to less preferential loading at this chair height. The main effect of armrest (use vs. no use) was also significant. Use of the armrests to help bear some of the weight while rising from the chair reduced the amount of force applied to the legs.

Discussion: A compensation strategy that was utilized was increasing the amount of hip flexion prior to lifting the body off the chair. Subjects leaned forward more when the chair height was lower.

Kinematics of maneuvers commonly responsible for hip dislocation.

D.R. Pederson, H.J. Yack, R. Wahj, J.J. Callaghan, T.D. Brown Departments of orthopedic surgery and physical therapy, University of Iowa.

A significant minority of patients undergoing total hip arthroplasty (THA) experience prosthesis dislocation. Some were caused from a sit-to-stand rise from a normal height chair (SSN) and from a sit-to-stand rise from a low-seated position such as a toilet (SSL).

Dislocations after total hip-replacement arthroplasties. *GE Lewinnek, JL Lewis, R Tarr, CL Compere and JR Zimmerman*

In a series of 300 hip replacements, 9 (3 per cent) dislocated. Factors that were documented included time after surgery (with the greater risk in the first 30 days) and surgical history (with a greater risk in hips that have had prior surgery).

Determinants of the sit-to-stand movement. *Research report: Physical Therapy, Vol. 82, No. 9, September 2002*

The literature indicates that chair seat height, use of armrests and foot positions have a major influence on the ability to do a sit-to-stand movement.

Sit-to-stand at different periods of pregnancy. *Clinical Biomechanics-Vol16, issue3, March 2001*

Results: The chair height has great influence on the knee joint and hip joint moments. Pregnant women in the third trimester produced larger knee moment during STS transition from lower seat height.

When older adults face the chair rise challenge. A study of chair height availability and height-modified chair-rise performance in the elderly. *Journal American Geriatric Soc. 1993, Jan*

Objective: Define the range of community seating heights available for use by older adults; test whether raising chair height by small increments facilitates chair-rise performance; and heighten physician and furniture industry awareness of discrepancies that may exist between actual and acceptable chair heights for older adults.

Conclusions: Augmentation of seat height by small increments facilitates chair rise performance.

The influence of chair height on lower limb mechanics during rising. *Journal of Orthopedic Research, 1989*

The maximum knee flexion moments were found to be highly dependent on chair height and nearly doubled from the highest to lowest position.

The effects of armrests and high seat heights on lower-limb joint load and muscular activity during sitting and rising. *Ergonomics, 1992 Nov; 35(11)*

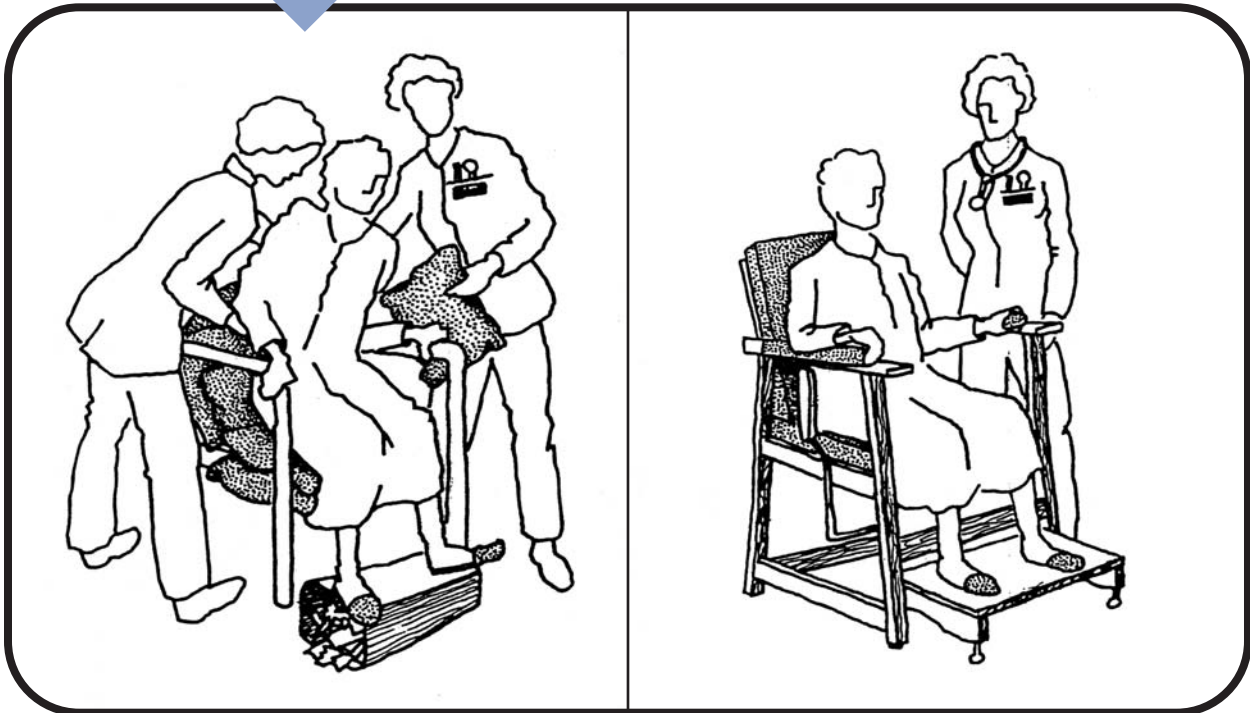
All subjects rising from 4 different type of stools estimated the effort from the higher stand stool to be lower than from the lower stand stool or from ordinary height without armrests.

The ASCENDER Solution

If your facility is still using pillows to achieve proper seat height and positioning like this...

...then it's time for a change by using the patented and proven ASCENDER Seating System... like 66% of the nation's top hospital's do*

**U.S. News & World Report, July 27, 1998
"America's Best Hospitals"*



Improvised positioning can impede safety

- Takes time to find pillows and improvise a seating position.
- Practically impossible to maintain a correct seating position.
- More lifting by staff to position patient.
- Wastepaper basket is often used as a footrest.

Adjustable positioning features maintain correct alignment

- Takes very little time to seat and position patient correctly.
- Ergonomic design helps maintain correct position.
- Protects nurses against back injuries caused by lifting patients.
- Safe and easy entry and exit for the patient.

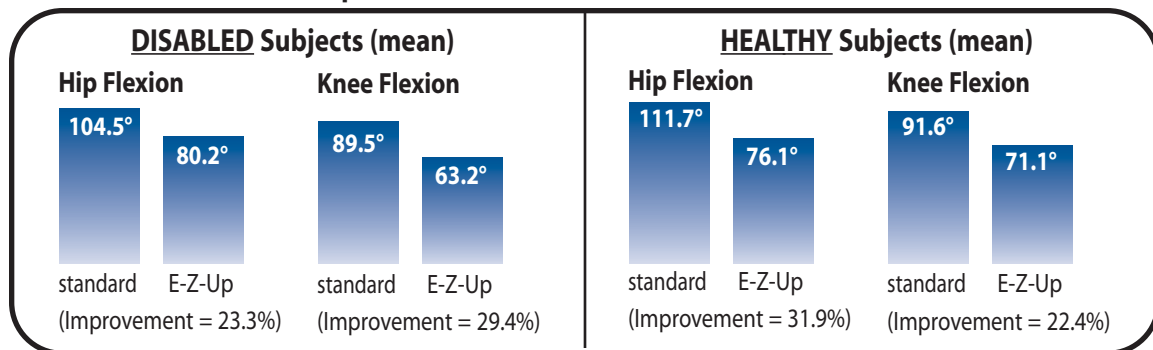
Biomechanical Research: Orthopedic Seating

The E-Z Up Artherapeutic Chair with a seat height of .64m (25 inches) was tested against a standard chair with a seat height of .43m (17 inches) at the Gait Analysis Laboratory, Children's Hospital Medical Center, Boston, in 1984, by laboratory physicians and researchers. Results were published in Physical Therapy, the Journal of the American Physical Therapy Association.*

SYNOPSIS OF FINDINGS

In tests measuring range of motion and joint moments in healthy subjects and patients with lower extremity disabilities, the E-Z Up chair proved significantly more effective than the standard chair in reducing muscle and joint stress in the hip and knee. The E-Z Up chair also provided for measurable less joint motion than the standard chair in both groups tested.

Maximum Joint Motion Required



RESEARCH METHODS

Four male subjects with lower extremity musculoskeletal disabilities and ten male subjects with no disabilities participated in this study. While photographed at 50 frames per second, each subject rose from the E-Z Up chair and from the standard chair at a self-selected speed. Degrees of motion were determined by skin markers at six sites, measured from the film frame by frame. Internal and external joint moments were calculated in order to estimate stress of muscle forces acting across specified joints.

RESEARCH FINDINGS

For both groups, significantly smaller ranges of motion at the knee and hip were necessary in order to rise from the E-Z Up Chair in comparison with the standard chair.

When the E-Z Up Chair was used, there was a decrease in stress moments at the knee and hip, indicating a relief in muscle activity.

The results with healthy subjects indicate that patients with decreased strength, with pain, or with limited range of motion at the hip or knee joints could benefit from the use of the E-Z UP Chair. The results with disabled subjects confirm the general results found with the healthy subjects.

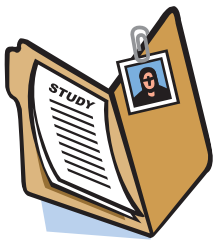
Additionally, the study indicates that the footrest, as an integral part of the chair, significantly contributes to the successful results found by reducing the pressure on the nerves and blood vessels which pass posterior to the knee by supporting the feet. It also serves to assist the patient in positioning into the chair.

CONCLUSIONS

The E-Z Up Artherapeutic Chair is an effective device compared with a standard chair. It measurably decreases the stress in the muscles and joints of the hip and knee and decreases the range of motion needed at the hip and knee joints.

A chair as the E-Z Up will allow many patients, particularly those with a combination of upper and lower disabilities, to rise unassisted from a seated position.

* Results reprinted from "Biomechanical Comparison of Rising from Two Types of Chairs," Burdett, Habasevich, Pisciotto and Simon. PHYSICAL THERAPY (Vol. 65: #8, pgs. 1177-1183, August 1985) with the permission of the American Physical Therapy Association.



Another Study Supporting the Efficacy of the ASCENDER Seating System

"Dislocation After Total Hip Arthroplasty," McCollum and Gray, Duke University Medical Center, Clinical Orthopedics, December, 1990.

SYNOPSIS

Despite many recent advances in total hip arthroplasty (THA), dislocation remains the most common postoperative complication and is second only to loosening as a cause for reoperation.

Five patients reviewed in this study had dislocations. None of these dislocations occurred during the postoperative hospitalization period. All dislocations were posterior in direction and all of whom hyperflexed the hip at the time of dislocation.

Patient 1 – had a posterior dislocation three weeks postoperatively while sitting and leaning forward in a recliner chair.

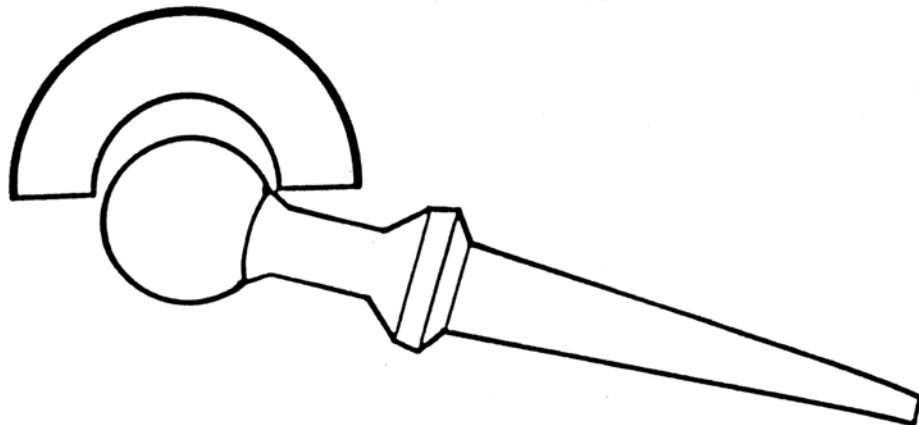
Patient 2 – dislocated six months postoperatively when he fell from a sitting position and hyperflexed his hip.

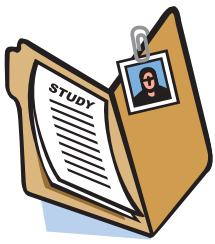
Patient 3 – dislocated posteriorly with hyperflexion and abduction while sitting in the front seat of a car.

Patient 4 – dislocated two weeks postoperatively when she sat on a low seat.

Patient 5 – dislocated while sitting on steps and adducted his hip.

Although this was a study of the techniques of the cup position, it clearly reveals the importance of **proper seating**. The ASCENDER Seating System may indeed help prevent some of these dislocations. It also indicates a long term need for the ASCENDER Seating System as post-operative complications may occur weeks or months after surgery.





Another Study Supporting the Efficacy of the ASCENDER Seating System

"The Influence of Chair Height on Lower Limb Mechanics During Rising", Rodosky, et al. Department of Orthopedic Surgery, Rush-Presbyterian-St. Luke's Medical Center, Chicago, IL, "Journal of Orthopedic Research", Volume 7, No.2, 1989.

SYNOPSIS

Getting out of a chair was considered one of the most important functions by a group of patients with arthritis. At present, there is a limited understanding of the factors influencing the ranges of motion necessary and the moments generated at the lower extremity joints when rising. Such information can provide the basis for better management of patients with musculoskeletal disease, and better designed chairs for their use. **(Please note: The ASCENDER Seating system was not a part of this study.)**

In the chair rising maneuver, it was found that just before the rising begins, the whole body center of mass is moved forward and slightly downward with respect to the chair seat.

Biomechanically, rising can be divided into two distinct phases: the forward thrust and extension phase.

CHANGES IN MOVEMENT AND MOMENTS WITH CHAIR HEIGHT

The maximum range of flexion at the hip, knee and ankle significantly decreased with increasing chair height.

Among the three major joints of the lower extremity the hip joint sustained the largest flexion movement. The maximum moments at the hip and knee significantly decreased with increasing chair height, while the ankle had no change.

The chair height had the greatest influence on the moment tending to flex the knee joint; this moment was reduced by 50% by raising the chair height from 65% to 115% knee height position.

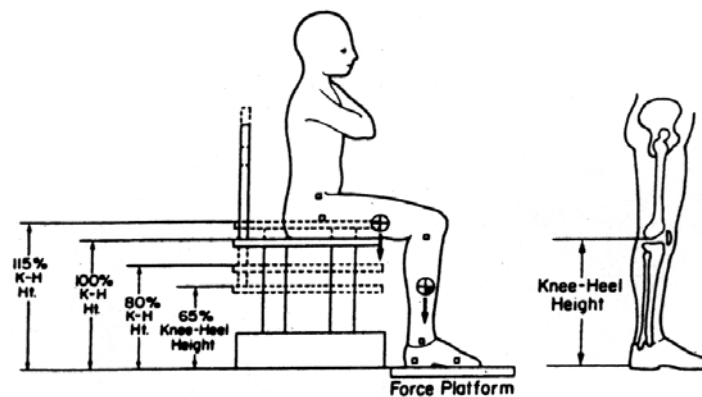


Fig. 1. An illustration of testing configuration and chair height definition

The hip moments during rising were greater than in other activities of daily living studied in our laboratory. The magnitudes of the flexion moments are significantly greater than corresponding values found at the hip during normal walking and stair-climbing. To reduce these moments, methods other than just relying on chair height are needed, such as the use of armrests. **(Note: one of the outstanding features of the ASCENDER Seating System is the extended armrest).**

Considerable forces are directed at the hip when rising from a standard height chair. Forces of this type are known to create stresses on the anterior surface of the femoral stems used in total hip replacement prostheses and may be responsible for fracture of the stem. **(Note: pressures and flexion are considerably reduced by using the ASCENDER Seating System.)**

Knee movements were also found to be at their maximum during the forward thrust phase. There was a large and significant difference between moments generated at the high and low chair heights.

Using these moments as indicators of muscle and joint contact forces, it is evident that patients with knee joint disease could greatly reduce knee stresses simply by avoiding seating that is too low. **(Note: the ASCENDER Seating System meets this need.)**

In summary, rising from a chair produces large moment magnitudes at the hip and knee. The magnitudes of the motion and moments at the hip are greater than those produced during walking. Patients with pathologic conditions of the hip and knee should be told to sit in high chairs and to use armrests when rising.

The scientifically proven and clinically tested ASCENDER Seating System with its patented adjustable features is designed to meet the needs of patients with musculo-skeletal disease or surgery.

The ASCENDER Seating System will help to reduce the moments and stress that occur at the hip and knee joints during rising from a chair.

**ASCENDER
SEATING SYSTEM**

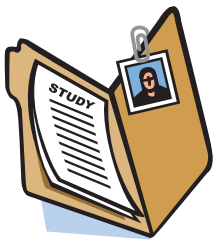


**AVERAGE
HEIGHT CHAIR**



ASCENDER BENEFITS:

- Reduces excessive pressure on hip/knee.
- Eliminates forward trunk lean
- Reduces energy requirements
- Extended armrests provide added safety, assists patients in entering and exiting.



Another Study Supporting the Efficacy of the ASCENDER Seating System

"Contact Pressures From an Instrumented Hip Endoprosthesis", Hodge et al Massachusetts General Hospital and Massachusetts Institute of Technology, The Journal of Bone and Joint Surgery, Vol. 71-A, No. 9, October 1989.

SYNOPSIS

Background – This is an on going study of a patient who had electronic sensors places in the hip prosthesis in June of 1984. Unexpectedly high localized contact pressures between the acetabular cartilage and the prosthesis were recorded. The readings indicated that the human hip must deal with pressures high as 3,000 pounds per square inch during moments of extreme stress as rising from a chair.

Current Study – The highest pressure, eighteen megapascals (2,610 PSI), was recorded one year postoperatively, while the patient was rising from a chair. High pressures occurred in the superior and posterior aspects of the acetabulum.

The data indicated that traditional postoperative management and protocols for rehabilitation may not be optimum.

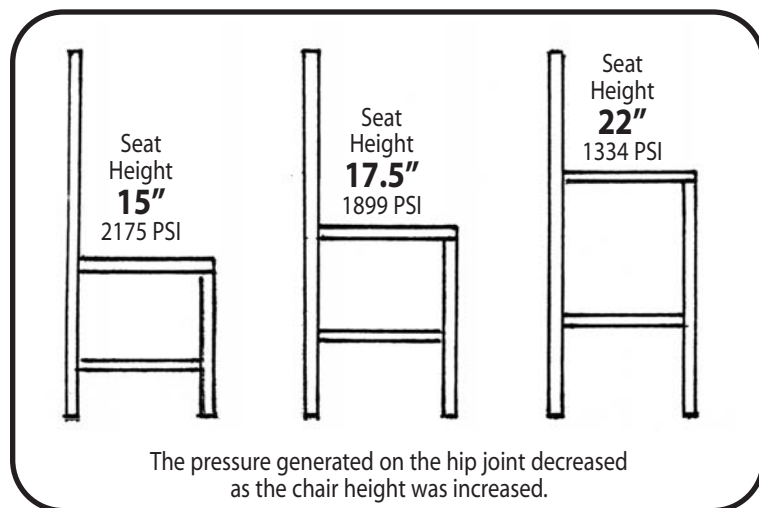
As rehabilitation proceeded, measurements were recorded for the more strenuous activities of rising from a chair, stair climbing, jogging and jumping. Rising from a chair produced a maximum pressure that was approximately three times that occurring during walking and approximately twice that occurring during jogging and jumping. The maximum pressure decreased as the height of the chair increased (see Chart 1).

The patient was studied rising from three different seat heights of a straight-back wooden chair.

Maximum pressure during stair-climbing and rising from a chair peaked twelve months postoperatively and then dropped during the next year (see Chart 2). Clinically, the patient could not manage climbing stairs or rising from a chair easily until eighteen months after the operation.

A conclusion could be drawn from this study that the **ASCENDER Seating System** should be used as **permanent seating** for those persons who have undergone total hip replacement.

Chart 1: Maximum Contact Pressures During Rising from a Chair



The 25" height of the ASCENDER Seating System may reduce the pressure on the hip even more.

Chart 2: Maximum Contact Pressures During Walking, Stair-Climbing, and Rising from a Chair According to Postoperative Time

Pressure (PSI)			
Postop. Month	Walking	Stair Climbing	Rising from a Chair
06	769	972	1117
12	798	1552	2610
15	783	1088	2175
18	783	1117	1291
36	580	653	1407

Product Descriptions

ASCENDER ORTHOPEDIC CHAIR

From a single simple core concept –
the combination of high seat and width –
Rehab Seating Systems, Inc.
offers a complete line of orthopedic chairs
that satisfy a wide array of clinical applications.



ASCENDER
Standard Hip

WOUND CARE

HIP REPLACEMENT

ARTHRITIS

CAST ROOM

PRIMARY FEATURES

- New standard in seat height maximizes patient's "sit to stand" capability
- Extended armrests and secure hand grips provide greater support when rising and sitting
- Patented GLIDE-A-WAY™ footrest facilitates patient positioning when seated or during entry and exit
- Hardwood frame provides stable seating platform and lab-tested weight bearing support
- Spacious and firm seating available in three width models and weight capacities
- Patented seating technology that maintains hip flexion below 90 degrees

TRANSPORTATION

TOTAL KNEE



ASCENDER
Transporter

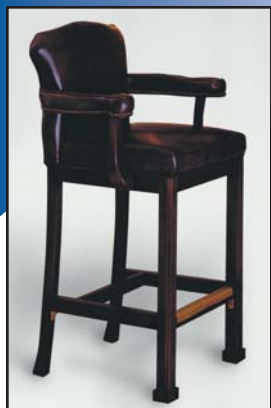
AMPUTATION



ASCENDER
Ultra Hip

ASCENDER and GLIDE-A-WAY are trademarks of Rehab Seating Systems, Inc.
US Patent Nos. 4358156 and 5277477

This stool is sometimes used as a hip chair, but is more commonly found in bars and lounges...



Generic Hip Chair

ASCENDER HIP CHAIR

...this chair is only found on orthopedic wards



ASCENDER 300
Ultra Hip with
Leg Support

ORTHOPEDIC (HIP) CHAIR COMPARISON

	Generic Hip Chair	ASCENDER Hip Chair	Advantage
Seat Height	27 inches	23 or 25 inches	ASCENDER
Seat Width	19 inches	20, 24, 28 inches	ASCENDER
Seat Depth	17 inches	19 inches	ASCENDER
Leg Support Option	No	Yes	ASCENDER
Slant Seat Option	No	Yes	ASCENDER
Retractable Foot Rest	No	Yes	ASCENDER
A-Frame Design	No	Yes	ASCENDER
Adjustable Back	No	Yes	ASCENDER
Weight Capacity	usually < 300 lbs	up to 1,000 lbs	ASCENDER



ASCENDER
M.P. 500



ASCENDER 500
Transporter

Ascender™
ORTHOPEDIC AND BARIATRIC
Seating Solutions

The perfect choice for your bariatric patients



**ASCENDER
M.P. 500**

Over a third of the US population is overweight, and over a quarter are morbidly obese. Many of these people have difficulty assimilating with the normal size world around them. Unfortunately, "super-sizing" refers only to the high calorie fast food meals that are at the root of many of these people's problem.

Sitting and standing are tasks that most of us take for granted. When we visit a doctor's office or other common area, the waiting room is typically fitted with normal size seats emphasizing decor over utility. But for the heavy-set person, the choices are limited; squeeze into an undersized chair, risking the embarrassment of getting stuck or worse of possibly breaking it, or remain standing.

Why are these people denied the dignity everyone else takes for granted?

Rehab Seating Systems has designed a series of chairs that effectively solve these problems. The ASCENDER MP Chair comes in three standard widths (wider widths available as special orders) that can accommodate patients up to 1,000 pounds. The ASCENDER MP also has a higher seat, adjustable to 18 to 20 inches (standard seats are 16"), and an adjustable forward sloping seat pan that facilitate sitting, standing and positioning. With four cushion color options and wood stains by special order, the MP chair can blend in with any existing furniture.

Not every chair needs to be an ASCENDER MP, just one or two to insure the safety and dignity of your most special patients.



**ASCENDER 500
Transporter**



**ASCENDER 300
Ultra Hip with
Leg Support**

Ascender™
ORTHOPEDIC AND BARIATRIC
Seating Solutions

A safe, smooth and comfortable ride



ASCENDER 500
Transporter

THE CHAIR WITH UNPARALLELED FEATURES...

- ▼ Adjustable seat height for easy accessibility
- ▼ Patented retractable footrest
- ▼ Designed to help avoid lifting injuries to providers
- ▼ High seat helps prevent hip dislocation
- ▼ Keeps hip flexion under 90 degrees
- ▼ Optional leg-up attachment
- ▼ Wide widths to accommodate heavy patients
- ▼ Much improved maneuverability
- ▼ Optional IV Pole/O2 cylinder attachment
- ▼ Optional California/Boston 133 Fire Code Certification
- ▼ Select from four cushion colors
- ▼ A more dignified ride for your patients
- ▼ Save thousands over bariatric wheelchairs



ASCENDER
M.P. 500



ASCENDER 300
Ultra Hip with
Leg Support

Ascender™
ORTHOPEDIC AND BARIATRIC
Seating Solutions



ASCENDER@Home
Standard
(PN 9000)



Bariatric
(PN9200)

New @Home Rehab Chair

People buy chairs for their homes because they are comfortable and good looking. Unfortunately, these chairs are not designed for those individuals who develop mobility deficits due to arthritis, excess weight and/or orthopedic problems requiring surgery, such as total joint replacement.

In the hospital setting, the combination of a high firm seat, patented retractable footrest, extended arm rests and other ergonomically appointed features have made the ASCENDER 7000 Series the first choice of orthopedic and rehabilitation programs. But what happens after discharge?

We have designed **a new chair for home use**. A unique patent pending feature not available on any other chair, allows patients to gradually transition from hospital to home. An easy to adjust three position seat provides graded levels of protection for the newly implanted hip joint, as well as facilitating entry and exit (sit to stand) for patients with arthritis and other mobility deficits.



ASCENDER 7000 Series
for hospital use

A close companion of the Ascender 7000, the Ascender@Home **fits into any budget** whether purchased or rented. Available in multiple stains and cushion colors, it will be an attractive addition to any living space.

**Available in 20" (standard) and
24" (bariatric) seat widths**



Favorite Home Chair

Ascender™
ORTHOPEDIC AND BARIATRIC
Seating Solutions

Neurology Patients Benefit from Higher Seating in Waiting Area



**ASCENDER
9000**



**ASCENDER
8000**



**COMMON WAITING
AREA SEATS**



An internal study commissioned by Mass General Hospital's Patient Care Improvement Initiative showed that Neurology patients who experience difficulty getting into and out of traditional waiting room furniture due to low seat height were better able to enter and exit a higher seat with little assistance and with more comfort. ***The study found that approximately 40% of the patients visiting the Neurology practice fell into this category.*** Nearly all found the higher seat to be a significant benefit while waiting to see the physician.

The Neurology staff placed four ASCENDER Chairs manufactured by Rehab Seating Systems of Brookline, MA at different places in the waiting area. The four higher seated chairs comprised one fifth of the total waiting room chairs. The Physical Therapy Department at Mass General oversaw the study in conjunction with the practice staff.

With the aging of the baby boomer generation (and the attendant rise in orthopedic and arthritis related problems), and the dramatic increase in obesity in the general population it is clear that the chairs that worked well for many years are no longer ergonomically suited for current patient needs. Something as simple as providing a comfortable chair in a common waiting area has become much more complicated for many healthcare providers. ***Do your patients fall into this category?***

If the answer is yes, Rehab Seating Systems has the solution to this problem.
Please call 617-734-8500 for more information, or
visit our web site at www.rehabseating.com

Ascender™
ORTHOPEDIC AND BARIATRIC
Seating Solutions

EVALUATION FORM

FOR ALL ASCENDER SEATING SYSTEMS

FEATURES / FUNCTIONS / BENEFITS	BEST	GOOD	FAIR	POOR
FEATURE: Adjusts to accommodate varying heights of patients (4'9" to 6'5"):				
FUNCTION: Switch seat cushion with back cushion to adjust seat height from 25 inches to 23 inches to accommodate shorter patients.				
FUNCTION: Adjust footrest height to one of three positions by pulling spring catches and screwing in or out front glides. (Not available on Transporter).				
BENEFIT: Reduces excessive hip flexion to under 90 degrees (under 70 degrees with the SLANT option) and excessive flexion of the knee joint.				
BENEFIT: Helps prevent hip dislocation by reducing forward trunk lean.				
BENEFIT: Seat height assists in getting patient into and out of seated position without excessive lifting by staff.				
FEATURE: Wide/Deep/Firm Seat:				
FUNCTION: By switching the thinner back with the thicker seat cushion the depth can be reduced by 2 inches to accommodate shorter patients.				
BENEFIT: Maintains proper skeletal alignment.				
BENEFIT: Helps maintain proper leg abduction.				
BENEFIT: Accommodates most patients, regardless of their size or physical limitations.				
FEATURE: Extended armrests with contoured hand grips:				
BENEFIT: Provides added safety and security during transfers.				
BENEFIT: Helps most patients to sit and rise, often without assistance.				
BENEFIT: Decreases chance of back injury to staff from excessive loads while assisting patients into and out of the seating system.				
FEATURE: Retractable footrest:				
FUNCTION: When the patient is sitting on the edge of the seat (whether entering or exiting) with body weight still fully supported, then the footrest can be either moved out or in. Patient can either move feet away from front of chair or raise them while moving footrest in or out.				
BENEFIT: Positions and supports feet properly thus eliminating pressure on nerves and blood vessels under the knees.				
BENEFIT: Decreases tensile stresses in ligaments that cross the knee joint.				
BENEFIT: Aids patient to push back in the chair.				
BENEFIT: Allows for proper hip/knee alignment.				
BENEFIT: Eliminates the need for a free standing footrest or stool. (NOTE: For elevated leg support, ask about our E-Z Leg Up Accessory)				
FEATURE: Footrest lever:				
FUNCTION: The footrest lever can be easily moved to the other side of the chair (Not on Transporter models). Maintenance person required.				
BENEFIT: Allows patients with incapacitated right arm to still be able to operate footrest lever.				
FEATURE: Adjustable back support:				
FUNCTION: The seat back can easily be adjusted to four pitch positions.				
BENEFIT: Provides proper spinal support and body posture.				
OPTIONAL FEATURE: E-Z Leg Up Accessory:				
FUNCTION: The E-Z Leg Up is a leg support system that can be used for left, right or both legs. It can be positioned in an infinite number of locations along two planes.				
BENEFIT: Addresses conditions requiring elevation of the lower extremities such as Phlebitis, Post Phlebotic Syndrome, Venous Stasis and Peripheral Edema from any cause.				
BENEFIT: The E-Z Leg Up assists in the post-surgery recovery phase following Hip Replacement or Fractures; Femur Fracture; Knee Replacement or Reconstruction; Ligament or Tendon Repair; Tibial and Ankle Fractures; Foot Surgery and Amputation above or below the Knee.				
OPTIONAL FEATURE: E-Z Utility Tray:				
FUNCTION: Clamps on each side of the tray are easy to operate and can be released by the patient while seated in the chair.				
BENEFIT: Allows patient to remain in a properly seated position while eating.				
BENEFIT: Tray can be used as table surface for patient's other endeavors.				
OVERALL RATING:				

REMARKS: _____

PLEASE COMPLETE: HEALTHCARE FACILITY: _____ DEPT. _____ DATE: _____

EVALUATOR: _____ TITLE: _____ PHONE #: _____

PLEASE FAX TO 617-738-9894 OR MAIL TO ADDRESS BELOW. We thank you for your cooperation in this evaluation.
We value your feedback and have made important improvements to our products over the years based on your colleagues' recommendations.

Rehab Seating Systems, Inc. Eight Alton Place, Suite 3 • Brookline, MA 02446 • (800) 525-7328

Ascender™

ORTHOPEDIC AND BARIATRIC Seating Solutions

PRODUCT SPECIFICATIONS

Description	Features	Adj. Seat Hgt (in.)	300 lbs 20" W	500 lbs 24" W	1000 lbs 28" W
			Model #	Model #	Model #
Hip Chair	Standard	25/23	7000	7300	7500
Ultra Hip	Leg up Support	25/23	7001	7301	7501
Slant Hip	Forward Sloping Seat	25/23	7100	7700	7800
Ultra Slant Hip	Forward Sloping Seat and Leg up Support	25/23	7101	7701	7801
Transporter	Wheels	25/23	7200	7400	7600
Ultra Transporter	Wheels and Leg Support	25/23	7201	7401	7601
Multi-Purpose Chair	Forward Sloping Seat	20/18	8000	8200	8400
Home Chair	Adjustable Slant	20	9000	9200 (24" wide)	



Multi-Purpose Chair



Hip Chair



Transporter



Ultra Hip



Home Chair

CUSHION COLORS



Wine Rose



Ice Blue



Emerald



Wheat

STAIN COLORS



Light



Dark

ASCENDER and GLIDE-A-WAY are trademarks of Rehab Seating Systems, Inc.
US Patent Nos. 4358156 and 5277477
Patent Pending on M.P. models
Made in USA



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