

Statement of Medical Necessity and Equipment Justification Seating, Positioning and Mobility Assessment

PATIENT'S NAME: Bob Builder

AGE: 26 years old

REFERRED BY: PA Office of Vocational Rehabilitation

THERAPIST EVALUATING: Karen M. Kangas OTR/L

OTHERS PRESENT: mother, RTS

Identification of Needs

Bob has needed independent powered mobility now for several years. As we have lived through the changes in various local medical suppliers, and in equipment changes (in the commercial market place) we have finally been able to complete an equipment trial, and determine what type of chair with adaptive seating and access will work for Bob.

Bob is non-ambulatory and unable to push a manual wheelchair. He is also not able to manage a joystick on a standard powered chair. Bob is a 26 year old male with cerebral palsy, and is a candidate for independent mobility with a powered chair, adaptive seating, and alternative access.

Medical Considerations

Bob is currently medically stable. Bob has had in the past botox injections in his right upper extremity. His mother reports that the injections did appear to assist in some decreased spasticity in that extremity.

As Bob is aging, his spinal scoliosis appears to be more controlling of his posture, however, both he and his mother report that no pain nor apparent “impingement” is noticeable.

I would like to note here, that after working with Bob over this time, his cerebral palsy appears to be more of a dystonic type in nature rather than only spastic or athetoid (for additional observations, please see section on motor assessment).

Current Seating

Bob is currently seated in a **Quickie RX**, x-axle frame manual wheelchair. The chair has standard height adjustable, full length, removable armrests and 70 degree front hangers, with angle adjustable footplates with heel loops. The adapted seating consists of a planar back with fixed, padded trunk supports (Freedom Design’s), and a JAY 2 gel seat with bilateral, angled hip guides and a pommel. The seating also utilizes a padded pelvic positioning belt with a push button closure, and a clear tray upon which Bob’s **Pathfinder** (augmentative communication device) is placed for his use. Bob has a headrest which can be attached when riding in the van.

When Bob is observed within his seating system, and when communicating with him, Bob utilizes several different upright postural patterns within his chair. He leans forward from the hips to utilize his device most often, at times coming totally away from the back of the chair itself. At other times, he is able to rotate his trunk slightly, and then “trap” his one arm within the trunk support to assist him with stability while moving and then working. Bob moves forward and back, and rotates his trunk, finding positions to aid him in stabilizing postures so that he can isolate and utilize his head control to access his communication device. After Bob has made his specific selections, he raises his head, and moves back to the back of the chair, gazing at his communication partner. This series of motor patterns, is well established, and under his complete control. He has found by using the boundaries of his seating system, that he

can move within it, and change positions, while still maintaining control of his body. These patterns of movement within a seating system are critical and absolutely normal human patterns of movement. Bob is able to manage these patterns in spite of his diagnosis of cerebral palsy, and its subsequent increased muscle tone.

It is important that these patterns continue to be supported in whatever seating system is utilized.

Motor Assessment

Reflexes and Abnormal Muscle Tone/Range of Motion/ Motor Strength:

I took Bob out of his chair, and placed him on a standard kitchen chair, to better observe his musculoskeletal system, and the alignment and relationship between his pelvic and shoulder girdles.

Bob has quite a significant pelvic obliquity (this is an asymmetry in two planes of the pelvis, as measured at the ASIS's, or anterior superior inferior spinous processes or hip-bones) with the right ASIS located about 1 1/2" forward of the left ASIS, and approximately 1" lower than the left ASIS. His right hip also appears to "jut" forward, and I thought I felt a particularly noticeable bony prominence. His mother reports, however, that she feels this is the pin which was surgically located in that hip during surgery years ago, for hip stabilization.

Bob's spine reveals a spinal scoliosis, which appears to be the cause of the pelvic obliquity. As the pelvis is rotated, so must the trunk move, and then, the shoulder girdle, subsequently, mirrors the posture of the pelvis. In Bob's case this can be observed by the right shoulder being dropped and retracted while the left shoulder is elevated. Both shoulders exhibit postures of internal rotation, with the elbows then compensating by moving internally, exhibiting and increased supination of the forearm. The wrists then react with increased flexion, with the result of flexed fingers. As Bob works, however, he is able to bring his arms in close to his trunk, providing himself with increased stability, and allowing the whole upper extremity increased range. The fingers can then come out of the fist, and the wrist can often raise, especially on the right hand.

The trunk rotation and scoliosis, although apparently "fixed" in their posture, have not impaired Bob's pelvic mobility. This is remarkable. His lateral rib cage can be observed to be located almost at the front of his body, yet this posture, has not prevented him from trunk righting and head control.

He bears weight totally on the right hip. To gain and maintain control of his pelvis, he must bear down on his right leg, and pull it back into the seating system or press down on the footplate to gain stability. The hip then is "driven" into the gel portion of the seat, and the hip guides, and pelvic belt must be quite snugly secured to assist Bob's pelvis in maintaining its stability for mobility. If the legrests are removed, Bob has difficulty holding himself in an upright posture.

Bob does demonstrate moderate spasticity in all extremities, and although he does exhibit some active range and control, he also exhibits limitations in all joints.

Voluntary, Isolated, Controlled Movements:

Bob has the most control of his head, neck and trunk, and of his left upper extremity proximally.

After working with Bob, now over the last two years, I have discovered through our various equipment trials, that his body appears to demonstrate characteristics of dystonia, rather than spasticity or athetosis. Dystonia has some unique characteristics which Bob's body

demonstrates. In dystonia, equilibrium, knowledge of body postures, and proximal stability are generally evident. Problems of control arise (with increased tone) when inadvertent pressure occurs distally (hands and feet). When this occurs, the body must shift into a weight bearing posture (at the pelvis or shoulder girdle) for the increased tone to decrease again. When demonstrating tone, an extremity can appear to get “stuck” in a particular posture, and will, with a weight shift, release. However, if the extremity demonstrating tone is held by an adult, the tone will increase rather than relax.

With individuals with dystonia, generally head control and proximal control are evident. The individual often develops unique postures and sequences of postures to prevent the increase of tone upon any inadvertent touch. The individual requires “judicious” strapping for conscious control of the pelvis, and often the lower extremities. Too much restraint, however, is interpreted by the body as restraint itself, again, increasing tone. In short, seating is unique to individuals with dystonia, and once they have discovered what will work for them, it is critical to maintain these “supports.” Too much contact with the surface of the seating can cause a lack of control rather than support. Also, once the familiarity of the task is automatic, graded, isolated control can be demonstrated. When in a new task or new situation, increased tone will be evident.

For Bob to maintain the control he has, especially given, the rotation occurring within his spine, it is extremely important that he remain able to find the external supports to aid him in stabilizing and controlling his body.

Bob is not only able to manage his trunk, and his head, but he can also isolate his one upper extremity to place his elbow upon a switch for activation.

Accuracy, Fatigue, Endurance:

Bob is extremely accurate and consequently communicative when using his augmentative communication device, the PathFinder, with a headstick. He is clearly competent in communication, and has excellent control and endurance during the day.

Sensory-Motor Patterns and Processing:

Bob does appear to have a good understanding of how his body works, and how to stabilize and place himself. He does not appear to have any motor processing problems of dysfunction.

Initially, I thought, however, that increased support in seating would be helpful as well as utilizing his head control for access to managing a powered chair. However, as Bob attempts to move into a neutral posture or “reach” back with his head, he, in fact loses postural control and stability and his tone increases. He, instead, is able to manage placement of his elbow (as his upper extremity is flexed) and move it within a large enough range for switch activation. This position will also support his current communicative competence.

Current Body Measurements

<u>Seat to shoulder</u>	<u>20”</u>
<u>Seat to top of head</u>	<u>29”</u>
<u>Seat to axilla</u>	<u>15”</u>
<u>Chest Width</u>	<u>12”</u>
<u>Hip Width</u>	<u>14”</u>
<u>Seat depth</u>	<u>17”</u>
<u>Seat to heel</u>	<u>16”</u>

Current means of mobility

Bob is currently totally dependent on others for his mobility.

Equipment Needs

The powered chair Bob had when I met him was never able to be adequately utilized. He could not control the head array, nor his own posture. Again, at first, I thought he needed a tilt in space option as well as more contoured seating. I had not yet observed his dystonic reactions as dystonic. However, as we developed the more contoured seating and attempted to use it with electronic switch head control, then it was apparent, that this posture was not going to be able to be managed by Bob adequately. It was also evident throughout this equipment trial, that the characteristics of dystonia were pronounced.

We were then able to change our direction, and arrive at different seating needs. We needed to replicate exactly the seating that is currently working for Bob in his manual wheelchair. I had hoped we could utilize alternative access with an “add-on” type of programmable electronics and batteries on a manual chair. However, this system’s (the e’fx system by Frank Mobility) electronics have been altered, and they do not accommodate switch access which we need.

Bob had always wanted a more simple chair, and one not so large. He did not need powered seat functions, neither a tilt nor a recline. In fact, his body needs to remain securely in place so that he can utilize his head, trunk and upper extremities throughout the day.

Talking with Adaptive Switch Labs, Inc. we were able to utilize a more simple power base, with programmable electronics (needed for alternative access and multiple environments), in one system. Within that system, Bob’s current adaptive seating can be accommodated.

Equipment Trial

The RTS. was able to bring the Invacare Nutron powered base to show to Bob and his mother. We were able to see it within Bob’s current home environment. We were also able to determine that Bob’s current seating system which is working well for him can be duplicated to fit into this powered chair base. I was able to “simulate” managing a proximity switch at Bob’s elbow, as he preferred, on the tray, and we were then able to plan for the adaptations required.

Seating and Powered Mobility Equipment Recommendations

Bob’s new chair will **need standard height adjustable, full length, removable armrests** to accommodate and support his augmentative communication device adequately, so that he can continue to communicate with it. He will also need **swingaway front hangers, 70 degree front hangers, with angle adjustable footplates with heel loops**, these will adequately support his lower extremities which give stability to his pelvis and trunk. He needs **Quickie’s style footplates** themselves as the edges are curved, allowing no bumping when turning in the small spaces within his home. Bob also needs a **padded calf panel**, between the legrests, to prevent his one lower extremity from getting caught behind one of the front riggings if he has a dystonic reaction of increased tone.

Bob will need a **planar back with fixed, padded trunk supports (Freedom Design’s), and a JAY 2 gel seat with bilateral, angled hip guides and a pommel**. This system has provided his trunk with stability, while not over-controlling his body, nor setting off any increase in tone due to his dystonia. This system includes a **seat pan from Freedom Designs** upon which the Jay 2 cushion is placed upon with velcro. This allows ease of removal and cleaning.

His seating will also need a **padded pelvic positioning belt with a push button closure** which allows Bob's pelvis to be held firmly in place, while he is able to manage his trunk, head and upper extremity. He needs the padding to protect his slender frame, and the adjustability of the belt to provide security no matter what seasonal clothes he is wearing.

He will need a **clear tray** as he currently uses, with a **lip around the edges**, to prevent objects (specifically his augmentative communication device) from falling off the edge. Bob also uses the tray to "protect" himself, and predict his body's posture, again, from any inadvertent touch, distally, which can cause increased tone upon a dystonic reaction. The tray will also **need a strap with a buckle** to hold it in place at the back of the chair.

Bob will also need a **headrest, with drop-down hardware**, to be available for use for safe, passive transport, yet, which can get out of the way during his daily activity.

Bob needs to use **Invacare's Nutron with programmable electronics** as a powered base. It will support his current necessary adaptive seating, and will not be a base which is very large for his very small environment. Normally this powered system only comes with a joystick configuration and non-programmable electronics. However, we are able to obtain MKIV's **programmable electronics** through Adaptive Switch Labs, Inc. allowing this more simple powered base to be used with alternative access, specifically single switches, managed with an elbow. A remote programmer will be needed to literally "program" the chair to function within each specific environment. It will also allow Bob's family to determine any service visits required as problems like motor balance, and battery length of life. These programmable electronics will come with a **visual display**, which will need to be mounted on an armrest, and fit over Bob's existing tray. The mount also needs to have a flip-down component, so that it can get out of the way when the tray needs to be removed or placed back on before and after transfers. The standard display mount simply will not perform this act, so **Stealth Products' visual display armrest mount** is needed. It allows ease of placement for Bob's line of sight as well as having a drop down component for ease of movement for transfers. An **attendant controller** will also be needed. This will not be used to assist Bob when driving, he will be totally independent, but rather it is for an attendant to manage the chair when Bob is not in the chair.

The powered chair's wheels need to have **airless inserts**. This allows Bob to be independent in his maintenance of the chair, and prevents him from a true "blow out" and any problem if he has a "flat" tire while driving.

To drive the chair by single switches (alternative access) a switch interface box is needed to attach to the control module of the electronics of the chair.

A **custom mounting box** will be devised to manage the proximity switches to be used at his left elbow. There will be **five proximity switches** included in this small "box" which will then have a single cable and a **"quick disconnect"** from the tray to its interface on the chair.

This will allow the tray to be removed efficiently upon transfers. The five switches will include **4 directional switches and an On/off switch**. Proximity switches are electronic switches which require zero pressure. They can reside within a small box on the tray, so that cables are not exposed. Their location will be marked on the top of the box, and when Bob touches this location with his elbow, the chair will move in that direction. Since they are proximity switches they can be located under this box and still be activated.

Primary Use of powered chair

Bob will be using this powered chair for independent mobility. He is already competent with his augmentative communication device and he is employed. He is a perfect candidate for independent powered mobility.

How will the chair be transported?

Bob is currently transported in a van with a lift. The system recommended should be able to fit within his current van. Its size is not much different than his manual chair, and this chair, too, can be tied down.

Training and Practice

With a powered chair, training will need to take place over time. On the day of delivery an initial lesson will occur. At this time, Bob will be taught how to manage the chair, and as it is accomplished, a training schedule and plan will be made. It is critical that training occur at an individual and appropriate pace. Often, this lack of training is why a powered chair is never fully mastered. The chair changes the entire environment of Bob and his family. All of them need to feel safe, secure, and competent in its use.

SPECIFIC EQUIPMENT RECOMMENDATIONS

*****Please note:** *These specific items are the exact items that this person needs. The specifications and brands themselves should **not** be changed. They have been chosen with great care, for durability, ease of use, compatibility, and accessibility and for this individual's own particular needs. (*

1. Powered Chair

Invacare's Nutron R51LXP

w/frame color, Silver vein

w/16" x 18" seat dimensions

w/full length adjustable height armrests with standard armrest pads

w/70 degree swingaway front riggings

w/angle adjustable footplates (but with Quickie brand foot plates)

w/ 12.5 inch rear wheels with airless inserts

w/ rear anti-tippers

w/remote programmer

From: Invacare Corp., One Invacare Way., Elyria, OH 44035-4190; 800-333-6900; www.invacare.com

From: Mr. Help, CCC Rehab Co

2. Type of Adaptive Seating

- a. Freedom Designs solid unpadded seat and Planar "I" back
- b. Freedom Designs 5" x 5" flat summer/winter lateral thoracic supports
- c. Freedom Designs 8" x3" hip guides
- d. Freedom Designs 8" x 8" flat flip down headrest
- e. Jay 2 seat cushion with extra cover & medial adjustable thigh support
- f. Quickie foot plates for angle adjustable footplates
- g. AES clear tray with added external Lip/rim and back straps with buckle
- h. AES calf panel
- i. Bodypoint's Dual pull padded pelvic positioning belt, with pushbutton closure

From: Adaptive Equipment Systems, 7128 Ambassador Rd., Baltimore, MD 21244; 800-237-2370

From: Bodypoint Designs, Inc., 704 NE Northlake Way, Seattle, WA 98105; 800-547-5716

From: Freedom Designs, Inc., 2241 Madera Rd., Simi Valley, CA 93065, 1-800-331-8551

From: JAY Medical Ltd., P. O. Box 18656, Boulder, CO 80308-1656; 800-648-8282

From: Sunrise Medical, 7477 East Dry Creek Pkwy, Longmont CO 80503; 800-456-8165

From: Mr. Help, CCC Rehab Co

3. Switch Interfaces, Switches and Electronics

- a. MKV electronics ****
- b. MKV visual display****
- c. Stealth mount for visual display with longer tube
(to allow it to swing around, and on top of Bob's tray on the right side)
- d. Attendant joystick with Stealth mount for rear of chair
- e. 5 proximity switches; 4 for control of the chair; 1 for on/off
- f. Quick disconnect for switches above,
to be mounted by Rehab Equipment in small box to fit on top
of tray, on the left to be managed by Bob's left elbow

****We are adding expandable, programmable electronics, an older version, available to then utilize this frame and size of wheelchair needed in this patients' home environment.

From: Adaptive Switch Labs, Inc., 125 Spur 191, Suite C, Spicewood, TX 78669; 800-626-8698;
www.asl-inc.com

From: Stealth Products, Inc., 103 John Kelly Drive, P.O. Box 458, Burnet, TX 78611; 800-965-9229;
www.stealthproducts.com

Local: CCC Rehab Co.

4. Delivery Assembling, Instruction, Training

This is another critical piece of this entire chair actually working. This whole chair needs to be assembled and checked, so that each piece fits, and to change a piece if it does not. This system must be safe and fit Bob adequately. In fact, on Bob's initial fitting, we will be "mocking up" the box to house the switches, as we will be able to arrange them at that time, and he can drive. From this "mock up" a permanent position and mounting will be developed for use.

This is the final customization and one of the most important parts of the entire process. Both the therapist and the dealer/vendor need to be involved, working together.

5. Choosing a medical supplier/dealer.

The Builders' have chosen CCC Rehab Co, as a local dealer, with my support. They have demonstrated to me, that they are able to provide technical and service support as well as remaining certified in installation and service by having completed the various manufacturers educational courses.

If there are any questions regarding the costs of the components recommended, please call Mr.RTS. first, and/or the manufacturers. I have chosen the components based on my expertise as a therapist dealing with seating and positioning of patients with complex bodies. The choice of items is mine, the delivery and putting together is both the medical supplier's and my responsibility. Any cost questions are for the medical supplier. I choose products as to the patient's needs and the match between the features of the product and the needs of the patient, not their cost, but their value. If there are products which have equal characteristics and a price variation is noticeable, cost effectiveness is always considered.

If there are any questions or concerns regarding this report, please do not hesitate to contact me.

Karen M. Kangas OTR/L

Date

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Physician

Date