Adaptive Yoga for Individuals with Cerebral Palsy

BY

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PROJECT

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RM

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I. INTRODUCTION AND BACKGROUND INFORMATION

A. Introduction

Yoga is an ancient discipline designed to bring balance and health to the physical, mental, emotional, and spiritual dimensions of the individual (1). The word *yoga* literally means 'union.' This union can take on different forms when practicing yoga, whether connecting movement with breath or mind with body. Yoga is often described as an eight-limbed path in which the practitioner's body and mind are trained through yoga poses (*asanas*), breathing techniques, and meditation so that one can reach his or her full potential as a person.

A growing body of evidence supports the belief that certain yoga techniques may improve physical and mental health of people both with and without disabilities (1). For the purpose of this project, I have created an adapted yoga manual for individuals with cerebral palsy (CP). The yoga shown in this manual will be therapeutic, designed to improve the well-being of individuals with CP

Even though no studies appear to have been conducted on the effects of yoga on CP, considering the positive effects yoga has had on other disabled populations, it is reasonable to believe that yoga can improve the lives of people living with CP. *Cerebral palsy* was defined in 2006 by a panel of experts as "a group of permanent disorders of the development of movement and posture, causing activity limitation, that are attributed to non progressive disturbances that occurred in the develop fetal or infant brain. The motor disorders of cerebral palsy are often accompanied by disturbances of sensation, perception, cognition, communication, and behavior but; by epilepsy, and by secondary musculoskeletal" (2).

Yoga therapeutics is defined by the International Association of Yoga Therapists as "the application of yoga for health benefits. Practitioners of yoga therapy integrate yoga concepts of breathing activities, physical postures, and meditation with an understanding of pathological conditions such as back pain or depression in the management of people with these conditions" (3). Whereas traditional yoga practice is primarily concerned with personal enlightenment of people without pathology, yoga therapy focuses on a holistic treatment for people with various somatic or psychological dysfunctions. According to Feuerstein, "the goals of yoga therapy are to promote health benefits and to promote self-awareness for the purpose of enlightenment. Yoga therapy offers an alternative approach to conventional exercise training, and it also can be adapted to meet the needs of people with physical limitations" (3).

B. The Manual

The purpose of this manual will be to show how traditional yoga poses can be adapted for people with CP with the use of props and other methods of adapting yoga poses. Yoga props can make yoga accessible to people of different abilities. The basic yoga props are blankets, bolsters, yoga straps, chairs, and yoga blocks. Thus, I will demonstrate how using yoga props and making modifications can make yoga more accessible for people with CP, both those who are ambulatory and those who use wheelchairs, so that they can receive the same benefits from a pose as yoga practitioners who are able to complete the classical form of the pose.

The adaptations in this manual are designed to show an effective way to complete yoga poses for someone with CP. However, it is important to note the instructions for adaptations given in the manual are suggestions for adaptations; thus, the yoga practitioner may need more or

less support to complete a certain pose, based on his or her abilities. For example, if a yoga practitioner's back is hurting or overarching while seated, he or she may need to sit on two bolsters or blankets for support instead of one. The general rule is that one must respect the needs of the body. If the yoga practitioner is unsure of the needs of his or her body when practicing yoga, he or she should contact a healthcare professional before starting yoga.

The intended audience for this yoga manual is yoga therapists, teachers, and students. The manual will be designed in a way that each of these groups can benefit and be informed by the information in the manual. The purpose of the manual will be to inform teachers, therapists, and students how each pose shown can be modified in an effective way to benefit people with CP. Thus, even if a student cannot do the full pose, he or she can still receive the benefits of the pose if it is done in a safe, modified version. The goal of the manual is to demonstrate to people with CP how they can practice yoga in a safe manner and to give yoga therapists and teachers effective ideas for adapting yoga poses.

The manual will include 16 yoga poses. Each pose will include the following sub-categories: 1. Benefits of the pose, describing what is the intended physical and/ or mental purpose of the pose; 2. Precautions, listing conditions people may have that would prevent them from doing the pose; 3. Setting up the pose, step-by-step directions on how to get into and out of the pose; 4. Key actions in the pose, what physiological actions the practitioner should be concentrating on in the pose; 5. Illustrations, pictures that demonstrate variations/adaptations of the pose.

1. The Author's Yoga Experience

I have recently finished a 200-hour teacher-training course, and I am a certified yoga teacher. I have been studying yoga for my personal therapeutic benefit for the past nine years. Thus, I have experience doing and teaching many of the yoga poses I will demonstrate. I have not been formally trained in a teacher-training program on yoga therapy, but the manual has been reviewed by someone who is experienced and formally trained in yoga therapy.

2. Review of Manual

The person who will review the manual has several years of teaching experience and has worked with many clients therapeutically (see Appendix for reviewer's comments). The teacher I learned most of these adaptations from is one of the most respected teachers in therapeutics in the Chicago area. He has been practicing yoga for over 40 and has many years of experience in yoga therapeutics training.

3. Use of Props

Props are important in Iyengar yoga, which is based on a versatile system of poses marked by attention to precise anatomical alignment and ease within poses (4). This system of yoga includes a modified approach to performing the *asanas* (postures), using yoga props and supports, for individuals who are stiff, immobile, injured, or ill, allowing poses to be adapted to the age and fitness levels of participants to meet their individual needs (4). Props allow the beginning yoga student to learn the poses gradually and accurately, despite limited experience and flexibility (5).

Under Iyengar principles, if practitioners cannot safely perform a classical pose, they should use props that will allow them to complete the pose in a safe manner. In a study on gentle Iyengar yoga and its effect on the gait, participants were encouraged to use props "as needed to support participants in any yoga positions that were difficult or uncomfortable for them and to minimize risk of overstretching or injury" (6). The results of that study showed significant improvements in pelvic tilt, stride length, and hip extension. Furthermore, in a study on Iyengar yoga and young adults with rheumatoid arthritis, participants were shown how to do poses with the use of props to protect the joints, increase circulation, and develop extension and strength without tension or stress. Results showed significantly improved pain, pain disability, and depression (7).

C. Therapeutic Yoga

Many different types of yoga therapeutic training are available. Two of the most highly regarded types are Iyengar and Integrative Yoga Therapy. The Iyengar method was described above. Integrative Yoga Therapy was founded in 1993 by Joseph LaPage, who wanted to "create a training program with the focus on Yoga as a healing art which would be student centered, non-dogmatic and in alignment with the latest approaches to teaching, while remaining deeply rooted in the yoga tradition" (8). Integrative Yoga Therapy combines asana, pranayama, mudra, Yoga Nidra, mantra, and meditation into a complete package in which they can be integrated and used for therapeutic classes directed toward specific groups and for one-on-one yoga therapy sessions.

In July 2012, the International Association of Yoga Therapists proposed recommended educational standards for training yoga therapists (9). The goal of these standards is to support the development of yoga therapists who are well trained in the teachings and practices of yoga for health, healing, and well-being. The length of the program must be at least 800 hours, with 600 of these hours being contact hours. The training hours are divided into five sections: yoga foundations, biomedical and psychological foundations, teaching and therapeutic skills, yoga therapy skills and their application, and professional practice (9).

1. Review of Literature on Therapeutic Yoga for Individuals with Disabilities

Many articles have discussed the benefits of therapeutic yoga for persons with disabilities. These studies indicate the physical and mental benefits of yoga and address a wide range of disabilities. Yoga programs have been shown to improve balance and coordination of individuals after strokes (10). In a qualitative study, the responses of participants who had had strokes indicated that a number of changes had influenced functional ability. Often, participant responses indicated that the yoga program had stimulated an improved body awareness and, in some cases, body sensation. Participants in the yoga program also indicated a number of positive effects at the psychosocial level of being, such as increased energy, confidence, concentration, and reduced stress. Many participants also spoke of improved sleep during the program (11).

Moreover, yoga improves hand-grip strength in patients with rheumatoid arthritis (7, 12). The article 'Yoga for Young Adults with Rheumatoid Arthritis: Results from a Mixed-Methods Pilot Study' explains that, "the emphasis on alignment in this practice [Iyengar yoga] protects the joints and is unlikely to irritate inflamed joints; the use of props to reduce tension and stress is

believed to reduce inflammation. Focus on the alignment of the posture, the breath, and nonjudgmental awareness of gripping, tension, and body sensation provides additional meditative benefits" (7).

A 16-week Iyengar yoga therapy intervention resulted in a significant reduction in self-reported disability and pain and reduced use of pain medication compared to the control group who were in a educational program for with individuals with chronic low back pain (13). Another study of individuals with chronic low back pain showed significantly greater reductions in functional disability and pain intensity in a yoga group as compared to a control group at 24 weeks. A significantly greater proportion of yoga subjects also reported clinical improvements at both 12 and 24 weeks. In addition, depression was significantly lower in yoga participants (14). Finally, practicing yoga also led to the reduction of pain in those with osteoarthritis and those with carpel tunnel syndrome (15, 16).

The findings of an exploratory study on the effects of Iyengar yoga on the gait of the elderly showed that yoga may improve hip extension, increase stride length, and decrease anterior pelvic tilt in healthy elders and that yoga programs tailored to elderly adults may offer a cost-effective means of preventing or reducing age-related changes in these indices of gait function (6). In addition, Iyengar yoga has been shown to improve the well-being and quality of life of those living with cancer (4, 17, 18). Finally, significant decline in depression, anger, anxiety, neurotic symptoms, and low frequency heart rate variability in diagnosed depressed individuals (5).

Studies on yoga for those with multiple sclerosis show that yoga is effective in decreasing fatigue (19, 20). In addition, a study on how yoga can affect the balance, speed of endurance walking, and quality of life for people who have multiple sclerosis showed that, for participants with mild-to-moderate disability due to multiple sclerosis, their balance scores improved significantly after eight weeks of yoga intervention, with significant improvement in the mean 2-minute walk time (20). Yoga practice was also shown to increase significantly some quality of life measurements, such as physical function, emotional well-being, and energy (19).

Many studies on the effects of yoga on asthma have shown that yoga practitioners have shown significant improvements in pulmonary functions (21, 22), quality of life, reduction in airway hyper-reactivity, frequency of attacks, and medication use (23). Studies also have shown that yoga is an effective treatment for hypertension through reducing blood pressure (24). The effect on blood pressure may be attributed to slow breathing exercises (24, 25). Yoga has also been shown to lower blood pressure in pre-hypertensive HIV-infected adults with mild-to-moderate CVD risk factors (26). A study on the effects of yogic breathing on chronic obstructive pulmonary disease showed that, compared to baseline breathing, participants showed a decrease in breathing rate and greater depth and significant lengthening of both inhalation and exhalation (27).

D. Yoga Programs for Individuals with Disabilities

According to a website, Yoga for the Special Child, a type of yoga created for children with disabilities, yoga can "help to significantly reduce high muscle tone, which is characteristic of most children with cerebral palsy. Holding a pose gives the muscles and tendons a relaxing

stretch, releasing overall stress and tightness throughout the musculature and around the joints" (28). The author of the article asserts that yoga helps the child develop greater coordination and range of motion.

Evaluations of programs including yoga classes for people with disabilities have been conducted. One such evaluation analyzed the effectiveness of an Iyengar yoga program on breast cancer survivors (17). This pilot study was an evaluation of an existing program offered through Campus Recreation at the University of Alberta in Edmonton, Canada. The results of the study showed that "most participants endorsed that they experienced improvements in anxiety, stress, depression, body image, and happiness on the direct program evaluation. Findings from this evaluation indicated that all participants found participation in Iyengar Yoga to be beneficial and enjoyable, that people important to them were supportive, and that they were confident they could do the exercises and were motivated to attend all classes" (17). Another study examined a yoga program for veterans with chronic low back pain. These results indicated that VA patients showed sizable decreases in pain and depression along with increases in energy levels and the mental health summary score for HRQOL (29).

Mind Body Solutions, a non-profit organization in Minnesota created by Matthew Sanford, teaches Iyengar yoga to individuals with all types of disabilities. The mission at Mind Body Solutions is to transform trauma, loss, and disability into hope and potential by awakening the connection between mind and body (30). The staff at Mind Body Solutions have seen the following results for people who have worked with the program: "improved balance, motor planning, transfers and forward reach, the ability to control and manage muscle spasms fewer

falls, increased ability to manage pain, relief from depression, awareness of their entire body, even the parts they cannot feel" (30).

E. Physical Effects of Cerebral Palsy

Although CP is a non-progressive disability, adults with CP often develop musculoskeletal and neurological symptoms, such as severe pain, chronic fatigue, and a premature decline in mobility, fine motor function, and independence (31). Several investigators have found that, for adults with CP, age-related changes occur earlier in life than for people without CP. "A disabling condition such as CP frequently causes a 'cycle of deconditioning' in which physical function deteriorates, followed by a further decrease in physical activity level, and a cascade of increasing functional decline" (32).

Furthermore, in studies investigating pain and CP, pain has been an issue for 67–82% of participants (31). The back, hip, and lower extremities were the most common pain locations for participants in these studies. In addition, osteoarthritis was reported as a cause of pain in several studies (31). Finally, adults with CP experience pain associated with contractures, spasticity, orthopedic deformity, fractures, poor nutrition, pressure from sitting on bony prominences, weakness, and fatigue (31).

Most studies report decreased functional status among adults with CP. For example, in one study, one third of the participants reported modest to significant decreases in walking ability and ability to perform self-care tasks (31). Moreover, numerous musculoskeletal impairments, including patella alta, hip displacement, spondylolysis, cervical stenosis, scoliosis,

foot deformities, and disuse osteoporosis, have an effect on the adult with CP (31). In addition, spasticity, which affects 70% of individuals with CP, is a major contributor to the development of contractures and bony deformities (31).

Individuals with CP have significant muscle impairments that may compromise their motor function long before they reach adulthood. Secondary to their neurological lesions, persons with CP have an inability to activate their target muscles maximally (33). Furthermore, CP may reduce and slow muscular growth in individuals with CP. Children with CP may reach developmental milestones later in life (33). Children who achieve their milestones later may miss an opportunity for early muscle development. The exposure of these children to sports and exercise may help increase muscle mass, but the effects of long-term exercise programs for individuals with CP have not been studied (33).

Muscle volume in adolescents and adults with CP is reduced throughout the lower limbs (33). The large muscle deficits of those with CP during childhood, coupled with the natural history of decline of muscle size and properties in adulthood, may contribute to an early loss of mobility (33). In typically developing older adults, progressive resistance training has been shown to increase muscle volume and strength and to improve function and mobility (33). Little research related to strength and resistance training for adults with CP has been conducted. Nevertheless, two papers reported improvements in strength and sit-to-stand performance (34, 35).

F. Cerebral Palsy and Exercise

In 2003, the American Physical Therapy Association's Section on Pediatrics and its Research Committee determined that there was a critical need to identify and promote effective physical fitness interventions for children with CP (31). In 2004, a research committee convened a summit with the purpose of fostering research in the area of physical fitness in children with CP. The findings of the summit were that a great need existed for more research involving CP and fitness (31).

Although many studies have addressed complementary and alternative methods (CAM) in children with CP, no known studies have addressed such methods for adults with CP (36). I conducted a literature search to find any studies that concerned CP and yoga for either children or adults and was unable to find any published studies. Even though I have not seen any published studies regarding CP and yoga specifically, there are many other studies regarding CP and exercise, strength training, and stretching that show physical activity can improve the movement and strength of individuals, usually children, with CP.

Several strength-training programs have been shown to result in improvements for individuals with CP. Studies have shown an increase in muscle strength in the following: knee, hip (37), calf, Achilles tendon (38), and plantarflexor (39). Improvements in the following have also been noted: gait (40, 41), walking velocity (40, 41), and gross motor function (34, 35, 40, 41, 42). Most of these studies focused on children and CP. The yoga manual would be for both children and adults. However, I would hope that adults with CP would especially benefit from this manual because there is a lack of resources, programs, and studies for adults with CP.

In the literature on CP and physical movement or activity, many of the studies focus on lower extremity exercise. Yoga offers many exercises that stretch and strengthen the leg muscles and bring the entire body into better alignment. For example, in *Supta Padangustasana* (a supine hamstring stretch), when the right leg is lifted to 90 degrees in the air, the left leg needs to remain strong with the foot flexed. In the upper body, the student needs to continue to lengthen the side ribs and collarbones and keep the shoulders sliding down the back. Thus, it is important for the entire body to stay in proper alignment.

G. Conclusion

Research studies indicate that adapted yoga has been beneficial for persons with various types of disabilities. There have been no published studies and few resources available for yoga for persons with CP. However, research shows that exercise and physical activity can improve the physical well being for persons with CP. Therefore, based on the research cited in this article, it is highly possible that yoga can improve the physical and mental well being of persons with CP.

II. MANUAL OF ADAPTIVE YOGA POSES

A. Opening Centering

Benefits: Encourages centering and internal awareness. This simple meditation helps to build the foundation for more advanced meditation (43)[1]

Setting Up the Pose

- Sit on a chair in a comfortable position while keeping the spine as straight as possible. You can place blanket or bolster on the chair behind you to support the spine.
- Feet should be flat on ground.
- Hands can rest in the lap wherever they are comfortable.
- If possible, close eyes and begin to observe your breath coming in and out.
- Do not try to control your breath, simply observe and feel it
- After several breaths begin to deepen the breath. Begin the inhale from the low belly and allow the breath to rise up to the collarbones. Exhale normally.
- Do this for several rounds, focusing on your breath.
- After several rounds of breath open the eyes and begin breathing normally again.

Key Actions

- Focus on your breath

To make this pose more comfortable you can do any or all of the following:

- Place a bolster or blanket behind you on chair to support spine.
- Place blanket on lap to rest hands in
- Place blanket or bolster under feet if feet do not reach or are solidly connected with floor.

[1]All yoga poses in this manual use the following reference: L.Gaspar, Prairie Yoga Teacher Training Manual, 2010.


Figure 1. Opening/Centering with Props.

B. Cat-Cow

Benefits: Warms up the spine; stretches upper spine on inhale and expands the upper chest. Stretches lower spine on exhale. Links breath to movement.

Setting Up the Pose

On Hands and Knees

Note: If being on your hands and knees is a challenge for you or you cannot bear weight on your knees, please do the chair version of this pose. This should be a warm up pose that does not require a substantial amount of effort.

- Set up on hands and knees, with hands under shoulders and knees under hips
- Exhale, round low back, contract belly, and look downwards
- Inhale, press sternum forward, widen collarbones, and look up slightly
- Repeat five times moving rhythmically with your breath

Seated Version

- Sit with a tall spine
- Feet are solidly grounded on floor
- Exhale, round low back, contract belly, and look downwards
- Inhale, press sternum forward, widen collarbones, and look up slightly
- Repeat five times moving rhythmically with your breath

Key Actions

- Initiate movement from spine; not the head and neck
- On exhale, focus on bringing belly towards low back
- On inhale, focus on expanding the chest

Starting Position

Exhale

Inhale

Figure 2. Hands and Knees Cat-Cow.

Starting Position

Exhale

Inhale

Figure 3. Seated Cat-Cow.

C. <u>Bharadvajasana</u>

Benefits: A gentle twist that works the lumbar, thoracic, and cervical regions of the spine. It energizes the kidneys and massages the abdominal region. The primary focus of this pose is to twist the upper back

Setting Up the Pose

Seated on Ground

- Sit with legs to the side, shin of top leg should be crossed over arch of bottom foot
- Sit on as many blankets as needed so that the pelvis is level. If you cannot keep pelvis level and/or the lower back from rounding on one to three blankets, please try the chair version of this pose
- Place the left hand on outer right knee
- Inhale, and lift the pit of the belly
- Exhale, and twist the chest to the right. Allow the head to follow and gaze over the right shoulder
- Right hand comes to block placed behind you on the right side of body
- Come out of the twist on an exhale

Seated in Chair

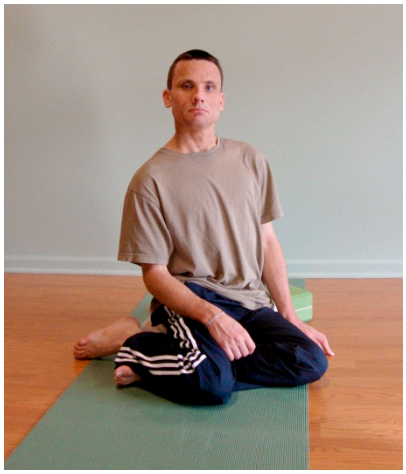
- Sit on the side of the chair
- Feet are hip distance apart and feet solidly on floor.
- Place block or other prop in between knees and squeeze in to keep legs stable
- Place a height under feet if needed to ground feet (short student)
- Place a blanket underneath the buttocks if hips are lower than the knees (tall student.)
- Inhale and lift the pit of the belly
- Exhale and twist the chest to the right. Allow the head to follow and gaze over the right shoulder
- Come out of the twist on an exhale

Restorative Version

- Sit with legs to the side, shin of top leg should be crossed over arch of bottom foot
- Place short end of bolster a few inches from hip
- Place blanket on bolster to support chest
- Inhale lift the chest
- Exhale twist towards bolster
- Look straight down at bolster. Walk hands out on the floor and allow your upper body to descend on to the bolster
- Turn head to one side when it reaches the bolster
- To exit pose, turn head so that it is looking straight down at bolster and push up with arms to a seated position
- To make pose more accessible and comfortable you can raise bolster up on an incline and add height, such as blocks and blankets under arms

Key Actions

- Attempt to lengthen the spine on each inhale and twist a little further on exhale
- Broaden chest and collarbones
- Descend the shoulder blades down the back




Seated on Blanket


Seated on Chair


Restorative Setup


With Many Props


With Few Props

Figure 4. Bharadvajasasana**.**

D. Balasana

Benefits: Stretches, the thighs, hips, and ankles, opening up space in the body. Balasana is spine lengthening and good for the back and neck. It is a comforting pose and helps one to become grounded and centered. It calms the frontal brain and lowers blood pressure

Setting Up the Pose

- Start on hands and knees
- Bring toes together and widen knees slightly
- Sit back on heels. Use blanket roll under the shins it your sit bones do not come down on the heels
- Reach arms forward along floor. Spread about a foot or shoulder distance apart
- Spread the fingers wide
- Allow forehead to rest on mat. See restorative version if this is not possible

Key Actions

- Reach arms forward as you press hips down onto heels
- Widen chest, shoulders, and side ribs
- Allow ribcage to descend between thighs

Adaptations

- **Restorative Balasana:** Use a bolster or blanket to add height under head, chest, and arms. If you are doing the restorative version, use setup shown below. Use a variation of props that ensures comfort in the pose for you. You can use blocks under props to give them more height. Be sure to angle bolster to give maximum support to ribs, chest, and sternum. Use blanket on low end of bolster to provide extra support to sternum.
- Place blanket between heels and sit bones

Restorative Balasana

Balasana with Blanket between Sit Bones and Heels

Figure 5. Balasana.

E. Adho Mukha Svanasana

Benefits: This pose provides benefits for the entire body. It lengthens the spine and hamstrings, stretches calves, stretches and tones the arms. It also relieves fatigue

Setting Up the Pose

Standing against Wall

- Face the seat of the chair. The chair should be placed against wall
- Bend your knees and fold forward
- Place hands on each side of chair seat, you may want to place a pad on seat of chair so hands do not slip
- Press strongly through hands, engaging the arms
- Walk legs back and press heels towards floor
- Let head hang between arms

Seated in Chair

- Sit with chair about a foot or two away from wall
- Widen legs to corners of your chair, press feet firmly into ground
- Raise arms overhead and press palms strongly into wall with fingers wide
- Don't bend the elbows, shrug the shoulders, or narrow the collar bones.

Key Actions

- Spread fingers and palms as wide as possible
- Keep the palms pressing down, as the forearms lift away from chair or wall
- Press thighs firmly back
- Stretch calves towards heels
- Expand chest and widen collarbones

Standing Ahdo Muhka Svanasana

Seated Ahdo Muhka Svanasana

Figure 6. Adho Mukha Svanasana. Begin with chair against wall.

F. Tadasana

Benefits: Helps one to become steady, centered, and self-aware.

Setting Up the Pose

Seated in Chair or Standing

- Stand or sit with feet hip distance apart
- Point feet forward and spread the toes wide
- Balance your weight evenly between the two feet
- Extend your arm down by your sides

- Lift your chest
- Gaze at the horizon

Key Actions

- Press top of the thighs back
- Activate arms and reach your fingertips down towards the ground
- Lift sternum and broaden collar bones
- Lift from the bottom of the belly
- Shrug the shoulder blades down the back and press them into the front body to open the chest
- Center ears over shoulders
- Balance your weight so that it is equal throughout the body.

Adaptations

- Stand with the back body against a wall for extension of the spine upwards.
- If seated, use bolster or blanket(s) to support spine, between back of chair and spine
- If seated, use a blanket under feet to maintain solid connection with the ground. Only use this adaptation if you feel you need more height to connect with ground.

Seated Tadasana

Standing Tadasana

Figure 7. Tadasana.

G. Uttanasana

Benefits: Lengthens spine and hamstrings. It tones the abdominal organs and stretches the back body. It also is a very calming pose to the mind

Precautions: Students with low back issues or very tight hamstrings should not go fully into this standing pose, try variations seated in a chair or go into forward fold halfway with hands on wall in front of you.

Setting Up the Pose

Seated in Chair or Standing

- Inhale, raise your arms over head
- Exhale, fold forward your upper forward
- Allow the arms and hands to slide down the legs and come to rest on a chair, blocks, or the lower legs.
- Keep your neck relaxed and bring the crown of the head towards the floor

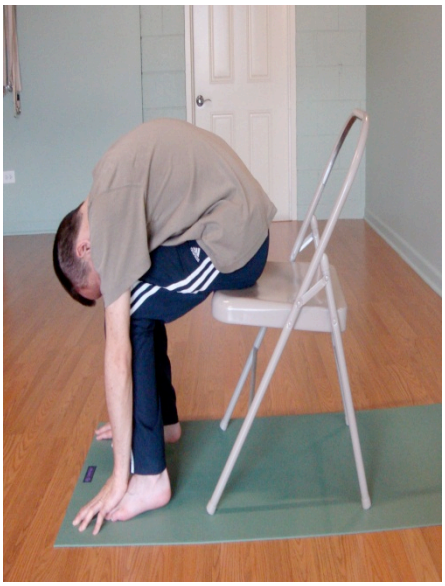
Key Actions

- Keep feet firmly planted on the floor
- Bring the waist and side ribs towards the floor

Adaptations

- Fold and bring your hands to a chair, for standing version
- Use a bolster or blanket(s) on top of chair to support head and arms for the seated or standing version of the pose.
- Fold and bring your hands to a wall in front of you.


Standing Uttanasana

Seated Uttanasana

Restorative Seated Uttanasana

Figure 8. Uttanasana.

H. Trikonasana

Precautions: This is a challenging standing pose. Do the chair version of pose if you are unsteady or uncomfortable standing in any way. Use caution in this pose if you have any back discomfort or injury. If you have any neck problems, don't turn your head to look at the top arm; instead, look straight ahead with the sides of the neck lengthened evenly, or look down at the floor

Benefits: This pose tones the legs, feet, and ankles. The triangular alignment gives one the feeling of balance, alignment, openness and expansion.

Setting Up the Pose

Standing against the Wall

- Place chair to the right side of your body
- Standing with back against wall, step feet apart about 3 feet wide. The feet can be closer together for more stability.
- Spread arms out wide, parallel to ground, fingers spread.
- Turn your right leg and foot out so that it faces towards the chair. Turn the left foot in slightly.
- Right knee should face directly forward.
- Inhale and lift the belly, side of the ribs, and sternum.
- Exhale and reach out through the right fingers and tilt the pelvis and ribs over the right leg, while remaining strong in both legs
- Allow the right hand to fall on the back of the chair.
- The left hand can come to the hip or extend to the sky.
- Look down and lift out of pose on an inhale.
- Repeat on the left side. Place chair to left side of your body

Seated in Chair

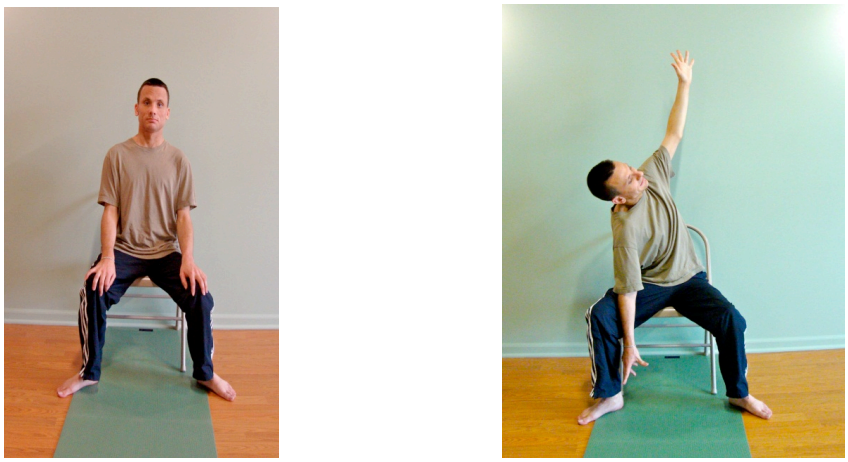
- Sit towards the front of chair.
- Spread feet out as wide as chair, feet need to be solidly grounded on floor.
- Place right hand on the inside of right thigh.
- Tilt torso to the right and slide right arm down leg.
- Allow right hand to rest on a block, knee, shin, ankle, or floor.

- Bring left hand to left side of waist, after few breaths extend left arm overhead if comfortable.
- Look down and lift out of pose on an inhale.

Key Actions

- Maintain balance and strength in the legs and feet. Evenly balance your weight between the legs as much as possible.
- Turn the right pelvis away from the right thigh and continue turning your torso if possible. Stop if you feel pain in low back.

Standing Trikonasana



Seated Trikonasana

Figure 9. Trikonasana.

I. Seated Parsvakonasana

Benefits: Stretches side bodies and opens the groin. Opens the chest and gives the feeling of side body expansion

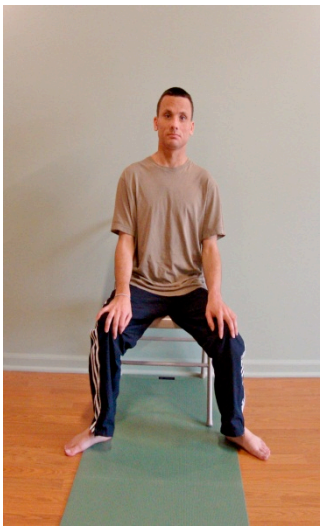
Precautions: If you have any neck problems, don't turn your head to look at the top arm; instead, look straight ahead with the sides of the neck lengthened evenly, or look down at the floor

Setting Up the Pose

- Sit towards front of chair.
- Spread legs as wide as chair, or as far apart as you are comfortable with.
- Feet are parallel and are solidly rooted on ground.
- Tip torso to the right
- Place right forearm on right thigh or allow it to slide down the inside of leg towards shin, ankle or floor. You may place hand on a block also
- Bring left hand onto left hip or you can extend it over head
- Look up, down, or straight out in front of you. Choose the head position most comfortable for your neck.
- Look down and lift out of pose on an inhale.
- Repeat tilting torso to left

Key Actions

- Continue turning torso, if possible Try to open your chest to the sky
- Stay grounded through feet
- Engage your abdominal muscles as you twist



Starting Position

With Hand on Hip

With Arm Overhead

Figure 10. Seated Parsvakonasana

J. Supta Padangusthasana

Benefits: Stretches the hamstrings, calves and buttocks. Encourages both grounding and lengthening of body. The body is totally supported in this posture; this minimizes injury risk*s*.

Setting Up the Pose

- Lie on back and extend both legs straight out in front of you
- Bend right knee into chest
- Hold the back of the right thigh with both hands
- Loop a yoga strap or towel around your right foot
- Keep the left leg extended straight on ground.
- Hold the strap with both hands and straighten right leg into air
- Only lift the right leg as far as you can while keeping it straight.
- Flex the right foot and press through the right heel
- Keep the left leg active, flex the left foot and press down through the quadriceps and thighs.
- Repeat lifting the left leg into the air

Key Actions

- Keep both feet flexed
- Keep arms straight while holding strap or towel
- Keep your head down on floor/blanket, keeping your chest open

Adaptations

- Loop a belt around the right foot and hold while right leg is extended. This will give added leverage to practitioners who cannot reach the right foot.
- If the back of left leg does not reach the ground use folded blankets to support it.
- Press left foot against wall or block against the wall, this will ensure that the left leg and foot are active.
- Bend the left leg placing the foot on the floor with the shin vertical. This will help release the hamstring of the right leg.

Starting Position

Supta Padangusthasana

Figure 11. Supta Padangusthasana.

K. Dandasana

Benefits: This pose strengthens the back and legs. Your hamstrings stretch. It assists your sitting posture. It teaches you how to extend and ground legs. As you ground through the legs and sit bones, the spine extends strongly upward. This pose should bring a feeling of stability.

Setting Up the Pose

- Sit against wall or front of a chair with your legs straight out in front of you
- Flex your feet so that your toes point to the sky
- Stretch through the entire leg, foot to hip
- Place the palms on the floor by the hips
- Lift up through the side ribs, sternum, and head as you ground down through the legs
- Shrug the shoulder blades down the back and allow the heart to project forward

Key Actions

- Keep thighs, quadriceps, shins pressing down
- Lift up through the abdominals, side ribs, and sternum

Adaptations

- Sit on a height so that the pelvis tilts slightly forward and you are comfortable
- Practice with back against front of chair or wall to get more elongation through the spine
- Practice with support (height) under the backs of the legs, if they do not reach the ground
- Practice with the legs strapped together, use yoga strap, to allow them to straighten.

Figure 12. Dandasana.

L. Supta Baddha Konasana

Benefits: This pose stretches inner thighs and groins. It frees energy in the pelvic area and quiets the mind.

Precautions

- Do not do this pose post-partum until pelvic area muscles that became loose for child birth have recovered their pre-pregnancy tightness.
- Be careful if you have had a groin or knee injury. Use blankets or blocks under the knees for support.
- Be careful in this pose if you have a hip or shoulder injury**.**

Setting Up the Pose

- Sit on mat and place a bolster or folded blanket(s) vertical on mat behind you, a few inches from tailbone
- Place blanket on the far end of bolster or blanket(s) to use as pillow for head
- Sit with the soles of your feet together
- Wrap belt around sacrum, close to buttocks, and clasp belt at feet in front of you. Make sure both ends belt come inside of legs and around feet
- Place hands on either side of you on ground
- Inhale, raise your chest
- Exhale, lie back on bolster or folded blanket(s)
- Place blankets and/or blocks under upper legs to support them
- Arms rest in goal post position

**If you feel discomfort in the low back in this pose, you need to add one or more bolster or blanket under the upper body or put blocks under bolster as shown in picture below.*

Key Actions

- Keep chest lifted throughout pose
- Release shoulder blades down the back
- Allow legs to relax downward

Figure 13. Supta Baddha Konasana.

M. Setu Bandha Sarvangasana

Benefits: This pose is a simple backbend that allows the chest, lungs, and shoulders to open. It strengthens the legs, stretches the belly and tones the spine.

Precautions: Practice restorative version of pose if you have a neck or shoulder injury. Use caution in this pose if you have a low back pain or injury

Setting Up the Pose

Version over Bolster

- Place bolster horizontal on mat
- Sit on bolster
- Lie back on bolster so that back, head, and arms come off bolster
- Place arms in goal post position
- Knees are bent with feet on floor
- To come out of pose bring knees into chest and roll on your right side.

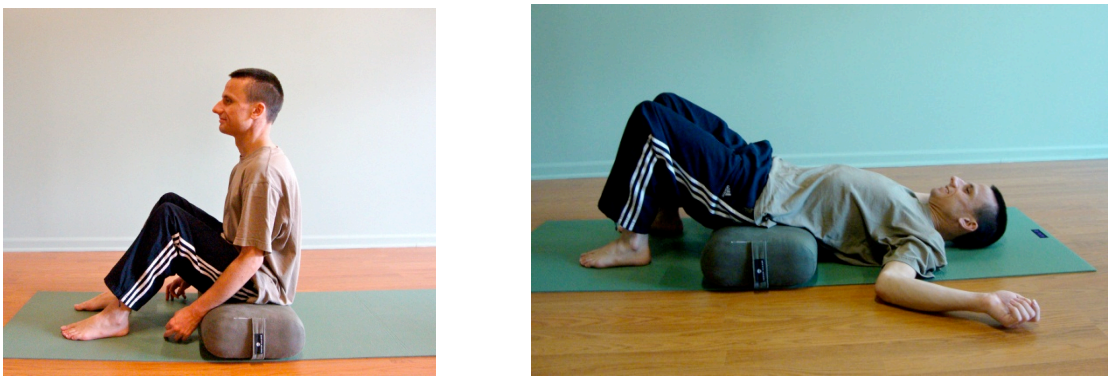
Restorative Version

**Set up shown in picture on next page labeled 'Restorative Version'*

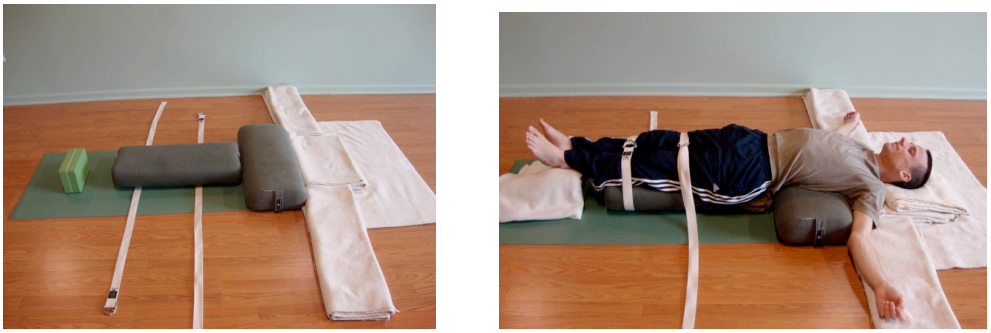
- Sit on front edge of bolster placed vertical on mat .
- Lie back on bolster. Your upper body will land on the horizontal bolster at the back of mat.
- Slide your head, neck, and shoulders off the bolster so the they rest on blankets
- Spread arms out to side and rest them on blankets
- Legs are straight and feet can rest on block to keep strain off of low back.
- If able, strap yoga belts around your legs to keep them together.
- Stay in the pose 3 to 5 minutes
- To exit the pose, remove straps, bend knees and roll to your side off the bolsters.

Key Actions

- Lift and expand the chest
- Press the knees forward to energize the legs (version over bolster)
- Press arms down to lift the chest up (version over bolster)



Over Bolster



Restorative

Figure 14. Setu Bandha Sarvangasana.

N. Jathara Parivartanasana with Bent Legs

Benefits: Massages abdominal organs. Helps to relieve strain in the lower back and hips

Setting Up the Pose

- Place bolster a few inches from right hip
- Recline in a supine position on floor with knees bent and feet on floor
- Press into feet and shift pelvis slightly to the left
- Lift and bring knees close to chest
- If possible, strap legs together, the strap should be on your lower thighs
- Extend your arms out to the sides; arms can be fully extended or in goal post position.
- Exhale and lower knees to the bolster
- Turn your head so that your gaze is to the left or keep head neutral so that your gaze is upward.
- Stay here for several breaths
- Loosen strap if needed and inhale bring knees back center
- Bring bolster a few inches from left hip and repeat pose bringing legs to left

Key Actions

- Turn the legs from hips
- Turn abdomen opposite direction as legs
- Keep the chest expanded throughout the pose

Figure 15. Jathara Parivartanasana with Bent Legs.

O. Janu Sirsasana in Chair

Benefits: This pose stretches the hamstring and low back muscles. It lowers blood pressure, massages abdominal organs and draws the mind inward. It is a great pose to do towards the end of your practice.

Precautions: Do not practice if you have a hamstring injury.

Setting Up the Pose

- Sit towards the front of your chair with feet solidly connected to ground
- Extend right leg out in front of you
- Loop strap around extended foot. Hold ends of strap in each hand.
- Flex the extended foot, toes facing upward
- Inhale, raise the ribs and chest
- Shrug shoulders back and down
- Press down through left foot into the floor
- To come out release strap and bring right foot next to left on floor
- Repeat with left leg extended

Key Actions

- Broaden the chest, rib cage and collarbones
- Shrug shoulder blades down towards hips
- Gradually add tension to strap to increase hamstring stretch
- Keep right foot flexed

Figure 16. Janu Sirsasana in Chair.

P. Savasana

Benefits: Savasana quiets the mind and body. It restores a healthy blood pressure and respiratory rate. The relaxation is refreshing to both the nervous system as well as the physical body.

Setting Up the Pose

Lying on Ground

- Place a folded blank at the end of your mat to support your head and neck
- Lie down on mat.
- Legs are bent with feet on mat. Feet are hip distance apart, flat on ground, near buttocks
- Extend your legs one at a time. Legs are slightly wider than hips. Legs and feet release outward
- If your low back is sore place a bolster or rolled blanket under the knees.
- The head is centered, not tipping to one side
- Release your arms out to the side. Arms are slightly wider legs, at a 45 degree angles; hands are in line with hips. You can support arms and hands on blankets
- Palms are open and can either face up or down
- Stay in savasana for 5 to 10 minutes
- To come out of savasana, first gently wiggle your fingers and toes
    - Roll onto the right side in a fetal position
- After a few breaths here, press into hands to slowly lift the torso, coming to a seated position

Seated Version

- Sit back in chair
- Use bolster or rolled blanket to support back body
- Place blanket on ground for feet to rest on
- Place blanket(s) in lap for the hands to rest on
- You can wrap a blanket around waist to support lower arms
- You can wrap blanket loosely around back of neck to support neck
- Stay in savasana for 5 to 10 minutes
- To come out of savasana, first gently wiggle your fingers and toes
- After a few breathes open eyes

Key Actions

- Close the eyes
- Relax the face
- Keep the body still and relaxed
- Scan the and body and release tightness where there is any in the body
- Take a few long exhales at the beginning of Savasana. Then allow the breath to fall in its natural rhythm

Lying, with Few Props

Lying, with More Props

Seated, with Few Props

Seated, with More Props

Figure 17. Savasana.

APPENDIX

Comments from Manual Reviewer Lori Gaspar, Director of Prairie Yoga:

> Ryan McGraw's manual is an outstanding example of thesis work required as part of our certification programs. While there are many books on how to practice yoga poses for the everyday population, there is very little documentation on how to adapt the practice for disabilities. Ryan's manual is a very practical resource guide for teachers and for students, not just with cerebral palsy. The information presented can be used for a wide variety of applications. His research is very thorough. He shows the use of props to support the body. His verbal instructions are clear and his photos accurately depict the information needed so one can practice the poses without assistance.
>
> Many trainees submit thesis, yet only a handful are selected to be posted on our website. We have posted Ryan's manual on our website and we are very proud to say that Ryan is a graduate of the Prairie Yoga Teacher Training Programs. He has been an outstanding trainee. His teaching skills are excellent and his knowledge of yoga is deep.

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