

CASPER APPROACH

-A New Seating Theory Unconstrained by the Conventional Approach of Straightening the Pelvis

It all started by observing the posture not in a snapshot but in daily life!

A chair is a tool used at school and home for long hours.



At school-

Though she was able to hold her head up for a short time, most of the time she sat with her head down, hip sliding forward, and was unable to use her hands, even with support of knee pads, hip belt, chest belt, shoulder belt, and all the other positioning functions. Wheezing and choking occurred often, and frequent suctioning was required. She was unable to eat large volume of food either.

CASPER APPROACH



With the CASPER

She sits upright without leaning on pads or belts mostly and keeps her head up. Wheezing and choking almost never happens and the events requiring suctioning have been reduced significantly. She eats more, plays with her hands and is learning to drive an electric wheelchair.



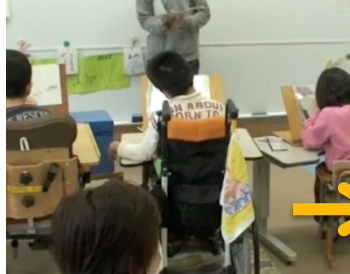
CASPER is an acronym for:

1. Caput
2. Axis
3. Skeleton
4. Proportion
5. Enjoy
6. Relax

Situation at the School

Posture at School

He kept his head up for the first 3 minutes, but soon his head fell forward, his chin was pressed against the table and after 5 minutes, he couldn't hold himself upright any longer. He couldn't raise his head when a teacher asked him a question. It was impossible to use his hands for a long period of time.



His head fell forward in 5 minutes.

CASPER APPROACH



He now sits without collapsing against the table.

In the class, he keeps his head up and upper extremity function has been improved. He is now able to perform fine tasks using his fingers, and a squint is almost gone. Most of all, he now attends his class with enthusiasm.



CASPER APPROACH – A Seating System Based on a Completely New Idea

Reducing the “Pains”, “Stress” and “Risks”

It has been believed that sitting in the same way as standing and keeping the pelvis upright was a “good posture”. Through daily observations of posture, however, it became obvious that forcefully straightening the pelvis to vertical was causing pain, stress and a lot of unnecessary risk. The CASPER APPROACH is a completely new seating concept to minimize those pains and stress based on many years of trial and error.

The CASPER APPROACH has demonstrated that minimizing the pains and stress and stabilizing the body against gravity can produce many changes that have never occurred before.

Conventional Seating System for Children with Cerebral Palsy

Historically, the 90-90-90 posture, or 90 degrees of flexion at the hips, knees and ankles was the basic seating solution for children with cerebral palsy. This posture was seen ergonomically ideal and many papers were written in the 80's to support this idea. In the 90's, however, researches pointed out that this posture was difficult to maintain over time and might hinder function as some muscles were forced to maintain high tension.

(Engstrom, 2002/Howe & Oldham, 2001)

Evidence of Seating Systems Developed in the U.S. and European Countries

As an alternative to the 90-90-90 posture, the Functional Sitting Position (FSP) was introduced in Northern Europe. In FSP, it is recommended to keep the pelvis upright in a lean-forward posture. In the 00's, some research literatures identified that FSP improved the upper extremity function, drawing attention of the world as the most evident seating technique. Those researches, however, are targeted for children and young people with mild to moderate physical disabilities who are able to perform task assignments, and those with moderate to severe disabilities with contractures and deformities who require the special seating most are not included in the research.

What is the CASPER APPROACH?

The CASPER APPROACH is a seating system developed in Japan in 90's to 00's based on a completely new idea and has been applied to children and adults with severe physical disabilities. Instead of focusing on body alignment as in 90-90-90 posture or FSP, the CASPER APPROACH identifies the body as the object consisting of various parts such as head, chest, and pelvis, and focuses on putting each parts in dynamically stable position. Specifically, head stability is considered most important, and an adjustment is made to prevent head from falling to the side, backward or forward. It is believed that by eliminating unstable elements which make head and trunk control against gravity difficult, synergist muscle patterns are neutralized and the natural body functions of those with severe physical disabilities can be brought out to the fullest.

Prospects and Challenges of the CASPER

We have received positive comments in many cases such as “abnormal muscle tone was mitigated and facial expression is much better”, “the child appears easier to breathe”, and “the scoliosis was improved”. The numerical evaluation on application of the CASPER has not been performed, however, and that's why it has not become the mainstream of the seating systems in the world.

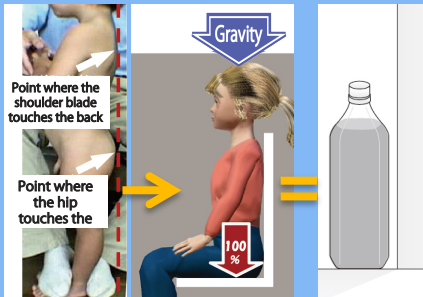
In Japan, objective evaluations on its application have been started and the CASPER is becoming a significant step forward in the meaning and potential of seating systems for children and adults with severe physical disabilities.

The CASPER APPROACH is a technique developed in Japan to enrich the lives of children and adults with severe physical disabilities who require special seating care.

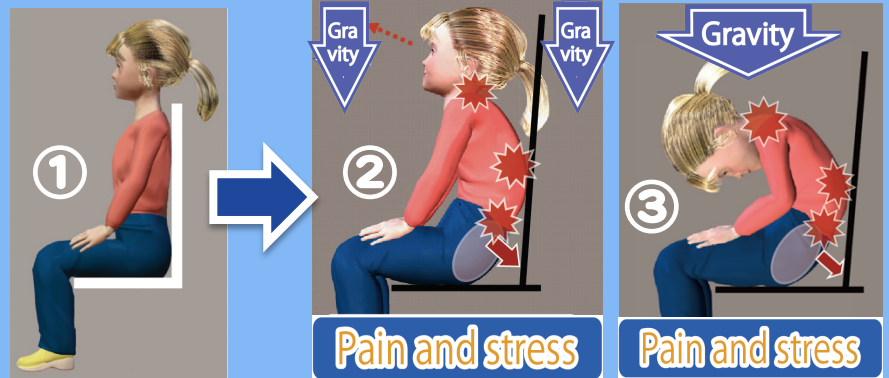
Factors Causing the Body to Fall Forward

You cannot lean on the backrest even slightly when you keep the pelvis straight

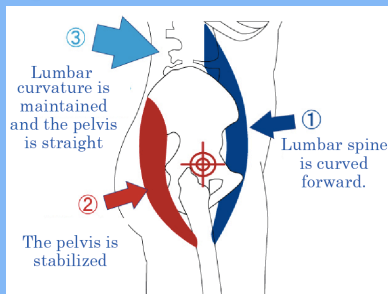
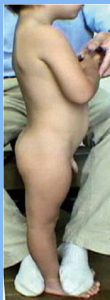
Sitting in an upright position similar to standing won't allow back support, just like placing a bottle of water next to a wall won't have the bottle leaning against the wall.



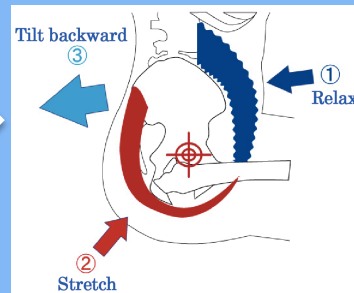
Posture this ① was believed to be ideal, but the posture in daily life becomes more like ② or ③



The lumbar spine is curved forward and the pelvis is stabilized by the tensile force of the iliopsoas and gluteal muscles.



When the hip is flexed, the effect of tensile force changes.

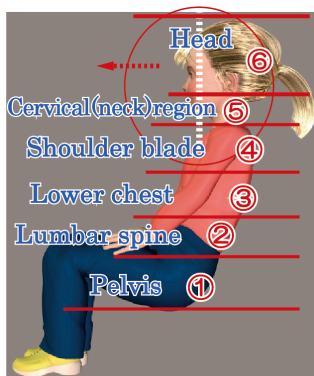
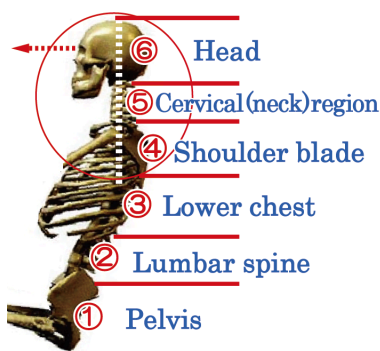


And the pelvis becomes tilted backward.

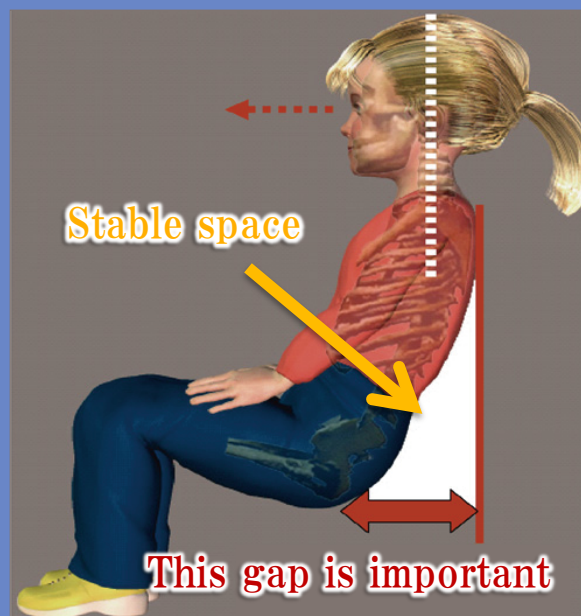


The CASPER aims to provide postural stability in daily life

CASPER's basic alignment image



A space enables a person to lean on a chair



The body becomes stable by leaning on a chair

This spacer is necessary for the body to lean on the chair and be stabilized against gravity. Without this space, the body will fall forward and become unstable.

“Dynamic Stability” and “Skeletal Axis from Upper Chest” against Gravity

Two elements

① Dynamic stability

① Stretched ② Fall Forward ③ Collapse ④ Twist ⑤ Slide Forward ⑥ Roll

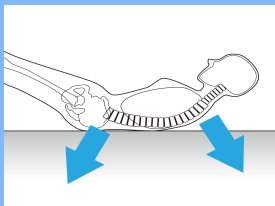
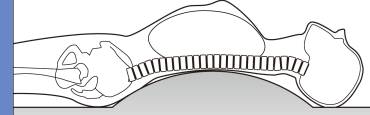
*Stability is defined as the absence of the above 6 factors.

CASPER's Characteristic Idea

① Stretched

For example, if a person with round shoulders lies on the floor facing up, the roundness of the body trunk is stretched by gravity forcefully, causing the person to feel “pain”. The same thing is believed to be happening when a person doesn't lean on the reclined wheelchair as it would cause the person to feel pain (this painful feeling is considered as an unstable element).

Even an able-bodied person feels **pain** when stretched like this.



When stretched

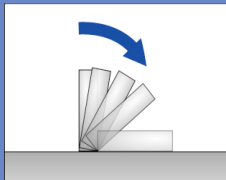
a person feels pain



A person feels **pain** when stretched and is **unable to relax** even if the wheelchair is reclined.

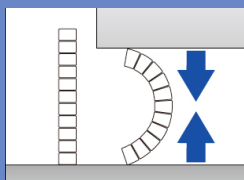
② Fall forward

Instability of falling forward in circular motion with the ischium as the point of support as with the pelvis.



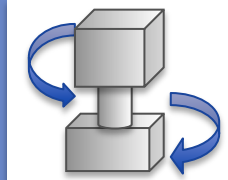
③ Collapse

Instability of collapsing like pushing downward as with the cervical spine and lumbar spine.



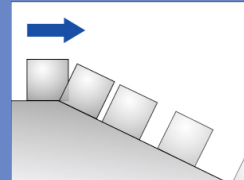
④ Twist

Instability due to twisted horizontal planes of the pelvic and chest, as well as chest and head.



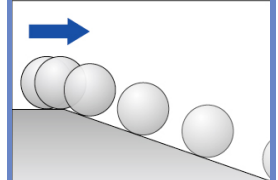
⑤ Slide forward

Instability such as the hip sliding forward, or the back sliding against the backrest.



⑥ Roll

Instability such as the head or chest rolling sideways.

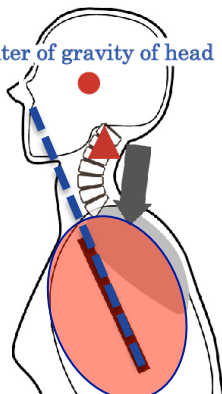


② Skeletal Axis from Upper Chest

When the skeletal axis from upper chest is vertical, keeping forward, backward and sideways balance against the gravity becomes easier, providing more stability and relaxation.

When the upper chest leans forward, a person must keep using their muscles to maintain an upright head.

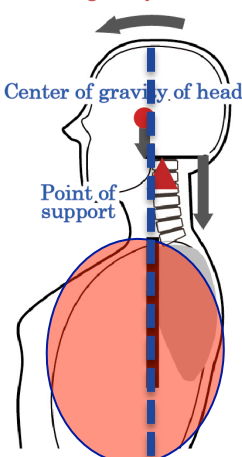
Center of gravity of head



Forward and backward stability against gravity.

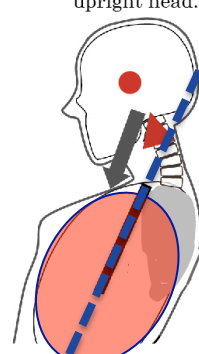
Center of gravity of head

Point of support

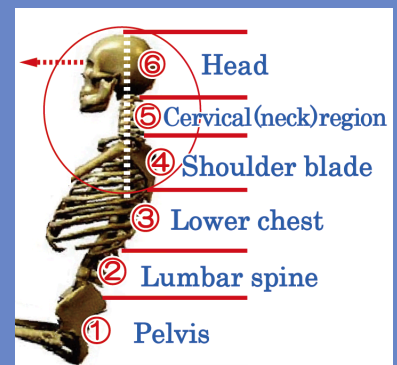


When the upper chest leans backward, a person must keep using their muscles to maintain an upright head.

Leaning backward

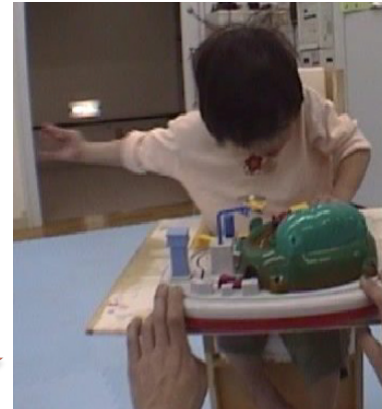
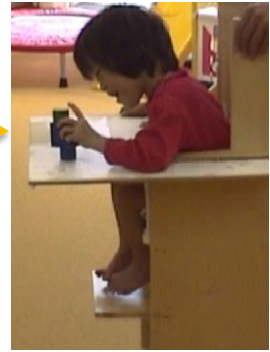


Only when the upper chest is vertical, the skeletal axis of the neck and head is formed, enabling lasting stability and relaxation.



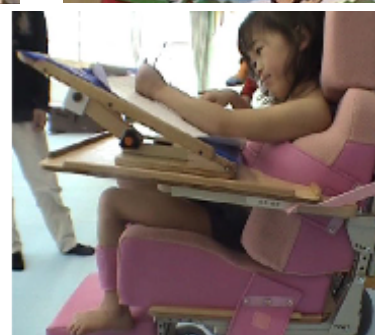
Situation at School

With a chair that puts the pelvis in upright, her body fell forward and she played with her elbow on the table. When she tried to use her left hand, her right hand was pulled back, moved out of her sight, and was unable to be used.



She now sits without falling forward.

During class, her head no longer falls forward, and she is able to use her upper extremities well. Her back including shoulders leans on the backrest and her head, neck and upper chest are almost in vertical alignment, so she is able to play with toys on the table and perform other tasks actively.



Situations at School

Posture at School

His mother was trying to put his hip in a better position, which was very difficult due to his high muscle tension. She managed to fasten the pelvic belt and foot strap and attached the abductor, but his muscle tone was excessively high and his head was bent back.



When he tried to push a button, his muscle tone increased and his head turned back.

CASPER
APPROACH



He now sits very relaxed.

His muscle tone is better now and he is able to bring his body back to the original position even when he is excited and his muscle tension is increased. He is now able to push a switch on the screen and to “look”, “choose” and “push” well. He sits very relaxed.



Being able to achieve new tasks only by changing chairs meant that he had the potential but the improper environment prevented him from doing so.



We consider that maintaining the postural stability is important.



For the better understanding of the Casper Approach **CASPER's Website**

<http://casper-ri.org/>



Our Philosophy **All for a smile**

The Casper Approach brings smiles and positive universal changes for children. We are compiling evidence and cooperating in various research to provide the Casper as an approach that anyone can use.

If you are interested in the Casper and are willing to cooperate with us, please contact us.

Our website has been launched to improve the Casper Approach together with the assistance of many people.

While providing various information about the Casper Approach, we also look forward to receiving input from people around the world.

We hope that the changes in children we have shown here will become commonplace around the world.

YouTube Casper Channel

<https://www.youtube.com/watch?v=O6xpauDMDk0>



<https://www.youtube.com/watch?v=80TqjMgbg8k>



<https://www.youtube.com/watch?v=h003dETGI-Q>



Before and after videos with the Casper Approach are available on YouTube.

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