



Labofa

www.labofa.com



RAY

Design: Hans Thyge & Co. & Perch Dynamic Solutions



RAY

RAY er udviklet på baggrund af en Ph.d. afhandling omkring ergonomiske skolemøbler udført af Simon Dennehy fra National College of Art & Design i Dublin. Formgivningen og udviklingen af programmet er udført i tæt samarbejde med den danske tegnestue Hans Thyge & Co.

Skolemøblerne er testet i tæt samarbejde med irske skoler, hvor prototyper er blevet afprøvet over en lang periode og videoregistreret i hundredvis af timer. Før denne research blev der udført komplicerede fysiske tests på Cork Institute of Technology i sammenlignende forsøg med standard skolemøbler. Alle disse tests er til dato nogle af de mest omfattende studier af siddestillinger og deres konsekvenser. Resultatet af undersøgelserne har vakt stor international interesse.

Perch Dynamic Solutions

Perch Dynamic Solutions er et design og research firma, der ejes af Simon Dennehy, som skriver sin Ph.d.-afhandling om RAY projektet. Firmaet arbejder med industrielt design og grafiske løsninger for firmaer i Irland, Tyskland og Italien. Firmaet har et tæt samarbejde med instituttet Task Force in Education på National College of Art & Design i Dublin. www.perch.ie

Hans Thyge & Co.

Hans Thyge & Co. er et progressivt design- og konceptudviklingsfirma, der ejes af Hans Thyge og to partnere. Tegnestuen arbejder for både danske og internationale kunder - primært indenfor møbelbranchen. Udover møbeldesign arbejdes også med industrielt design, koncept design, udstillingsdesign, animationer, undervisning og foredrag. Firmaet har modtaget mange priser og er publiceret verden over. Hans Thyge & Co. har udviklet en meget succesfuld række af ergonomiske stole for Labofa.

RAY is developed on the basis of a Ph.d thesis about ergonomic school furniture made by Simon Dennehy from the National College of Art & Design in Dublin. The design and development of the collection is carried out in close cooperation with the Danish design studio Hans Thyge & Co.

In close collaboration with Irish schools prototypes of the new school furniture were tested over a long period of time and video recorded for hundreds of hours. Prior to this research various complex physical tests were performed at Cork Institute of Technology as comparative tests with standard school furniture. These tests are some of the most comprehensive studies of sitting postures and their consequences. The results of the studies have attracted considerable international interest.

Perch Dynamic Solutions

Perch Dynamic Solutions is a design and research company, owned by Simon Dennehy who is writing his Ph.d. thesis on the RAY project. The company works with industrial design and graphic solutions for businesses in Ireland, Germany and Italy. The company works closely with the institute for Task Force in Education at the National College of Art & Design in Dublin. www.perch.ie

Hans Thyge & Co.

Hans Thyge & Co. is a progressive design and concept development company owned by Hans Thyge and two partners. The studio works for both Danish and international customers - primarily in the furniture business. In addition to furniture design they also work with industrial design, concept design, exhibition design, animations and lectures. The company has received many awards and has been published worldwide. Hans Thyge & Co. has developed a series of very successful ergonomic chairs for Labofa.







RAY

RAY er en ny generation af ergonomiske skolemøbler baseret på et verdenspatenteret sædeprincip. Designet bygger på adskillige års analysearbejde og tests med skolebørns siddepositioner. Stolen er skabt i et internationalt samarbejde mellem den danske designer Hans Thyge Raunkjær og Ph.d. studerende Simon Dennehy, der repræsenterer et af verdens mest anerkendte institutter indenfor ergonomiske studier NCAD i Dublin.

RAY

RAY is a new generation of ergonomic school furniture based on a world patented seat principle. The design is based on several years of research and tests of sitting positions of school children. The chair is made in an international collaboration between Danish designer Hans Thyge Raunkjær and Ph.d. student Simon Dennehy, representing one of the world's most renowned institutions in ergonomic studies NCAD in Dublin.

Det fleksible sæde

Den højdejusterbare RAY stol er resultatet af mange års udviklings- og testarbejde. RAY stolens filosofi er at sidde højere på stolen og med en åben siddevinkel. Den bagerste del af sædet, hvor halebenet har kontakt med siddefladen, er stift og uflexibelt. Denne stive form fortsætter ud under det fleksible sæde i en smallere form som på et cykelsaddel.

Området udenfor denne "saddel" er fleksibelt, således at tryk fra benene vil få det fleksible sæde til at bøje ned. Den forreste del af det stive sæde medvirker derudover til at benene spredes, når man sidder højere. Dette giver støtte til bækkenet ved hjælp af føddernes kontakt til gulvet, stabiliserer kropsholdningen og aktiverer de indre muskelgrupper. RAY stolens patenterede sædeteknologi hjælper brugeren til dynamiske siddepositioner, idet der kan ændres siddestilling alt efter behov. Det fleksible sæde muliggør at indtage en højere opret siddeposition med mindre pres på benene, hvilket ikke er muligt på traditionelle stole.

Det legende udtryk

RAY stolen har fået et legende og svævende udtryk som går fint i spænd med den aktive siddestilling. Ryggen er forfinet og let og føres med to arme ned til det fleksible og bløde sæde. Stolen har fine detaljer og mange farvevarianter, som sammen med de humoristiske og legende undertoner, skaber en smuk og harmonisk stol.

Materialer

Stolens ryg er støbt i glasfyldt nylon og det fleksible sæde er udført i en specialplast, der kan tåle de mange nedbøjninger. Stolen er utrolig robust og skabt til brug i skoler. Stolen er meget let, så selv små elever kan løfte stolen. Hjul og udløser til højdejusteringen er konstrueret så stolen støjer minimalt. Sædet fås også i en enkel og smuk polstret udgave. Modellen på medestel har derudover en behagelig let fjedrende bevægelse i stellet.

The flexible seat

The height-adjustable RAY chair is the result of many years of development and testing. The philosophy of the RAY chair is to sit higher on the chair and with an open seat angle. The rear part of the seat where the tailbone is in contact with the seat surface is rigid and inflexible. This rigid shape continues under the flexible seat to a more narrow shape – similar to the shape of a bicycle saddle.

The area outside of the "saddle" is flexible, so that the pressure from the legs will cause the flexible seat to bend down. The front part of the rigid seat encourages leg separation when sitting higher. When also keeping the feet on the ground this offers support to the pelvis, stabilizes posture and activates various muscle groups. The RAY chair's patented seat technology helps the user to sit dynamically and change posture as needed. The flexible seat allows the user to take a higher upright sitting position with less strain on the legs, which is not possible on conventional chairs.

The playful expression

The RAY chair has a playful and floating expression which ties in well with the active seating position. The back is refined and light and attached by two arms to the flexible and soft seat. The chair has nice details and is available in many colours, which together with the humoristic and playful undertones create a beautiful and harmonious chair.

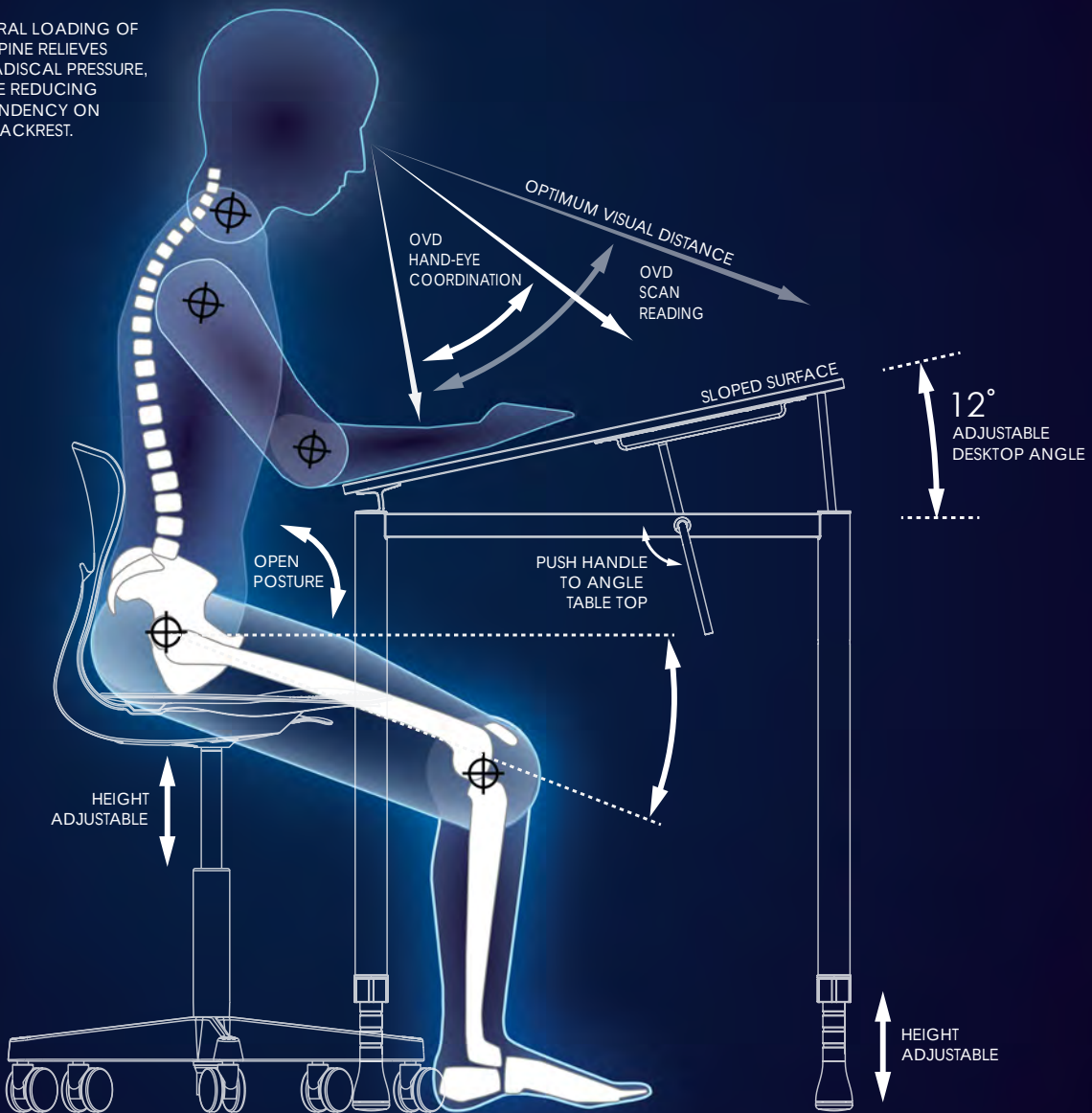
Materials

The chair's backrest is moulded in glass filled nylon and the flexible seat is made from a special plastic that can withstand the many deflections. The chair is extremely sturdy and designed for use in schools. The chair is very light, so even small pupils can lift it. Castors and release levers for height adjustment are designed to reduce noise to a minimum. The seat is also available in a simple and beautiful upholstered version. The cantilever version also has a pleasant springy motion in the frame.



FLEXIBLE, DYNAMIC & STABILIZED WORKING POSTURE
RAY SITTING

NEUTRAL LOADING OF THE SPINE RELIEVES INTRADISCAL PRESSURE, WHILE REDUCING DEPENDENCY ON THE BACKREST.

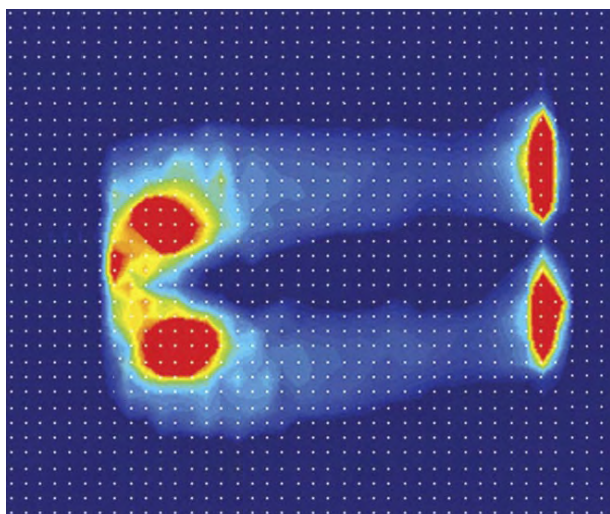




Traditionel skolestol
Traditional school chair

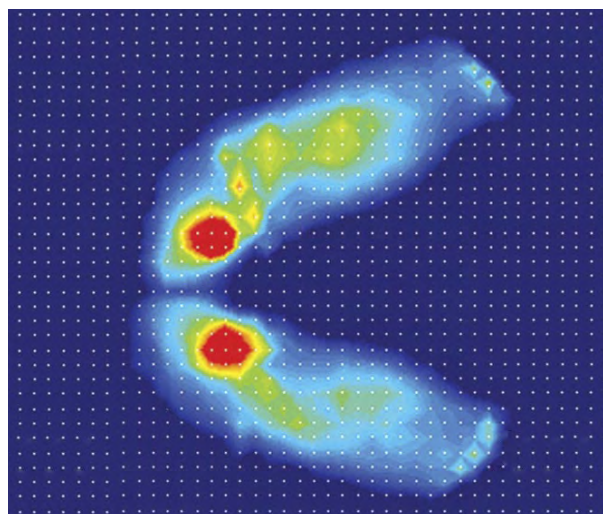


RAY skolestol
RAY school chair



Højt tryk på siddeknoglen og under knæ. Laboratorietest på traditionel skolestol, Cork institute of technology, Irland.

High pressure on sit bones and under knees. Lab test with pressure mapping on traditional school chair, Cork institute of technology, Ireland.



Et mere jævnt og fordelt tryk under benene. Laboratorietest på RAY stol, Cork institute of technology, Irland.

More even distribution of pressure under legs. Lab test with pressure mapping on RAY Chair, Cork institute of technology, Ireland.

Analyse

Traditionelle skolestole, hvor sædet er horisontalt eller hælder lidt bagud kan på langt sigt resultere i helbredsproblemer og dårlig kropsholdning, især hvis denne type sæde kombineres med arbejde ved en horisontalt orienteret bordplade. Statiske og ufleksible møbler hindrer muskelstimulering, godt kredsløb, samt bevægelse af den nedre del af kroppen. Dette kan have indvirkning på udviklingen af overvægt og på sigt lede til alvorlige sygdomme.

Børn lærer og udvikles igennem dynamisk interaktion med deres omgivelser. Det er derfor vigtigt at designe møbler, der bidrager til et mere aktivt læringsmiljø. Elever bør have mulighed for at justere deres møbler, således at disse tilpasses de givne læringsmæssige eller fysiske krav.

Analysis

Traditional school chairs where the seat is horizontal or slightly backwards inclined may in the long run result in health problems and bad posture, especially if this type of seat is combined with working at a horizontally oriented tabletop. Static and rigid furniture prevent muscle stimulation, good circulation and movement of the lower part of the body. This may have an impact on the development of obesity and eventually lead to serious diseases.

Children learn and develop through dynamic interaction with their surroundings. It is therefore important to design furniture that contributes to a more active learning environment. Students should be able to adjust their furniture, to adapt them to the given learning or physical requirements.

Den åbne siddestilling

RAY stolen fokuserer primært på designet af sædet. Forskning har vist, at den traditionelle "retvinklede" siddestilling medfører dårlig rygstøtte, svækkelse af vigtige muskelgrupper og adskillige livsstilssygdomme på længere sigt. Den mest effektive siddestilling for den studerende er med en åben vinkel imellem lår og torso og med hoften som omdrejningspunkt. Dette muliggør, at bækkenet roterer fremad indtil rygraden indtager en naturlig afbalanceret position, hvorved overkroppen støttes optimalt.



The open sitting posture

The RAY chair focuses primarily on the design of the seat. Research has shown that the traditional “right angled” sitting posture leads to poor back support, weakening of the major muscle groups and in time can result in several lifestyle diseases. The most effective posture for the students is with an open angle between thighs and torso and the hip as a fulcrum. This allows the pelvis to rotate forward until the spine takes a natural balanced position, where the upper body is supported optimally.



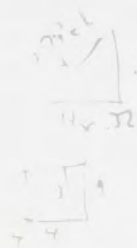


Size mark 3-4



Size mark 5-6

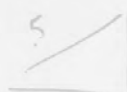




$$.24 = 24$$
$$v = .081$$



$$\frac{12}{4} = 4.75 + ?$$



$$24$$
$$4x$$

$$\frac{1.714}{3x} = 1.03$$

$$(16x)^2 + (9x)^2 = 5^2$$

$$337x^2 = 25$$

$$x^2 = 7.41 \times 10^{-4}$$

$$x = .027$$

$$35m$$
$$4y$$
$$1.377$$
$$22$$
$$14$$
$$1.377$$
$$x = 34$$

$$6.4m \frac{1}{2}$$
$$272$$
$$35m$$





Skoleborde

Skolebordene med vip er udført som enkeltmandsborde, således at hver elev individuelt kan tilpasse bordpladen. Bordene inkluderer et højdejusterbart bordbenssystem udviklet af Labofa. Bordpladens vippemekanisme har 2 positioner og er designet specifikt til RAY systemet.

De fleste af bordets bevægelige dele er udført i nylon for at minimere støjen under brug og når bordpladen hæves og sænkes. I de forreste ben er der indbygget en luftbremse, der gør at bordpladen sænker sig langsomt og næsten støjfrit. Til trods for de tekniske funktioner har bordet et simpelt og meget rent udtryk og er enkelt at anvende. Stellets kraftige konstruktion er yderst holdbar, hvilket sikrer bordet en lang levetid.

School tables

The school tables with tiltable tabletops are made as one-person tables enabling each student to individually adjust the tabletop. The tables have a height-adjustable leg system developed by Labofa. The tabletop's tilt mechanism has 2 positions and is designed specifically for RAY system.

Most of the parts of the tilt mechanism are made from nylon to minimize noise during operation and when the tabletop is raised and lowered. The front legs have a built in air brake that makes sure that the tabletop lowers slowly and almost noiseless. Despite its technical features the table has a simple and very clean look and is simple to use. The sturdy construction of the frame makes the table extremely durable.









Size mark 3
Sædehøjde: 42,5 cm

Size mark 4
Sædehøjde: 46,5 cm

Size mark 5
Sædehøjde: 53,0 cm

Size mark 6
Sædehøjde: 57,0 cm

Size mark 3
Seat height: 42,5 cm

Size mark 4
Seat height: 46,5 cm

Size mark 5
Seat height: 53,0 cm

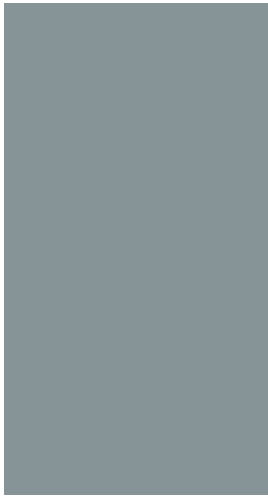
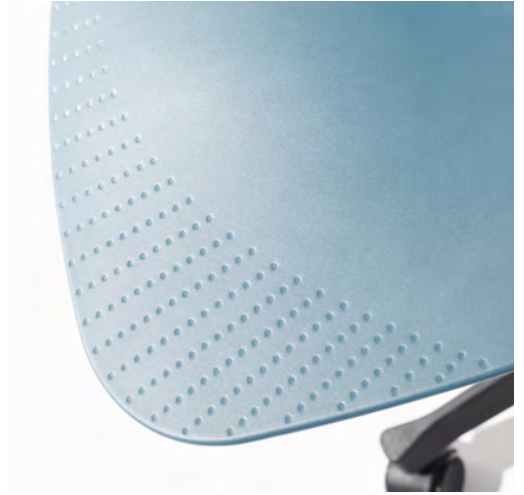
Size mark 6
Seat height: 57,0 cm

















Labofa

Labofa A/S
Borgergade 42
DK-4241 Vemmelv
www.labofa.com