

# CASE STUDY

N° 15

**Name:** Nathan Graham  
**Age:** 6  
**Occupation:** Pre-school student  
**Location:** Cairns, Queensland, Australia

## Symptoms

Nathan is a child with spina bifida, which has resulted in partial paralysis of his legs from his knees down. His lower legs are moved by his quadriceps, which are weak, as are the other extensors. He is incontinent for both bowel and bladder, and he has had many surgical operations for his dislocated hips and back, which have failed. Each hospitalisation has meant long months of inactivity, and travel, and being removed from all normal activity. When an operation fails, he is even further behind his peers. Nathan is very cheerful and accepting, positive and co-operative which defines his courage and the intense commitment of his parents especially his mother, who cares for this highly dependent boy.

## Introduction to the Saddle Seat

Nathan's occupational therapist recommended the Bambach Saddle Seat, as she felt that, among other benefits, the seat offered one of the most important ones for Nathan – it helps him attain and maintain correct posture. This is especially significant for Nathan, as it is important to

avoid further physical impairment of his spine (to add to his existing physical difficulties). The seat he uses is a cut down, black vinyl with a back an 80 mm drop through stem, 3 locking casters and a washable, real sheepskin, cover.

## Result

On the Bambach Saddle Seat Nathan feels, and is, secure (he slides forward and off a conventional seat). The Bambach Saddle Seat anchors his pelvis, allowing him to assume and maintain an upright, active posture. On a flat seat Nathan has to prop on his elbows to write; on the Bambach Saddle Seat his functional ability is improved (such as when reaching, manipulating toys and educational equipment as well as pushing with his legs and feet). On the Bambach Saddle Seat he can lean forward, rotate and flex from his hips. He uses the movement he has in his legs to move about and position himself for the task at hand.

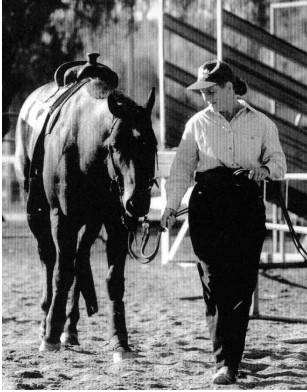
His occupational therapist feels that his back and abdominal muscles will tone up and improve his ability to maintain his posture without so much support.



Nathan using typical school seating, with disastrous results for his posture. His spine and abdomen are collapsed, he head protruding to enable him to see work. His shoulders are elevated statically, his functional ability poor.

Nathan on a Bambach Saddle Seat, his postural deformities corrected, his head and neck in natural alignment. He has greatly improved function as well as moral. He can pivot on stem in all directions, eliminating trunk rotation across an immobile pelvis.

## The Award-winning Bambach Saddle Seat



Mary Gale

The idea for the Bambach Saddle Seat came to occupational therapist and horsewoman Mary Gale in treating patients who could not sit unsupported on an ordinary seat or wheelchair. Mary found that the same patients could balance quite independently on horseback and assume a symmetrical posture.

It occurred to Mary that if she could replicate the 'saddle position', where the spine is able to assume its natural curves, she would create an ideal seat for therapy as well as for task seating.

A review of literature showed work of Dr A.C. Mandel, who noted that the ideal sitting posture for the human spine is achieved on horseback. Other researchers also concluded that ordinary furniture removes the natural curves from the spine and places great stress on the spinal discs. Anecdotal reports from horse riders who suffered severe back pain on the ground, yet who gained marked relief when mounted in the saddle, were also noted.

Several years of experimentation resulted in the Bambach Saddle Seat, deceptively simple in design but incorporating refinements and features that permit sitting for extended periods without loss of a healthy spinal curve. The proof is that the Bambach Saddle Seat is enabling many people who suffer disabling back pain to return to work. The seat also offers the opportunity for normal adults and children to sit to work independently in correct posture and maintaining mobility, but it is especially valuable for many who are physically impaired.



**NeoCon Silver Award**  
Design Excellence for  
Desk/Workstation Task Chairs



**Winner ADEX Award**  
for Ergonomic Task Seating

### Published papers on the Bambach Saddle Seat

T. Verkindere, C. Lacombe, and J. P. Lodter, 'Electromyographic study of the dynamic sitting position suitable for dentists', *L'information Dentaire*, Vol. 80 No. 12 (March 1998)

M. Gale, S. Feather, S. Jensen, G. Coster., 'A Multi Disciplinary Approach to the Design of a Work Seat to Preserve Lumbar Lordosis'. *Australian Occupational Therapy Journal*, Vol. 36 No. 2 (June 1989)

### Publication

Mary Gale, *The Seated Spine & The Bambach Saddle Seat*, Brookvale, NSW, 1997.

### Research papers on the Bambach Saddle Seat have been presented at:

International Conference on Ergonomics Occupational Safety & Health & the Environment, Beijing, October 1988.

Third International Physiotherapy Congress, Hong Kong June, 1990.

The National Safety Council of Australia's Congress, 'Futuresafe', Adelaide, South Australia, May 1992.

'Tadsem', Cumberland College of Health Sciences, University of Sydney Campus, Australia, October 1992.

World Federation of Occupational Therapists Conference – The Scientific Programme Technology Seating Sessions, Imperial College, London, April 1994.

### Research on the Bambach Saddle Seat has been exhibited via poster presentation at:

The World Federation of Occupational Therapists, Melbourne, Victoria, Australia, April 1990.

World Physiotherapy Congress, London, UK, September, 1990.

### Unpublished papers on the Bambach Saddle Seat

A. Nicholls, Doctor of Chiropractic: 'Report; Physiological Evaluation of the Intact Column-Pelvis-Meningeal System Radiographic Outcome Findings'.

Prof. G. Schumpe, Graduate Physicist/Medical Practitioner: 'Biomechanical Study of Sitting on the 'Saddle Seat'.

M. Gale, S. Aldrich, S. Jensen, W. Gale, 'Comparison Study of a Saddle Seat with Conventional Office Work Seat'.



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