

# Perkutane Stabilisierung osteoporotischer Kompressionsfrakturen

J.G. Grohs



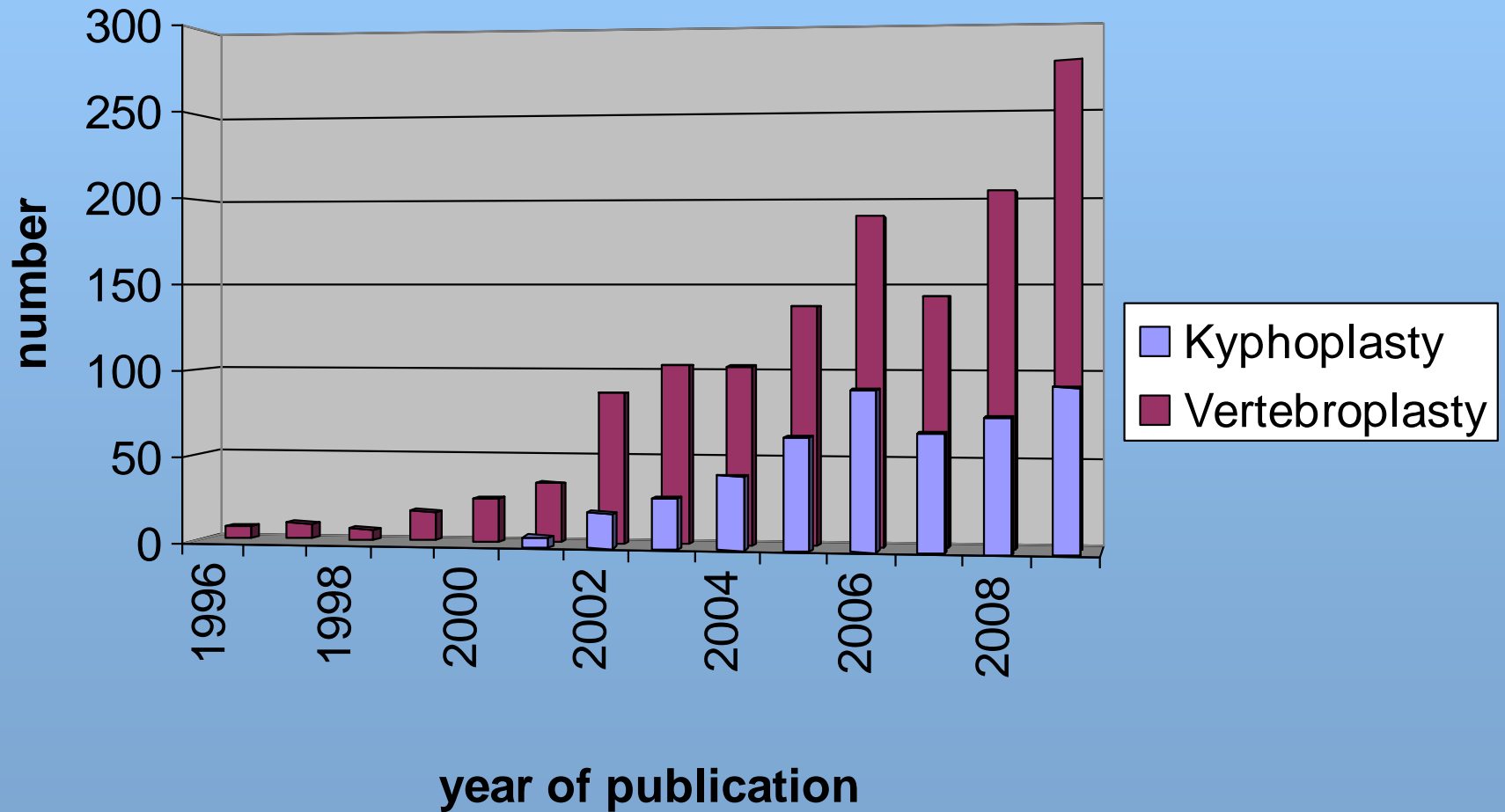
Univ.-Klinik f. Orthopädie





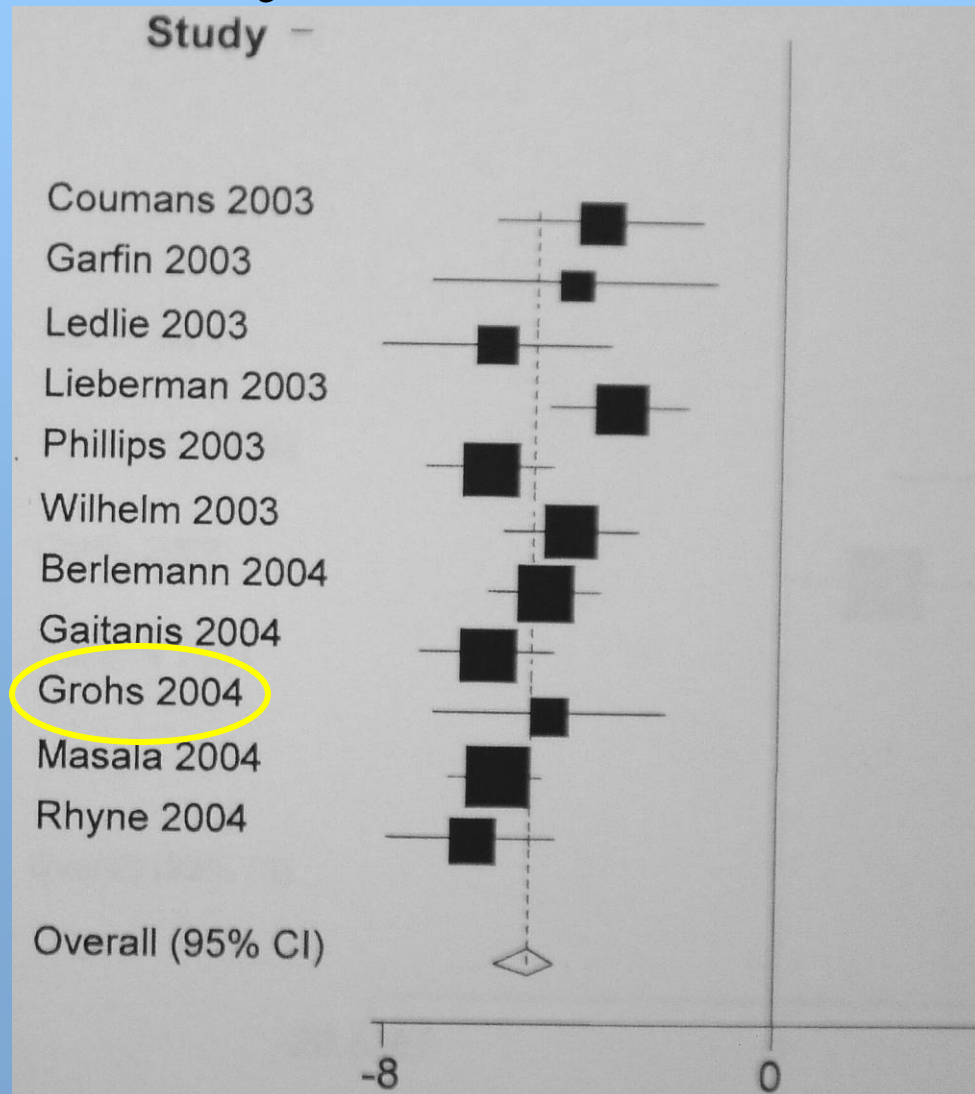
# Scientific Papers

(Medline)



# KP-Metaanalysis Bouza, Eur Spine J 2006

- pain
  - VAS



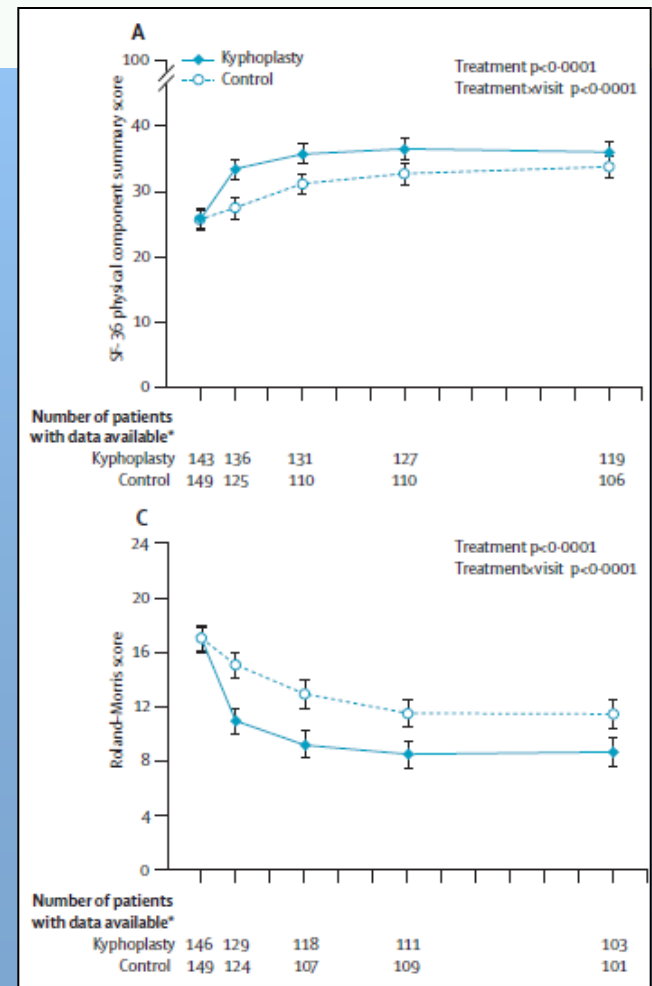
# 4 Publications 2009-10

- Prospective randomized controlled trials

# Efficacy and safety of balloon kyphoplasty compared with non-surgical care for vertebral compression fracture (FREE): a randomised controlled trial

Douglas Wardlaw, Steven R Cummings, Jan Van Meirhaeghe, Leonard Bastian, John B Tillman, Jonas Ranstam, Richard Eastell, Peter Shabe, Karen Talmadge, Steven Boonen

- Industry-driven
- prospective randomized trial
- Balloon kyphoplasty better than conservative treatment up to 3 years



# The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812

AUGUST 6, 2009

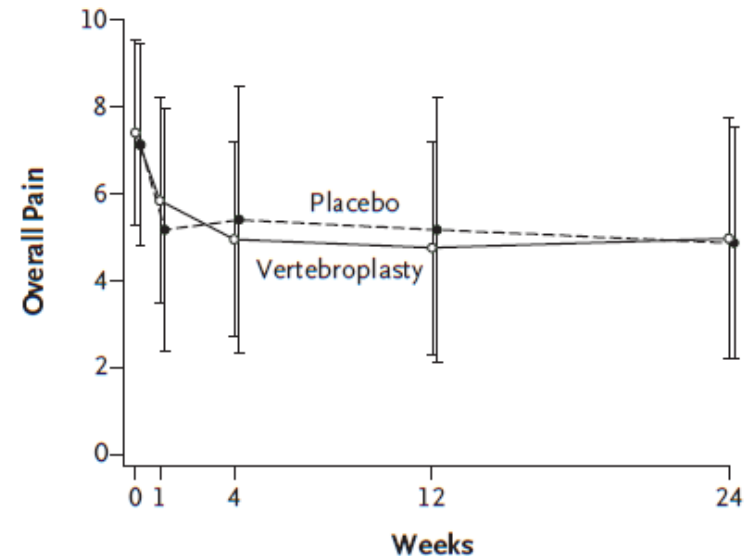
VOL. 361 NO. 6

## A Randomized Trial of Vertebroplasty for Painful Osteoporotic Vertebral Fractures

Rachelle Buchbinder, Ph.D., Richard H. Osborne, Ph.D., Peter R. Ebeling, M.D., John D. Wark, Ph.D., Peter Mitchell, M.Med., Chris Wriedt, M.B., B.S., Stephen Graves, D. Phil., Margaret P. Staples, Ph.D., and Bridie Murphy, B.Sc.

- No difference between Vertebroplasty and sham operation

A



No. at Risk

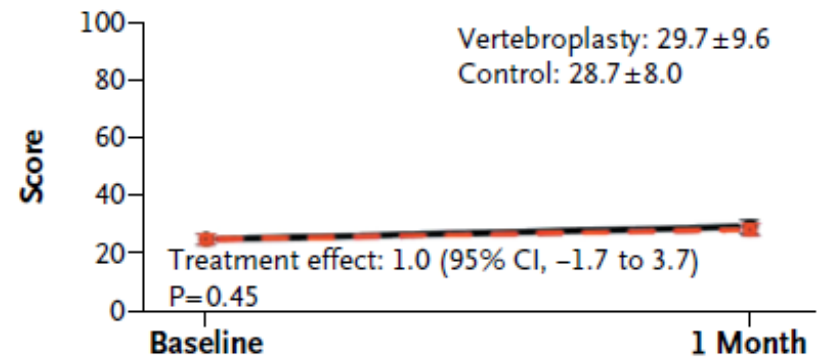
Vertebroplasty	38	37	35	36	35
Placebo	40	37	38	37	36

# A Randomized Trial of Vertebroplasty for Osteoporotic Spinal Fractures

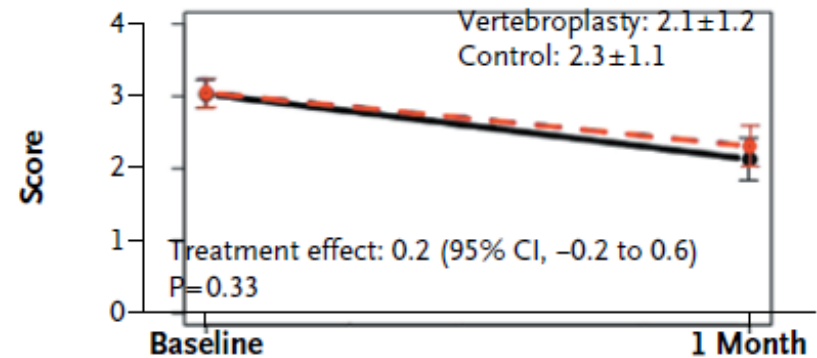
David F. Kallmes, M.D., Bryan A. Comstock, M.S., Patrick J. Heagerty, Ph.D.,  
 Judith A. Turner, Ph.D., David J. Wilson, F.R.C.P., T. H. Daniel, F.R.C.S.,  
 Richard Edwards, F.R.C.R., Leigh A. Green, F.R.C.S.,  
 Sara Owen, M.Sc., William Hollingworth, F.R.C.S.,  
 Deborah J. Annesley-Williams, F.R.C.R.,  
 and Jeffrey G. Jarvik, M.D.

- No difference between Vertebroplasty and sham operation

**A SF-36 Physical Component Summary**





**C Pain Frequency Index**

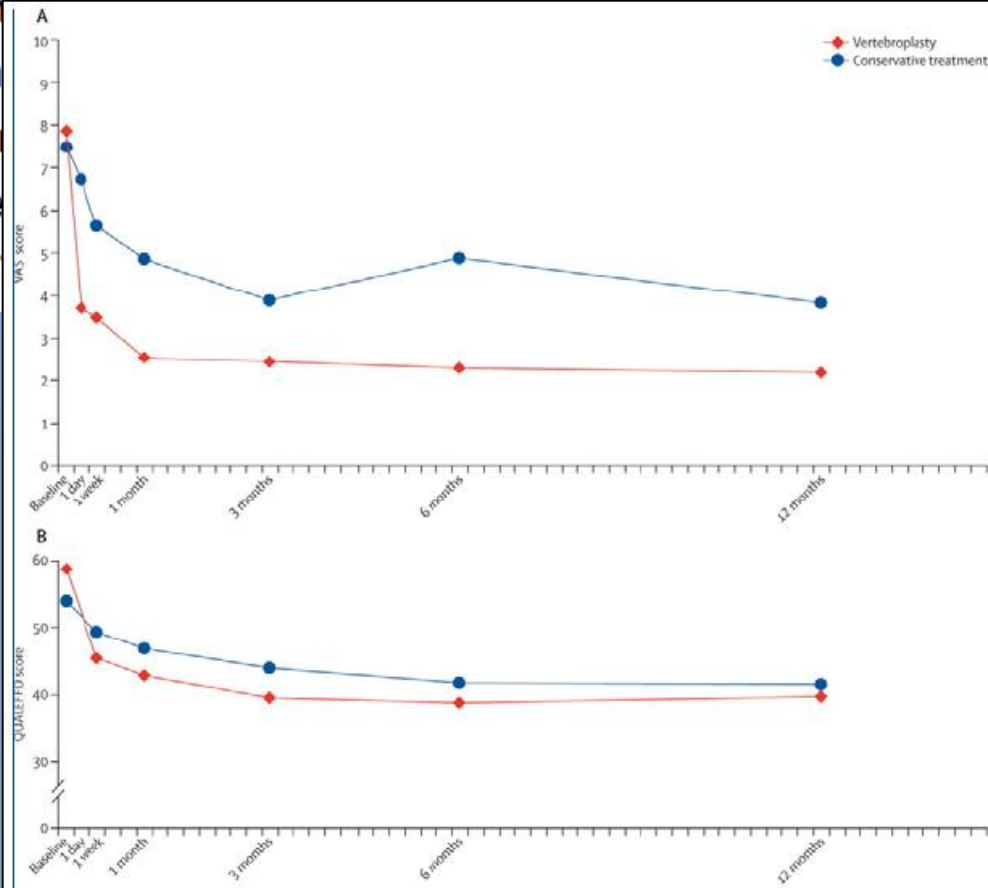


— Vertebroplasty    - - - Control

## Vertebroplasty versus conservative treatment in acute osteoporotic vertebral compression fractures (Vertos II): an open-label randomised trial

Dr Caroline AH Klazen MD<sup>a, g</sup>, , , Paul NM Lohle MD<sup>a</sup>, Prof Jolanda de Vries PhD<sup>b</sup>, Frits H Jansen MD<sup>d</sup>, Alexander V Tielbeek MD<sup>d</sup>, Marion Willem Jan J van Rooij MD<sup>a</sup>, Marinus C Schoem Harald JJ Verhaar MD<sup>g</sup>, Prof Yolanda van der G Muller MD<sup>j</sup>, Otto EH Elgersma MD<sup>k</sup>, Dirk R Halke MD<sup>n</sup>, Prof Erik Buskens MD<sup>o</sup> and Prof Willem P

- 229 Patients,
- 1year Follow up
- Vertebroplasty better



# Concerns

- Acuity of osteoporotic vertebral compression fractures
  - 6 weeks, 3 months (Wardlaw), 1 year (Kallmes, Buchbinder) ?
  - Time since onset of pain

# Concerns

- Pain from osteoporotic fractures diminishes over time (3-6 months)
- 68% of fractures older than 6 weeks (Buchbinder)
- 56% older than 14 weeks (Kallmes)
- In the plurality of patients fracture pain should have been diminished
- Selection bias in vertebroplasty trials?

# Concerns

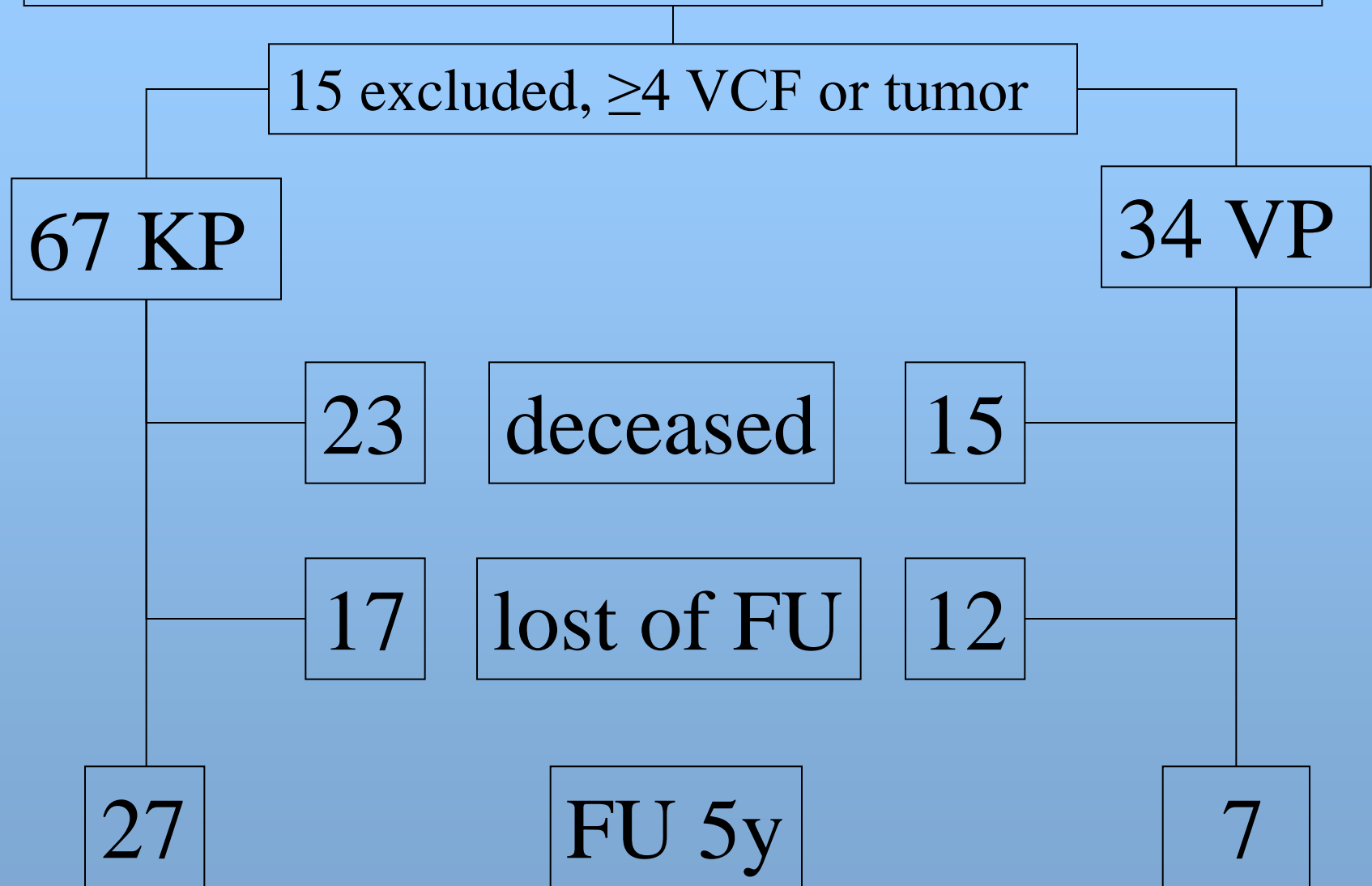
- Prospective randomized controlled trials
- Different outcome
  
- **Did they investigate the same group of patients ?**

# **5 Years Follow up after Cement Augmentation of Vertebral Compression Fractures**



Medical University Vienna  
Dept. of Orthopaedics

# 116 Patients stabilized in 2001-2003



# Patients basic data

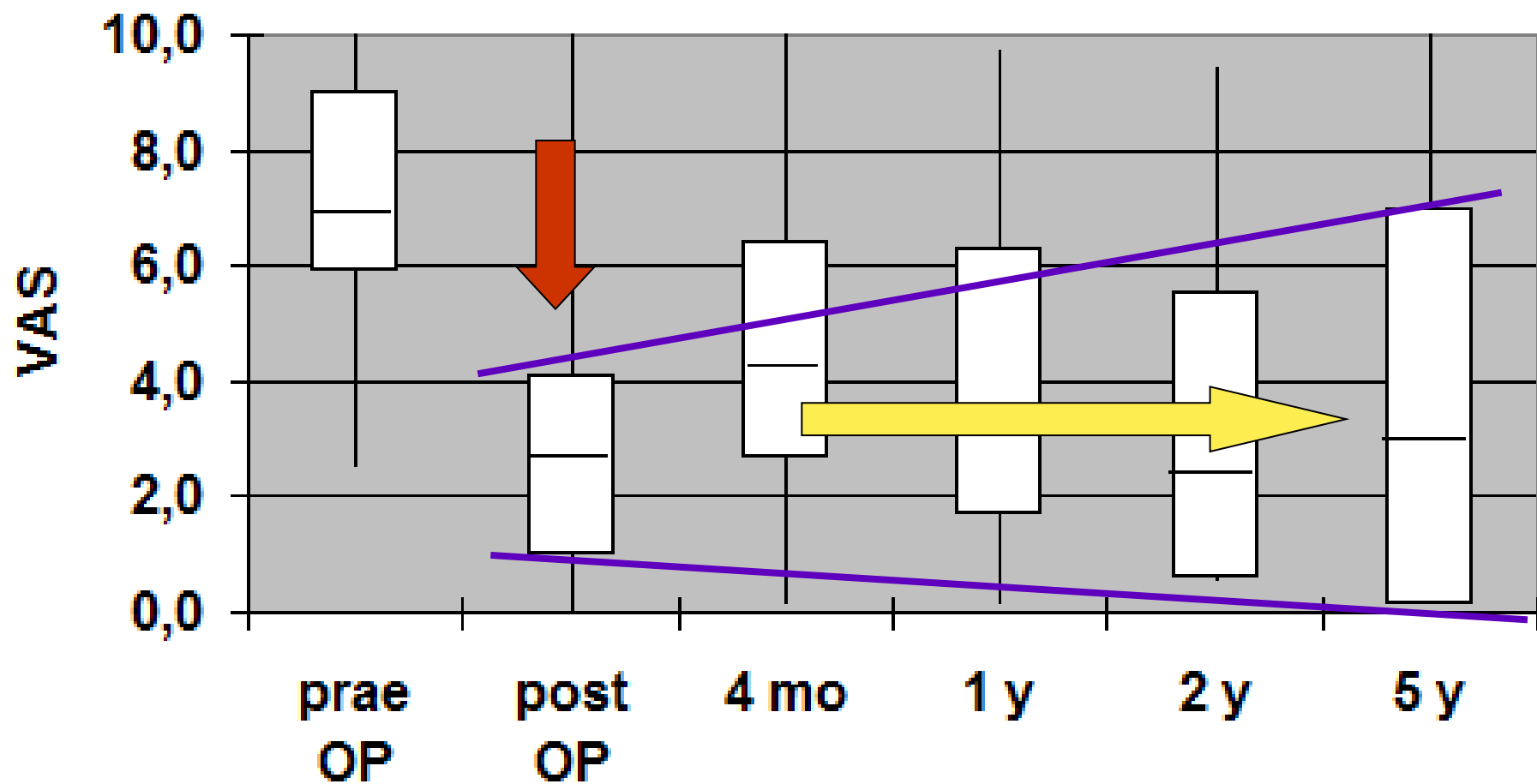
	Balloon kyphoplasty	Vertebroplasty	Significance
Patients	67	34	
Age (years)	70 (62-76)	74 (63-77)	P=0.4
Duration of pain (weeks)	12 (6-20)	12 (4-26)	n.s.
Prim/sec Osteoporosis	68:32	60:40	n.s.
Vertebral bodies / patient	1,25 (1-3)	1,26 (1-3)	n.s.
Kyphotic wedge (°)	13 (9.0-19)	8.0 (2.0-15.0)	P=0.0009
Height (%)	80 (68-89)	93 (81-100)	P=0.000002
VAS	7.7 (5.9-9.0)	8.0 (6.4-10)	n.s.
Oswestry disability index %	55 (45-67)	52 (45-64)	n.s.
	Mean (1Qu-3Qu)		

# Reduction of Deformity

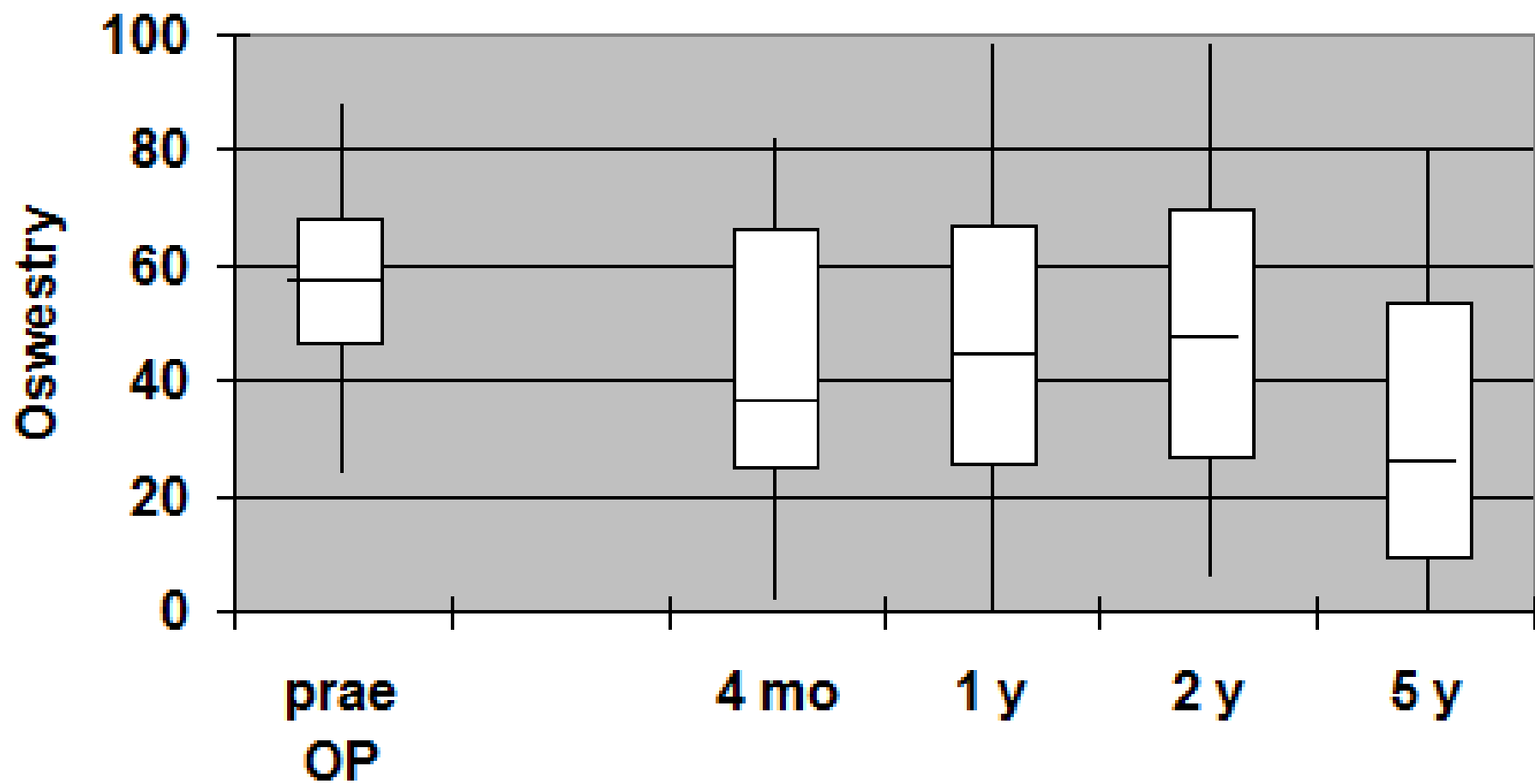


- Wedge  $9.0^{\circ}$  (7-11.5)
  - 47% of vertebral bodies with kyphoplasty
  - None with vertebroplasty
- Height 11% (8-16.5)
  - 53% of vertebral bodies with kyphoplasty
  - None with vertebroplasty

# Pain

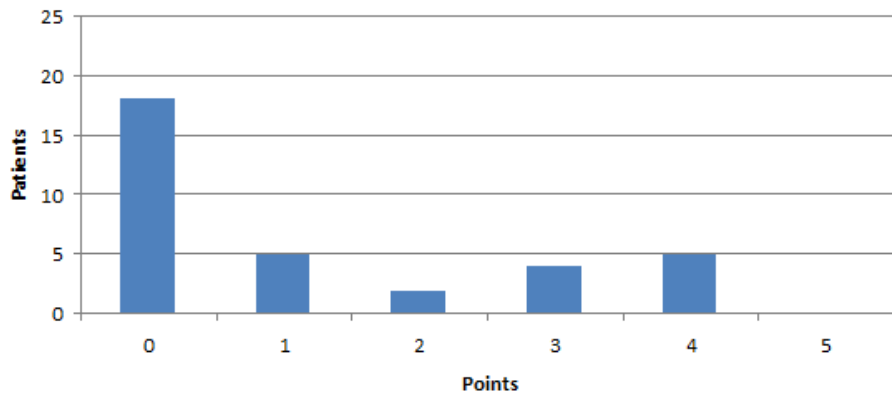


# Life quality

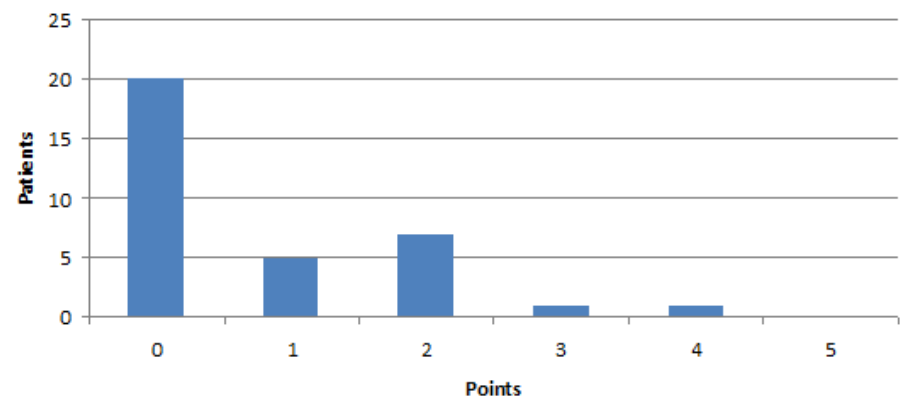


# Daily activities

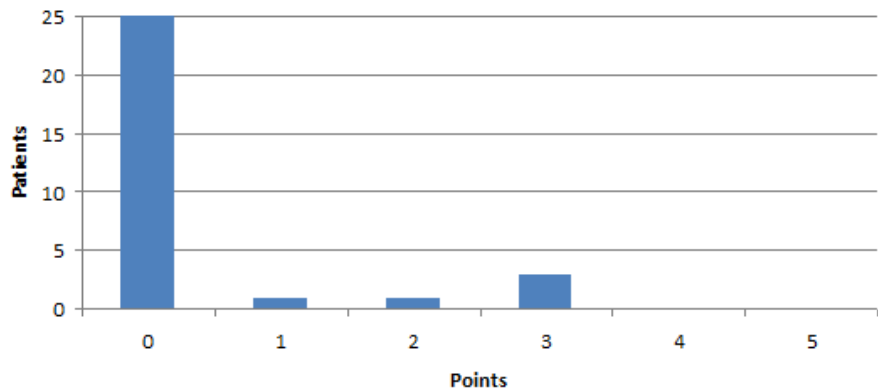
Personal care



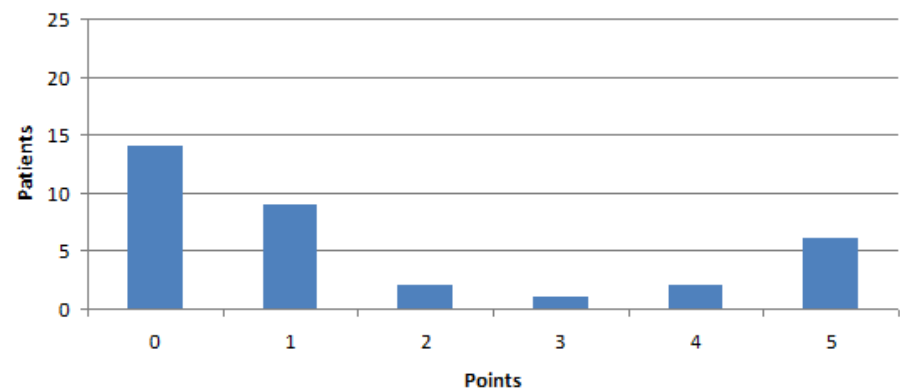
Sitting



Sleeping

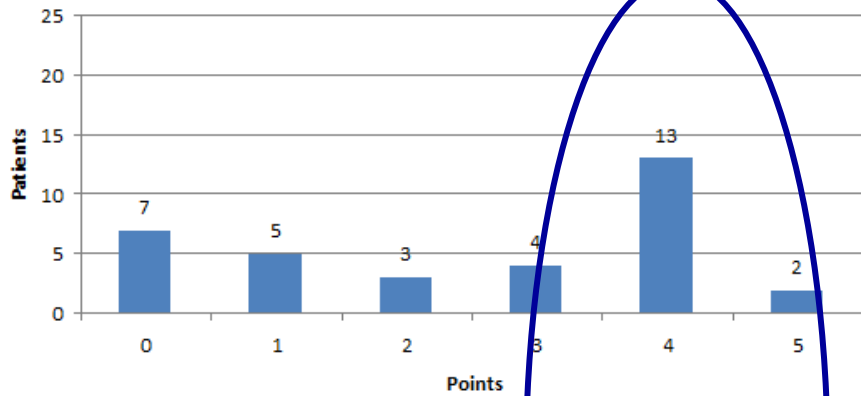


Traveling

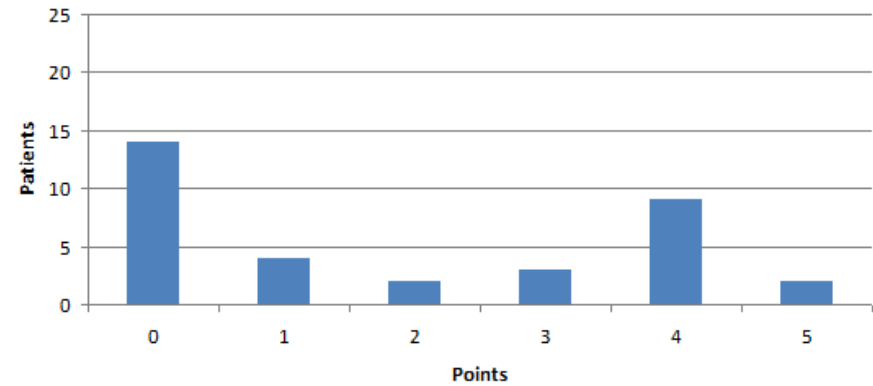


# Upright activities

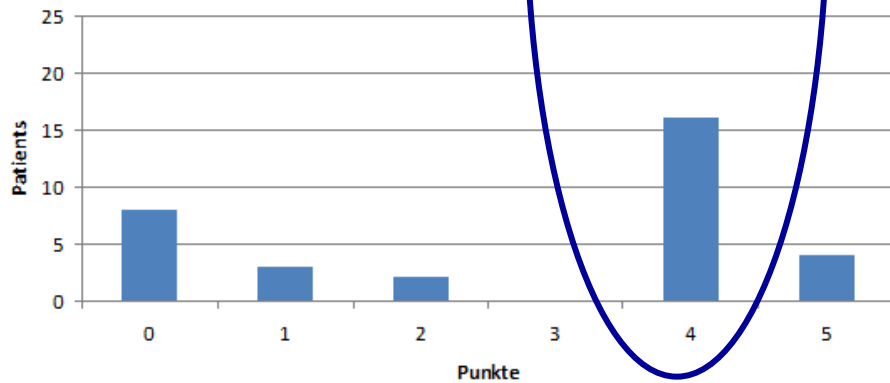
Standing



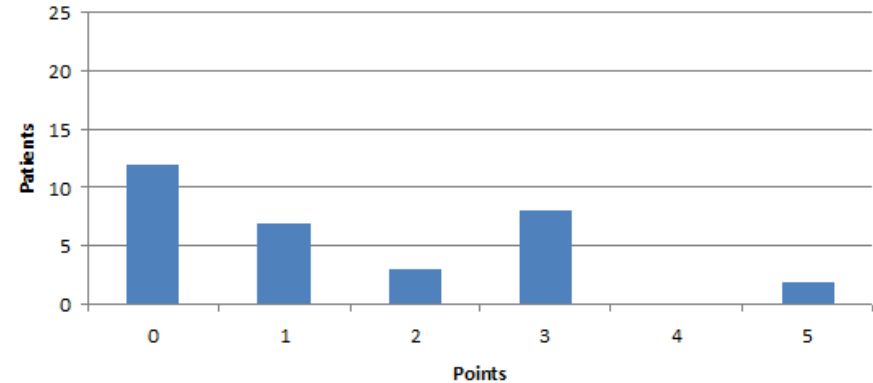
Walking



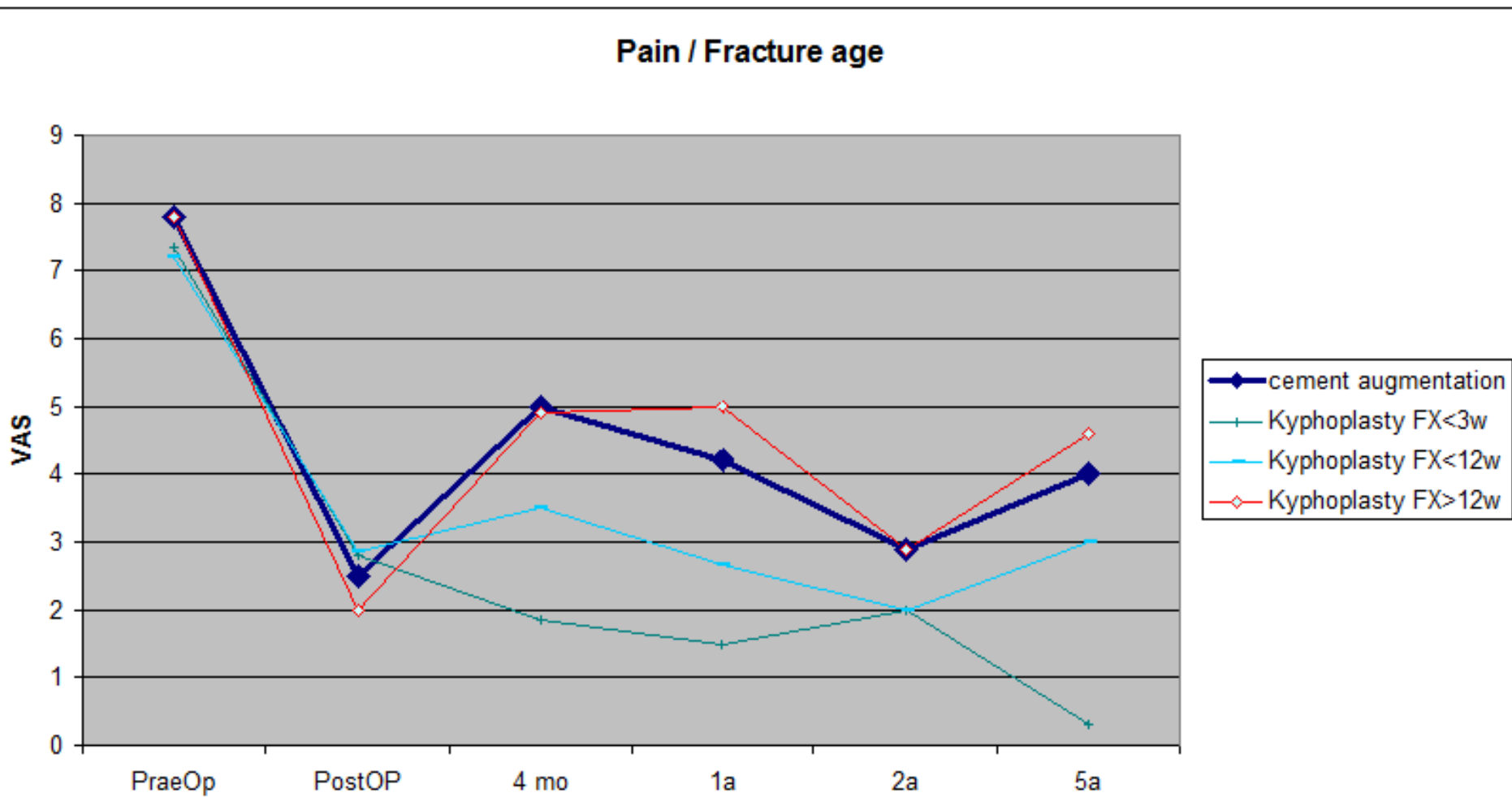
Lifting



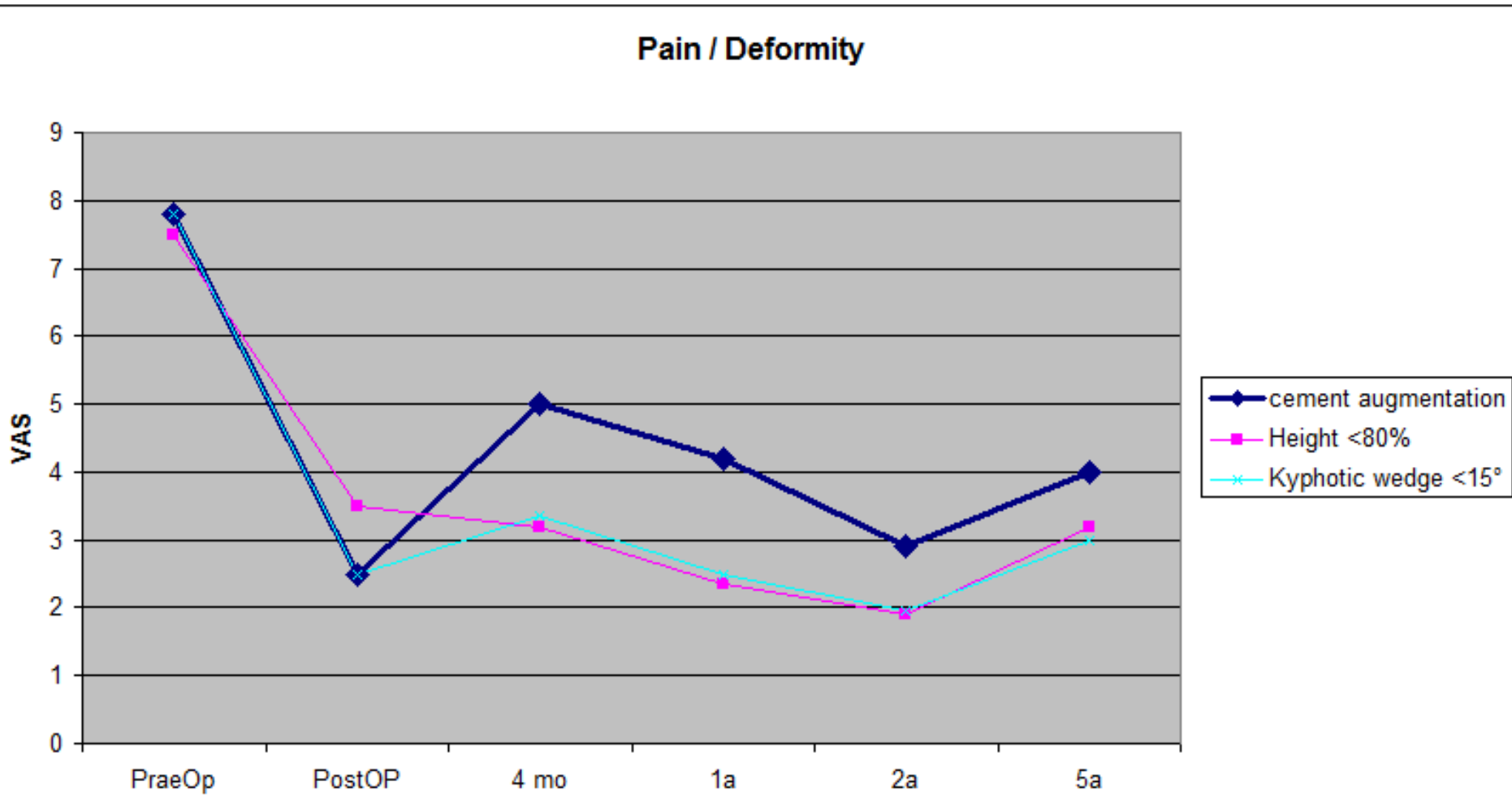
Social life



# The earlier the better

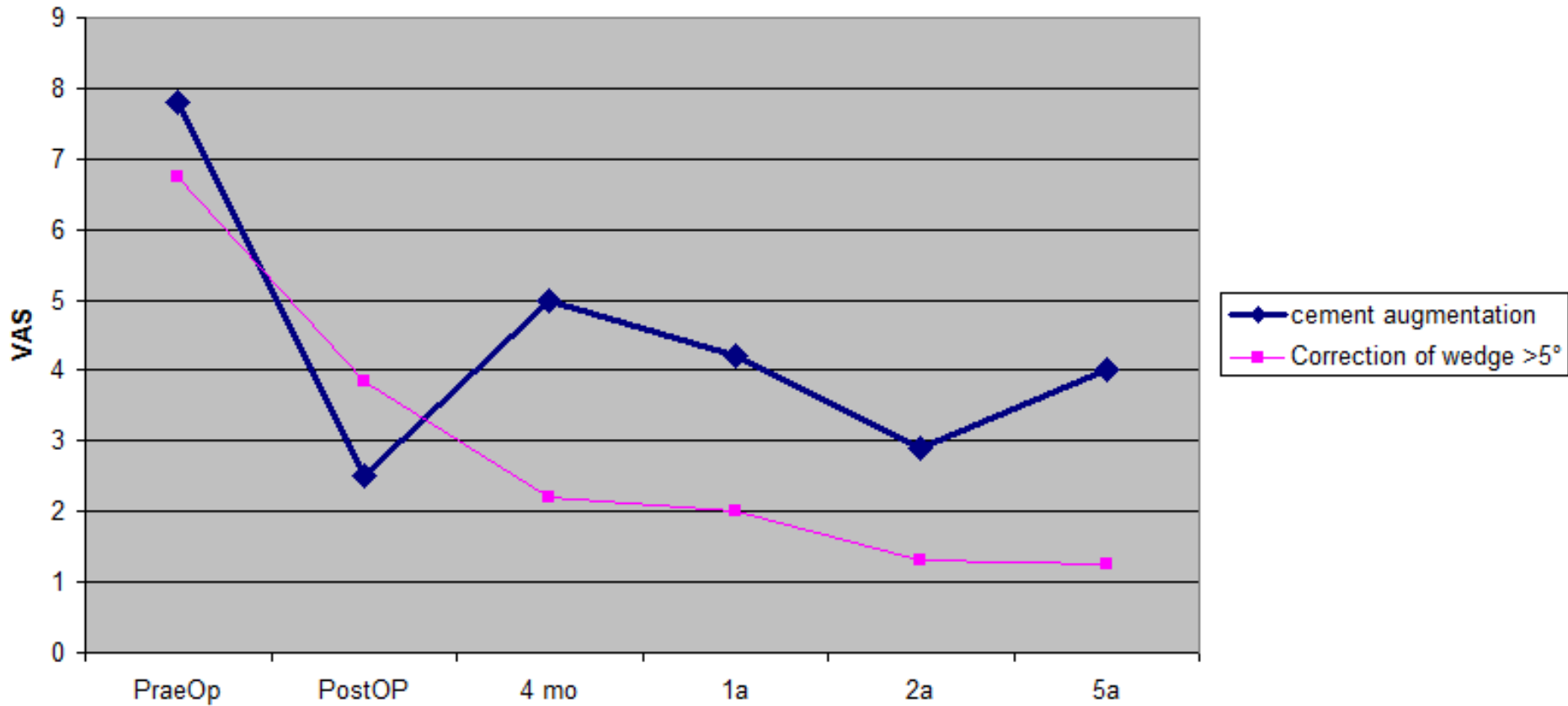


# Low height, small kyphotic angle



# major reduction

Pain / Correction of Deformity



# Conclusion: Cement augmentation

- Rapid and distinct decrease of pain
- Identification of some positive predictive factors for longlasting decrease:
  - Short time after onset of pain / fracture
    - 3weeks > 12 weeks
  - Height < 80% but kyphotic wedge < 15°
  - Correction of wedge > 5°
- Kyphoplasty > Vertebroplasty

