



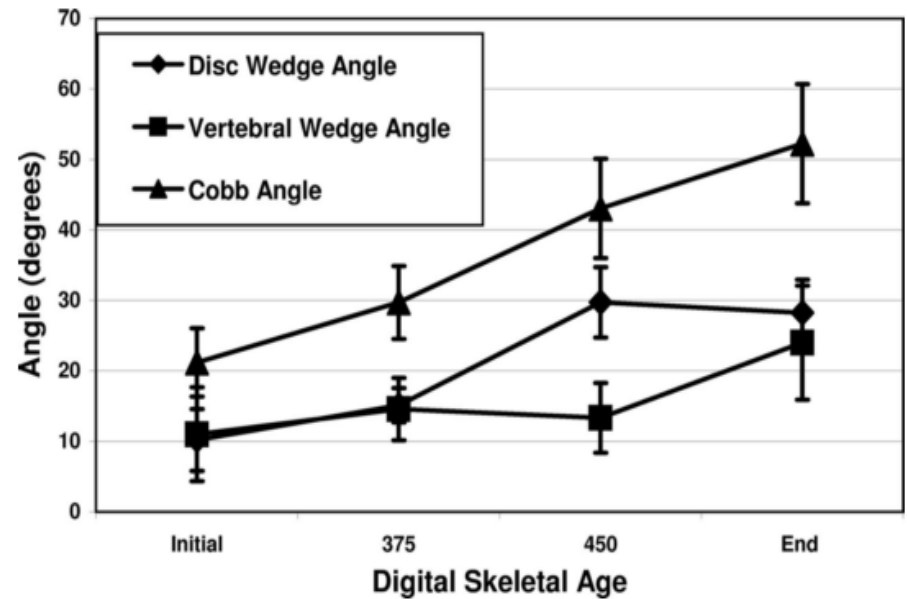
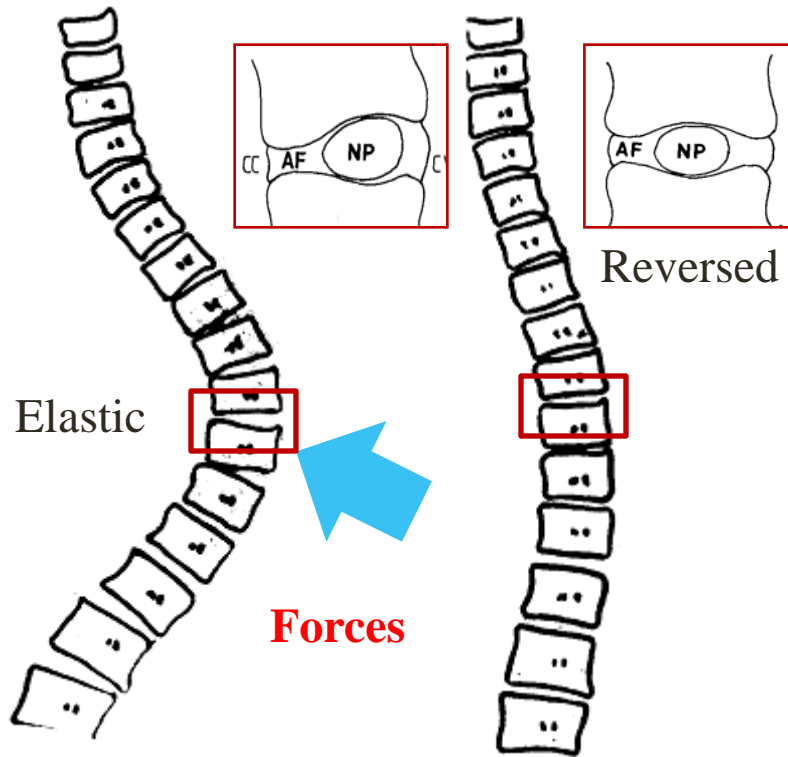
# Does disc wedging contribute to the effects of brace treatment?

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# Disc Wedging



Corrective Factor

Progressive Factor

T. K. F. Taylor, et al. Clinical Orthopaedics and Related Research 1979.  
Ryan E. Will, et al. Spine, 2009;

# Factors

Maturity

Curve  
magnitude

Curve  
flexibility

BMD/  
Osteopenia

et, al.

Effective of bracing  
treatment

Robert F. Heary, et al.  
Neurosurgery, 2008  
Hung VW, et al. *J Bone  
Joint Surg Am* 2005.  
Zi-Qiang Chen, et al. *J  
Orthop Sci* 2011

# Objective

**To investigate whether the initial disc wedging percentage could serve as an important factor in predicting the curve behavior, regression, or stabilization, after the treatment of bracing in AIS.**

# Material and Methods



**A retrospective review was performed on patients with AIS who received brace treatment at our clinic from January 2009 to July 2014.**

# Material and Methods

## Inclusion criteria

**Age 10 to 15;**  
**Risser grade: 0;**  
**Before menarche at initial visit;**  
**Main thoracic curve;**  
**Initial out-of-brace standing Cobb angle of 20-40 degree;**  
**Followed up at an interval of 3 to 6 months;**

## Exclusion Criteria

**Congenital, neuromuscular, or other connective tissue etiologies scoliosis;**  
**Braced with unsatisfactory compliance;**

# Results

**Table 1. General Data of Patients With AIS Before Brace Treatment Initiation**

Parameters Before Brace Initiation	N	Mean	SD
Age	61	11.9	1.6
Age at menarche (y)	42	12.6	1.3
Standing height (cm)	61	162.1	8.1
Weight (kg)	61	42.2	6.3
BMI	61	16.1	1.6
Disc wedging (° )	61	14.09	1.9
Disc wedging percentage (%)	61	48.89	9.3
Cobb angle (° )	61	28.57	6.7

*AIS indicates adolescent idiopathic scoliosis; BMI, body mass index;*

# Results

**Table 2. Comparison of Characteristics Before Brace Treatment Between Group A and B**

Parameters at entry	AIS with a Progressed Curve (Group A, n=15)	AIS with a Non-progressed Curve (Group B, n=46)	P
Age	11.25	12.38	0.423
Age at menarche (y)	12.4	12.7	0.614
Standing height (cm)	160.2	163.1	0.532
Weight (kg)	42.1	42.3	0.764
BMI	17.4	15.3	0.042
Disc wedging (°)	9.3	17.5	0.001
Disc wedging percentage (%)	31.7	63.4	0.001
Cobb angle (°)	29.4	25.5	0.046

*AIS indicates adolescent idiopathic scoliosis; BMI, body mass index;*



# Results

**Table 3. Predictive Factors of effects in Brace treatment Using Multivariate Logistic Regression Analysis**

Factors	Odds Ratio (95% CI)	P
BMI	9.83 (0.71-25.10)	0.089
Disc wedging percentage	10.32 (1.49-38.76)	0.001
Cobb angle (deg.)	7.12 (1.89-30.76)	0.034

# Demo Case 1

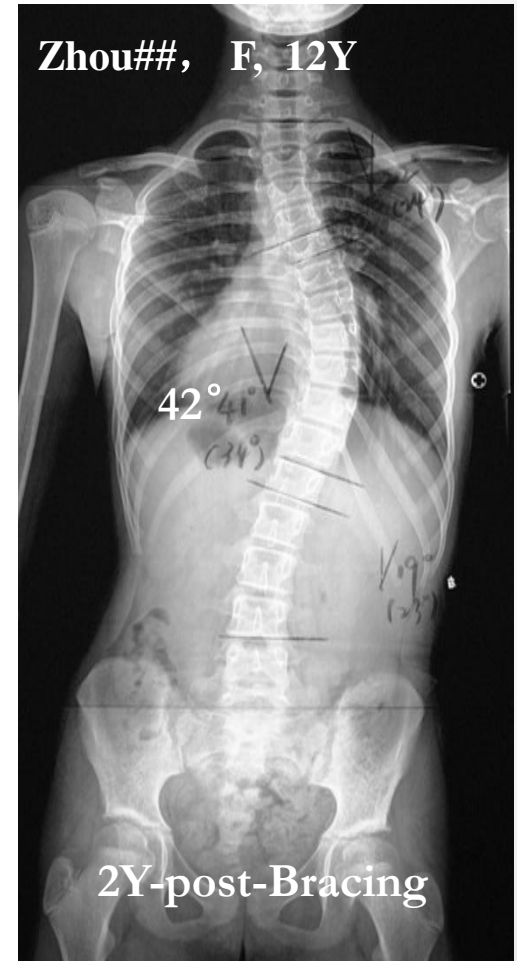
Zhou##, F, 10Y



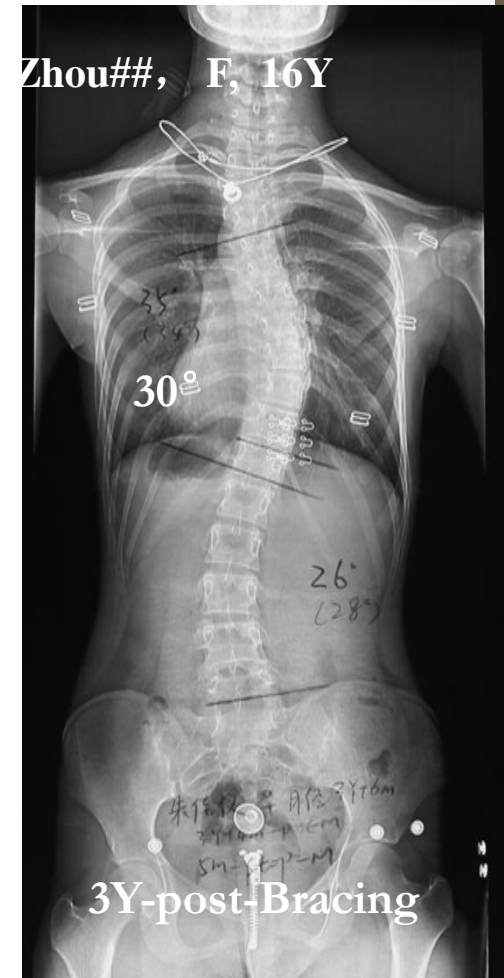
Disc wedging  
percentage: 22.54%



Zhou##, F, 12Y



# Demo Case 2



# Conclusion



In conclusion, it is revealed through a regression model that the initial disc wedging percentage, and the initial curve magnitude could predict the final effects of bracing treatment.



The present study is the first longitudinal report investigating the role of the disc wedging percentage as the predictor of curve progression during brace treatment.