# Screening for Scoliosis in Physical Therapy Students, Naresuan University

Author: Mattana Angsupisal * [1]
Suwalee Namwongsa [1]
Sasithorn Khanchan [1]
Phiangravee Nitithunmas [1]
Nawaporn Tunpakdee[1]

[1] Department of Physical Therapy, Faculty of Allied Health Sciences, Naresuan University

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*Forecast*

"Is scoliosis screening a part of the primary care management of adolescent health?"

"Should a health manager concern this care in terms of quality of school life?"

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## *Background*

- Scoliosis is a spinal deformity characterized by lateral curvature plus rotation of the involved vertebrae around a vertical axis[1, 2, 3].
- Classification of scoliosis :

  (according to magnitude, location, direction, and cause)
  - Non-structural
  - Structural

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## *Background*

- Nonstructural scoliosis:

  The spine is structurally normal with a lateral curvature, no spinal rotation, and no trunkal asymmetry.
  - Example types of nonstructural scoliosis:
    - Postural: resolves when the child is recumbent
    - Compensatory: caused by leg-length discrepancy; there is no fixed rotation of the vertebrae

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## *Background*

- Structural scoliosis:
  - Involves both a lateral curvature and rotation of the vertebrae
  - Idiopathic scoliosis (unknown etiology) is currently the most common type of structural scoliosis that affects 2% - 3% of children from 8 to 15 years of age[1,2].

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## *Background*

- Physical therapy students are likely at risk of functional scoliosis due to their job characteristics, e.g. lifting and transferring a patient, handling techniques. All that may load body mechanics and putting their back under strain.
- Screening followed by appropriate advice could alert students a possible spinal problem and increase their knowledge of postural care.

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## *Objectives*

- To determine point-prevalent rates and classify types of scoliosis in Physical Therapy Students, Naresuan University
- To determine the correlation between scoliosis prevalence and an increasing year of study.

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## *Research Design & Setting*

- Research design:
  - A pilot study
  - A cross-sectional observation study
- Setting:
  - Department of Physical Therapy, Faculty of Allied Health Sciences, Naresuan University, Thailand.

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## *Methods*

- Population & Sample:
  - Participants: 246 PT students, age range 18-20 years, 40 males and 206 females.
  - Exclusion criteria: a student who had spine-related accidents or has been treated with spinal operation.

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## *Methods*

- Data collection:

  1. Spinal alignment observation

     Spinal alignment were observed and palpated in standing position in three different views (Anterior, Right side, and Posterior views) using observational form of spinal posture (Trew M.& Everett T.,2001) and gridline mirror .

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## *Methods*

- Data collection:

  2. Screening procedure: [3, 4, 5, 6]

     2.1. The Adams forward bending test:

     - From standing position, student is asked to bend forward looking down,
     - keeping feet ~15 cm apart, knees braced back,
     - shoulders loose and hands positions in front of knees or shins with elbows straight and palms opposed.

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## *Methods*

- Data collection:

  2.2. Inclinometer for Rib humps:

  - Angle of trunk rotation (ATR) was measured using the scoliometer (Sammons Preston™ 5055).
  - Scoliometer measure : >5 degrees, ➡ are considered classifying structural scoliosis.
  - Screening process: 1-2 minutes[5].

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## *Methods*

- Data collection:
  - Note* Strict screening guideline: [3, 5, 6]

    ATR readings of 7 degrees or more (strict parameter) is recommended referral & have high possibility of Cobb angle > 10 degrees on X-Ray.
- Data Analysis:
  - Descriptive statistic for point-prevalent rates data,
  - Chi-square test ($p$=0.05) for the correlation of scoliosis prevalence and an increasing year of study.

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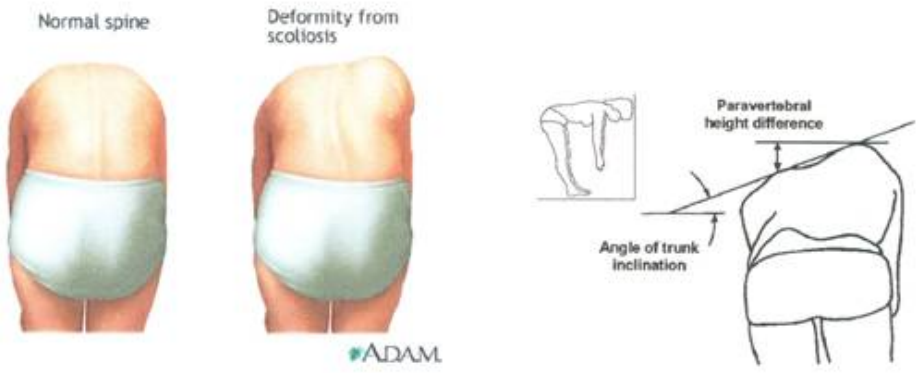
## The Adams forward bending test & Rib Humps Measurement using Scoliometer

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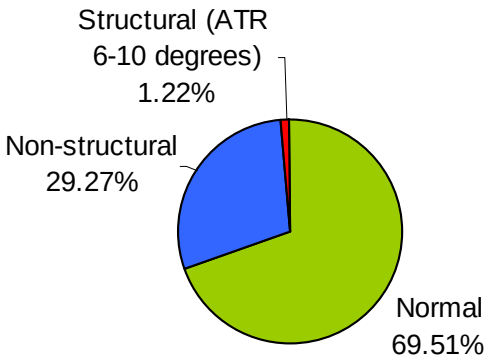
## *Result*

**Screening for Scoliosis in 246 Adolescents (Age 18-20 years)**




## *Result*

- From 246 students, all 3 students with structural scoliosis (1.22%) were female.
- The female-to-male ratio was 3 to 0 with mild curves of ATR ranging at 6-10 degrees.
- The spinal alignment observation of non-structural scoliosis students (29.27%) was shown mild asymmetrical alignment of spine with negative forward bending test.
- No statistical significance ($p$=0.213) between the correlation of scoliosis prevalence and the increasing year of study ($1^{st}$-$4^{th}$ year).

## *Discussion*

- The point prevalent rate of 1.22% structural scoliosis founded in this study was similar to many epidemiological studies[3,4,5,6].
- Although there was a difference in age groups of adolescents between this study (18-20 years) and others (mostly 10-14 years) [3,4,5,6].

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## *Discussion*

- The negative correlation between a number of scoliosis students and an increasing year of study maywell be explained that PT students might have been adapted and learnt way to correct their postural spine in routine life despite of a strain of job characteristics.
- However, factor-related scoliosis in PT students need to be further investigated prior to discussion with management.

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## *conclusion*

- 246-Late adolescents (mean age 19.91±0.58 years) in Physical therapy Department, Naresuan University were found 1.22% structural scoliosis, and 29.27% non-structural scoliosis.
- There was no correlation between scoliosis prevalent rates and study years ($p$=0.213).

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## *Future work*

- This project could be further managed in community as a part of the primary care management of adolescent health.[4, 5, 6, 7]
- By doing this, rehabilitating clinicians and health managers should build better cooperation [6].
- The impact of early screening with proper advice would benefit a family with scoliosis children which in turn enhancing quality of school life in adolescents. [4, 5, 6, 7]

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## *Food for thought*

Screening for scoliosis could be managed with the least cost in Thailand by :

Educating parents and physical educators in school about forward bending test and observation.

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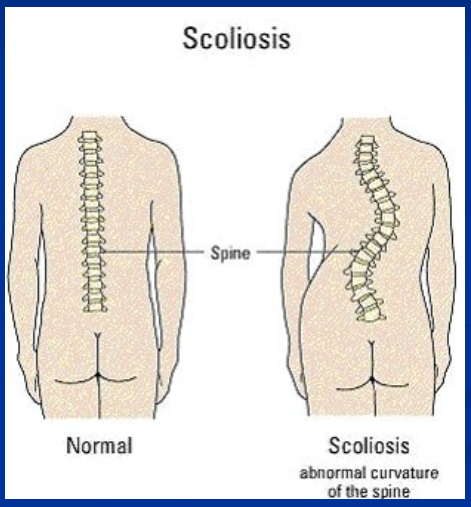
# Thank you for your attention

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