

HKU finds overweight and obesity significantly increase the risk of spinal disc degeneration and low back pain in adolescents



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Institute of Human Performance, The University of Hong Kong

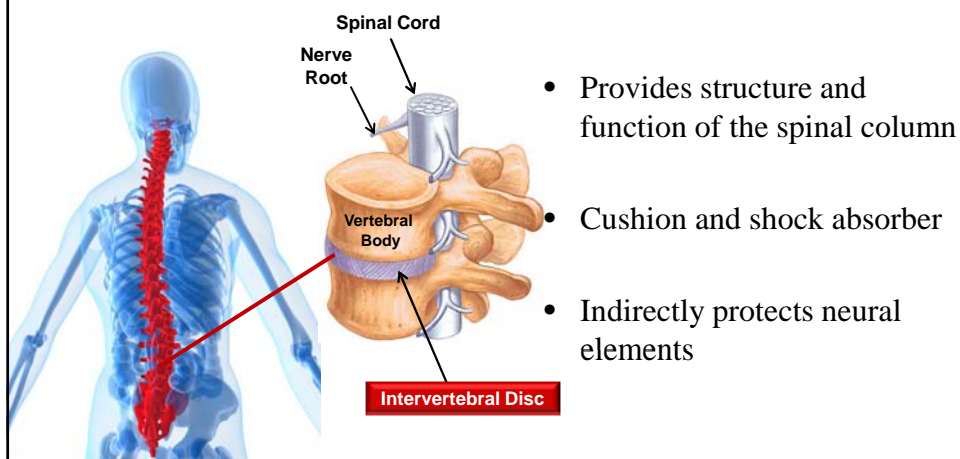
4th May, 2011



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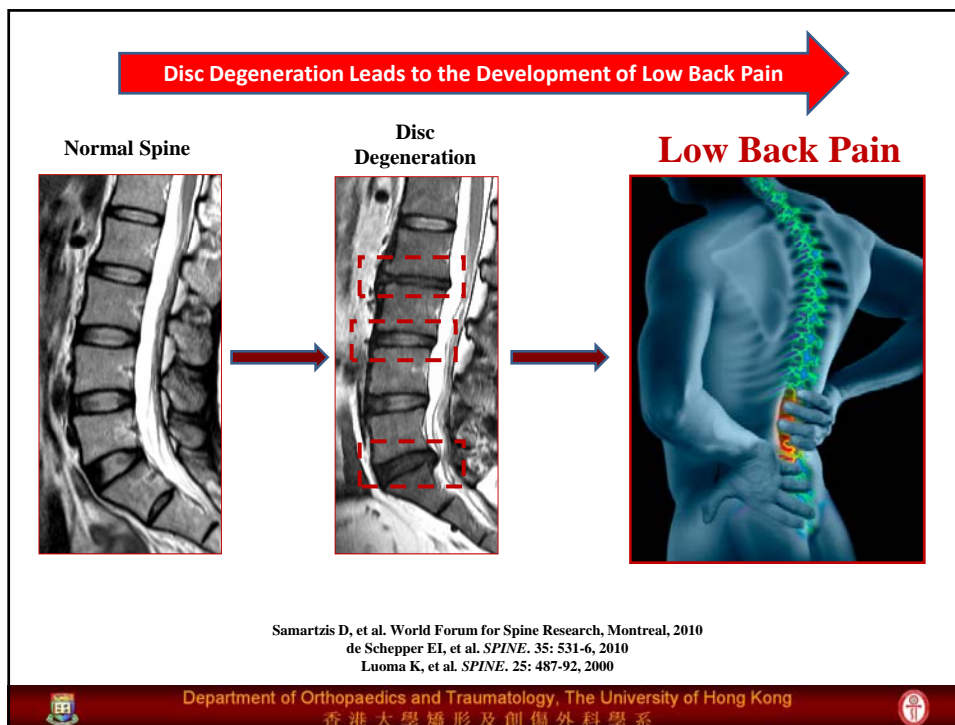


Intervertebral Disc



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Low Back Pain

Global Burden of Disease

- 2nd most common condition seeking clinical consult
- Decreases daily function & productivity
- Diminishes the quality of life
- Lost wages
- Increases health-care costs
- Psychological distress
- Low back surgery is the most common surgery

Shen F, Samartzis, D, Andersson GBJ. *J Am Acad Orthop Surg*. 14: 477-87, 2006
 Wong WS and Fielding R. *J Pain*. 12:236-245, 2011

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Treatment

Mild Low Back Pain & Disc Degeneration

- Exercise
- Analgesics
- Physiotherapy

Severe Low Back Pain & Disc Degeneration

(failed conservative treatment)

- Surgery



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CASE STUDY Female Cohort Subject

- **16 years old Female** - 73 kg (classified as overweight)
- Developed left-sided low back pain and radiating pain down left leg
- Condition worsened, with difficulty in getting out of bed
- Diagnosed with spinal disc degeneration
- After failed in conservative treatment, she eventually underwent surgery
- After surgery - body weight decreased to 64 kg
- **19 years old** - body weight increased to 82 kg (classified as obesity)
- **20 years old** - developed right-sided low back pain and diagnosed with disc degeneration at another level

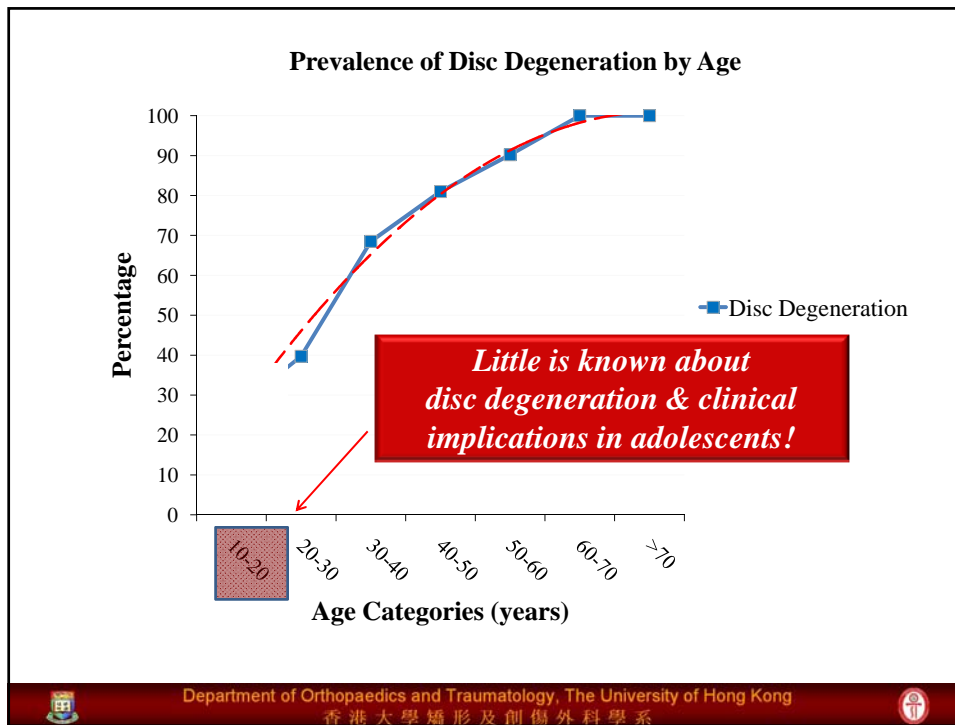


MRI at 16 Years-Old



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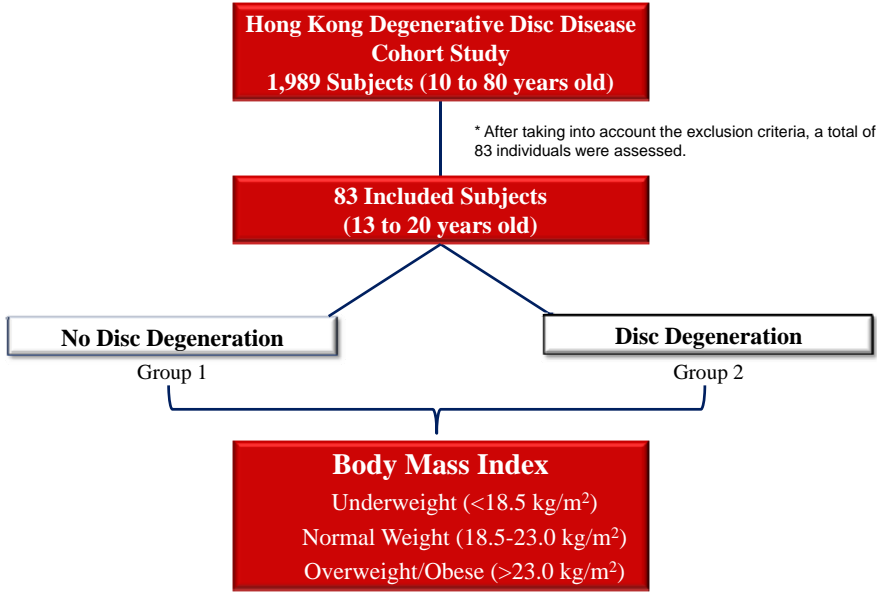


Hong Kong Degenerative Disc Disease Cohort Study

- Population-based study (since 2001)
- Currently 3,500 Southern Chinese subjects
- Largest cohort in the world

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Research Methodology



Body Mass Index (BMI)

BMI = Weight (kg) / height (m²)



Boy
16 years old
1.70 meters

- 50 kg – Underweight
- 60 kg – Normal
- 70 kg – Overweight
- 80 kg – Obesity

Girl
16 years old
1.60 meters

- 45 kg – Underweight
- 50 kg – Normal
- 65 kg – Overweight
- 75 kg – Obesity

HKU research findings

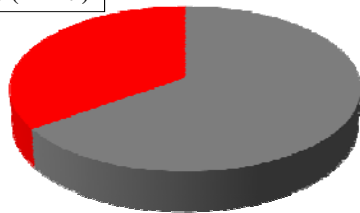


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Prevalence of Disc Degeneration

Disc Degeneration
35% (n = 29)



20-year-old Male



20-year-old Female

Disc degeneration does not only occur in the elderly, but also in adolescents !



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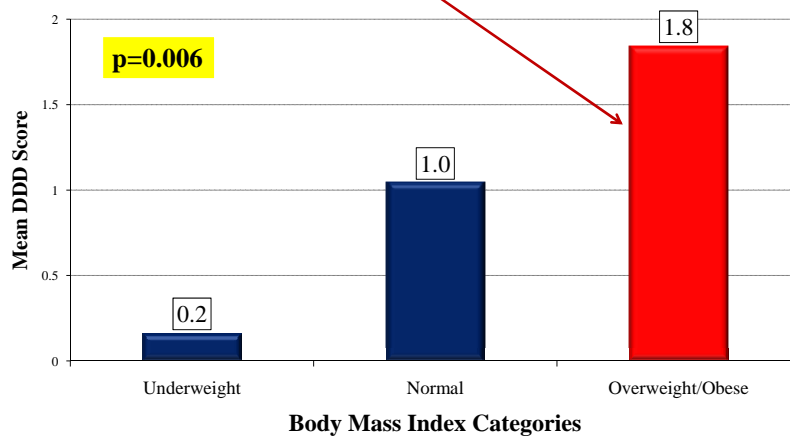
**Overweight/obese adolescents may have
3 times the risk of disc degeneration than normal weight !**



Photo obtained at <http://passion4fashion-passion4fashion.blogspot.com/2010/10/boy-of-three-who-weighs-10-stone-is.html>

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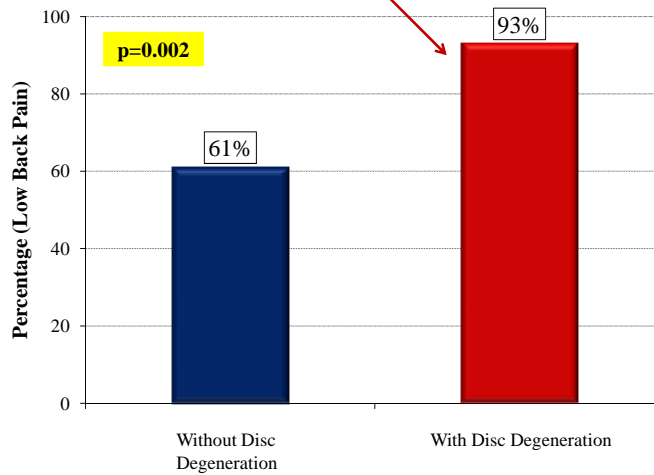
More heavier, more severity of disc degeneration !



DDD=Degenerative Disc Disease

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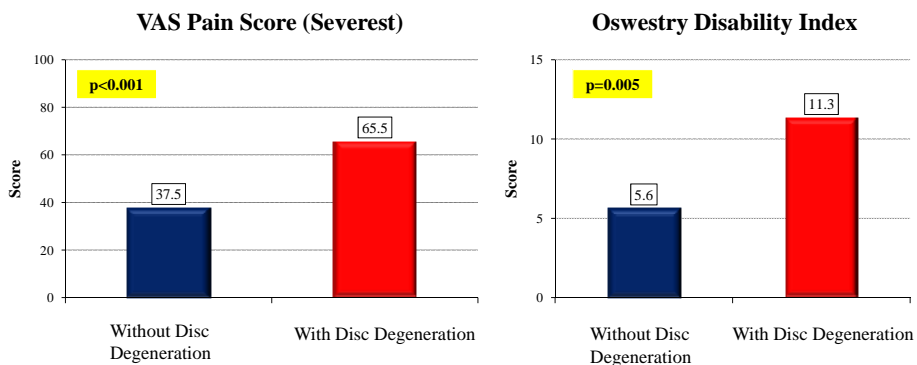
**With disc degeneration,
the occurrence of low back pain increases !**



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**With disc degeneration,
low back pain intensity increases and physical function decreases !**



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Summary of Research Findings

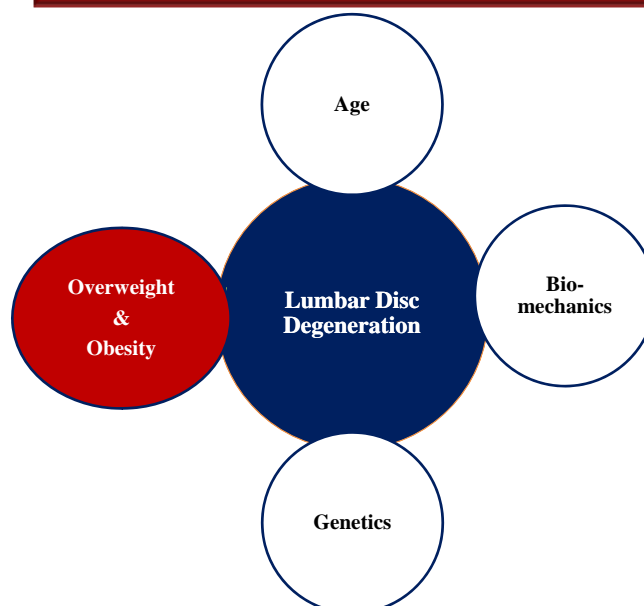
- 35% of adolescents under 20 years of age have disc degeneration
- Overweight/obesity **triples** the risk of disc degeneration
- Adolescents with disc degeneration have more severe low back pain and
 - Reduced ability to study
 - Reduced ability to work
 - Reduced ability to exercise



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Major Causes of Lumbar Disc Degeneration



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Reasons for Inactivity

- Overweight/ obese children/ adolescents
 - Energy cost of movement
 - Limited motor skill competency



- All children/adolescents
 - Limited space for safe play
 - Academic responsibilities
 - Sedentary activities are appealing for the younger generation



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Strategies to Increase Activity

- Prevention
 - Establish healthy physical activity and eating habits in early childhood
- Parental involvement
 - Increases child activity
 - Lifelong activity patterns
 - Motivator for Hong Kong children



Photo obtained from OC Community / University Communications



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Strategies to Increase Activity

- Intervention
 - Family
 - Begin with low intensity activity
 - Walking as an alternative to motorized transport
 - Active video gaming
 - Enjoyment



Photos obtained from *Gamerize*: <http://www.copyright-free-images.com>



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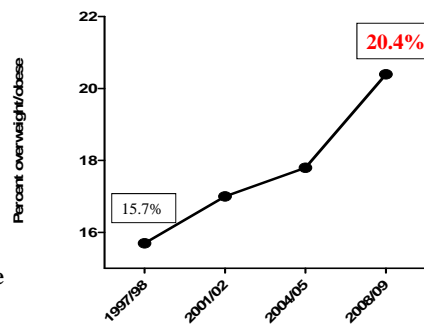
Implications and Suggestions

Overweight and obesity

- Pandemic conditions, currently on the rise in Hong Kong and in particular in young individuals.
- According to the Department of Health, as many as 20.4% of school aged children (6 to 18 years old) in Hong Kong were overweight or obese in 2008/09.

Obesity and overweight can bring negative health impacts

- Diabetes
- Cardiovascular Disease
- **DISC DEGENERATION & LOW BACK PAIN**



Source: Department of Health

**What is bad for the heart,
is also bad for the back !**



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Public Health Concern !

Increase Awareness

- Disc degeneration in adolescents
 - Increases low back pain episodes
 - Leads to greater severity of disc degeneration symptoms
- Preventive measures
 - Avoid being overweight



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50 years of Excellence –
"Commemorating the Past,
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18-21 August 2011

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<i>Peter Devane</i>	-New Zealand	(Joint Reconstruction)
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