

Honor Society of Nursing, Sigma Theta Tau International
23rd International Nursing Research Congress

Evidence-based Approach to Establish National Physical Activity Guidelines for Children and Young in Taiwan

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Known Facts



- ❖ Physical activities can improve children's health
- ❖ World Health Organization (WHO) and many countries have developed their guidelines of recommended amount of children's PA
- ❖ Minute has become the prevailing unit used in PA guideline

Improvements



- ❖ Systematically consolidate the amount of PA recommended by different countries from literature
- ❖ Provide empirical data of children's achievement rate of the amount of recommended PA in different countries
- ❖ Develop Taiwan's new guideline of recommended amount of PA into national policy. From three times every week, thirty minutes every time, and 130 heart rate per minute to thirty minutes every day.

Background (1/2)

Close Relationship between PA and Health

- ❖ Inactivity in children and young's life is a serious problem worldwide and it has deep influence on them, both physically and mentally.
- ❖ The leading driver to childhood obesity is:
 - lack of PA
 - long time of sedentary behavior

(Chen, Liou, & Wu , 2008; Twist, 2001)

Background (2/2)

The Benefits of PA



❖ The benefits of PA include:

- Improving cardiopulmonary
- Muscles and bone health
- Improving cardiovascular fitness and metabolic health biomarkers
- Improving body composition
- Learning and Intellectual development
- To learn interpersonal and problem solving skills

(United States Department of Health and Human Services, 2008)

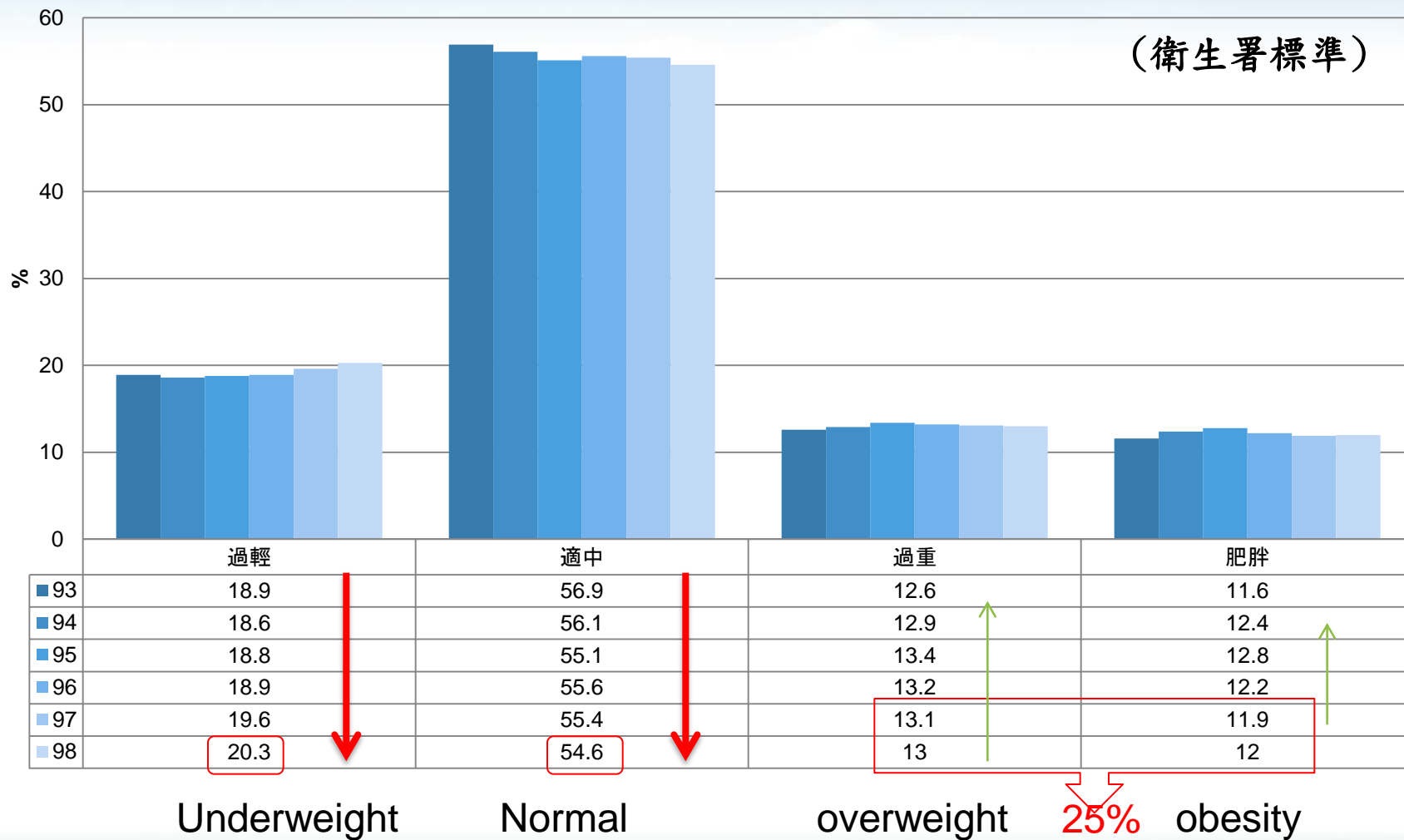
The Prevalence Rate of Children Obesity in Taiwan

❖ In National wide health survey conducted in 2007, the rates of obesity students

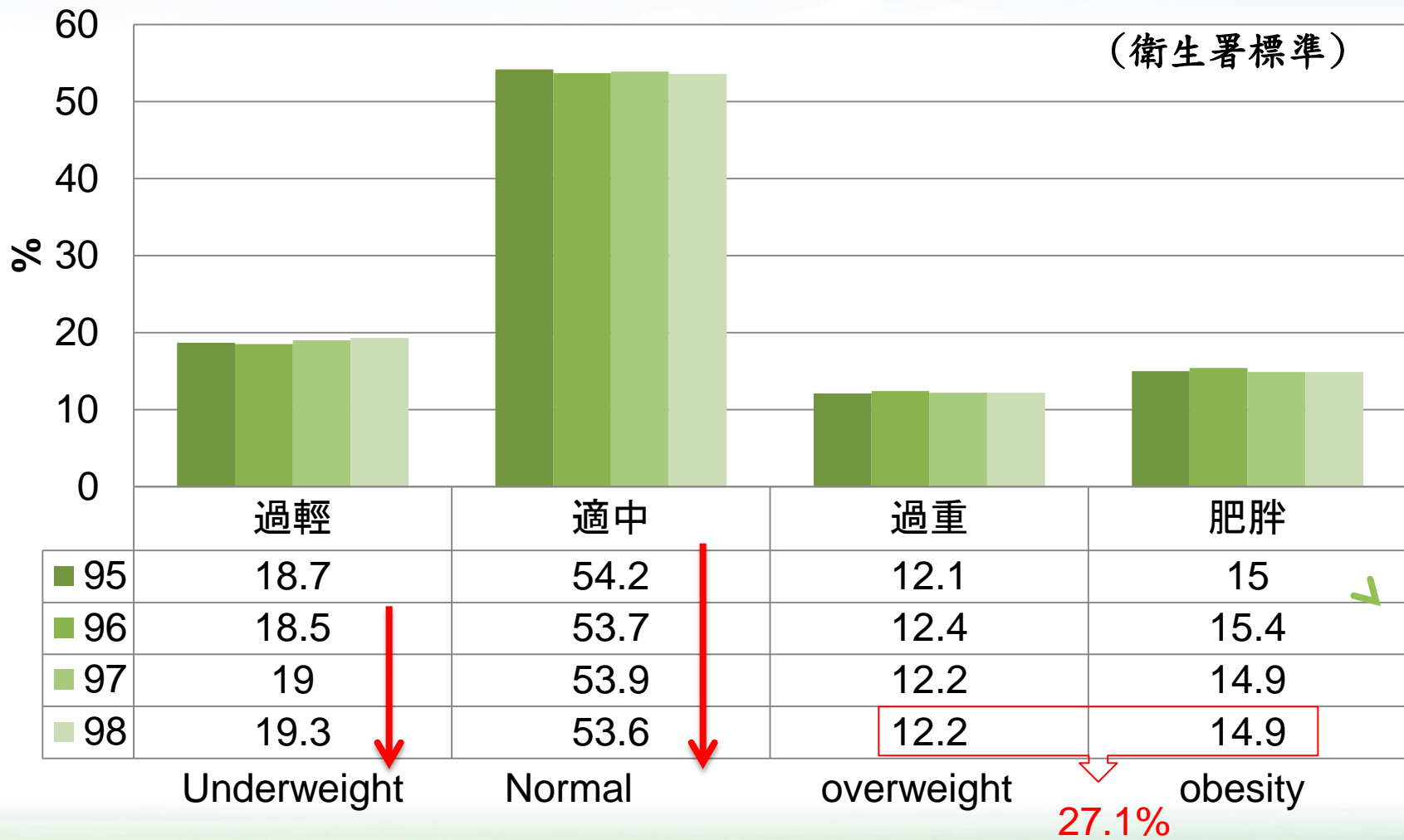
- 24.2% for elementary school students
- 25.9% for junior high school students
- 25.1% for senior high school students
- 25.1% for vocational school students

(Liou, Chang, 2007)

The Trend of Classification of Body Weight in 6 to 12 Children



The Trend of Classification of Body Weight in 13 to 15 Children



Inactivity is an Important Factor



- ❖ Inactivity is the fourth risk factor of death in the world.
- ❖ WHO actively takes the role of promoting physical activities and establishes PA guidelines:
 - Frequency
 - Time
 - Intensity
 - Type
 - Amount of PA

Global Recommendations on Physical Activity for Health



- ❖ The recommendations to improve health are:
 - Children and youth aged 5-17 should accumulate at least 60 minutes of moderate - to vigorous-intensity physical activity daily
 - Amounts of physical activity greater than 60 minutes provide additional health benefits.
 - Most of the daily physical activity should be aerobic. Vigorous-intensity activities should be incorporated, including those that strengthen muscle and bone, at least 3 times per week

(WHO, 2011)

Amount of PA Recommended by Different Countries

Mins
/wk



Figure 1 Amount of PA recommended by different countries

The PA Recommendations of Taiwan



- ❖ The Ministry of Education of Taiwan initiated its 333 plan in 1998 as the core vehicle to promote regular exercise
- ❖ 333 plan means exercise three times every week, 30 minutes every time, and exercise intensity reaching at least 130 heart rate per minute

Method



- ❖ This study used Delphi method to construct recommended amount of PA consensus
- ❖ Two rounds of Delphi reviews and two panel discussions were conducted

Study Subjects



- ❖ Study subjects are total 105 PA experts from industry, academia, public and private sectors

Experts Background Information

	N	Gender		background information
		M	F	
Scholar / Professor	57	23	24	Physical education, public health, health promotion, nursing
Principle	7	4	3	Elementary school, junior high school, senior high / vocational school
P.E. teacher	4	2	2	Elementary school, junior high school, senior high / vocational school
Teacher	6	3	3	Elementary school, junior high school, senior high / vocational school
School nurse	6	0	6	Elementary school, junior high school, senior high / vocational school
Parents	4	1	3	Elementary school, junior high school, senior high / vocational school
Students	14	7	7	Elementary school, junior high school, senior high school
Officer of Ministry of Education	3	2	1	Department of Physical Education, Ministry of Education
Director of Physical Activity and Health	3	2	1	one each from northern, central, and southern Taiwan
Industry	1	1	0	Sports equipment and instruments
Total	105	55	50	

Procedures and Analysis



- ❖ We systematically reviewed related literatures, websites, and focused on policy implementation and current condition of PA
- ❖ Offered these data to participants and after two rounds Delphi reviews (n = 63, 43)
- ❖ Two panel discussions (n = 26, 22)

The image shows a view through an open window. The window frames are visible on the left and right sides. Outside, there is a vast green field in the foreground, a single tree on a small hill in the middle ground, and a bright blue sky with a large, fluffy white cloud. The text is centered in the upper half of the image.

The Recommendations of PA Amount and Consensus

The Recommended Amount of Vigorous-intensity PA



- ❖ Amount of vigorous-intensity PA for age segment of 7 to 12, 13 to 15, and 16 to 18 should increase as age increase
- ❖ Considering senior high school students face great pressure from schoolwork and the fact that the level of Taiwanese' PA is low, vigorous-intensity PA is adjusted to 120 minutes every week.
- ❖ The second round panel discussion considered future promotion and preferences and agreed to adjust the recommendation to 150 minutes every week.

The Recommended Amount of Moderate-intensity PA



- ❖ 210 minutes of moderate-intensity PA every week is recommended for easier campus promotion purpose
- ❖ Moderate-intensity PA 30 every day

The Recommendations of Sedentary Behavior



- ❖ Experts suggested that elementary school and middle school students' sedentary behavior should be limited to two hours
- ❖ Sedentary behavior clearly defined as watching TV, playing video games, surfing internet, and using computers at leisure times
- ❖ Students should spend less than two hours on sedentary behavior

The Recommendations of Physical Education



- ❖ 70% to 80% of actual PA is achieved in P.E. class
- ❖ Teachers should deliver diversified instruction with particular focus on fitness, health, and interest.
- ❖ For between-class exercise, it should consist of large, vivid, diversified, simple and easy-to-learn movement.

The Recommendations of Walking to School



- ❖ This study provides recommendation and solutions to issues related to walking to school
- ❖ Encourages weekend parents-children interaction
- ❖ Changes in school policy and homework design are also important drivers to increase student's PA

Proposed Guidelines and Consensus of Physical Activity for Students



Items	Physical activity (min/wk)		Sedentary leisure time after school	Physical education		PA in school	Walk to school	PA with family		
	Vigorous physical activity (min/wk)	Moderate physical activity (min/wk)	Watch TV, Play computer game, surf on the web (hr/day)	Time/week	Percent of physically active time in school physical education class (%)	Times/week	Encouraged	Encouraged		
1-2 grades	90 3 times *30 min/occ	210	As less as possible	3-4	70-80	3-5			Encouraged	Encouraged
3-6 grades	90 3 times *30 min/occ	210	<2							
7-9 grades	120 4 times *30 min/occ	210	<2							
10-12 grades	150 5 times *30 min/occ	210	<2	2-3						

台灣中小學生身體活動量指引

333再升級 210增活力

項目	身體活動 (分鐘/週)		靜態 休閒時間 (週間課後)	體育課		課間操 (身體活動)	走路 上下學	促進 親子活動
	費力 身體活動 (分鐘/週)	中等費力以上 身體活動 (分鐘/週)	指看電視、 打電動、上網、 用電腦時間 (小時/天)	節數 (節/週)	課堂中 實際活動 時間比率(%)	次數 (次/週)		
國小低年級	90 3次*30分	210	越少越好 最好不要	3-4	70-80	3-5	鼓勵	鼓勵
國小中、高年級	90 3次*30分	210	<2					
國中	120 4次*30分	210	<2	2-3				
高中職	150 5次*30分	210	<2	2-3				

The Definitions of Physical Activity Guidelines for Students

費力活動

1. 會提升心肺功能
2. 強度跟慢跑差不多
3. 做這些活動會讓你覺得身體費力
4. 呼吸很喘，說話會上氣不接下氣，沒辦法一面活動，一面跟別人輕鬆說話
5. 會讓你滿頭大汗，或是心跳加快很多

活動舉例

跑步、打球(如籃球、足球、網球單打)、連續快速游泳、快速溜冰、跳繩、登山爬坡、爬樓梯、有氧舞蹈/街舞、快速騎腳踏車、搬運大於10公斤的重物(例如排骨便當20個、珍珠奶茶700cc裝15杯)、柔道、跆拳道、攀岩。

中等費力活動

1. 可以舒展筋骨，促進新陳代謝
2. 強度跟快走差不多
3. 做這些活動時會讓你覺得身體有點費力
4. 呼吸會比平常喘些，可以舒服的對話，但沒有辦法唱歌
5. 會讓你輕微出汗，或是心跳快一點

活動舉例

快走、打球(羽球、排球、桌球、網球雙打、棒球、壘球)、登山健行、用一般速度游泳(不含慢游、玩水泡水)、用一般速度騎腳踏車、下樓梯、舞蹈(如迪斯可、嘻哈舞、土風舞、民族舞蹈、健身操、不含慢舞)、一般速度溜冰、玩滑板、吊單槓、扯鈴、玩飛盤、溜狗、拿有點重的東西走路(4.5-9公斤，例如背重的書包、一箱24瓶易開罐飲料、二包A4的紙、二瓶家庭號鮮奶)或費力的打掃工作(拖地、擦地、搬移教室桌椅、清洗窗戶)。

Future Development (Application)



- ❖ Medical personnel can use systematic literature review, empirical data, and Delphi method to construct the consensus of health indicators and form national health policies.
- ❖ With the recommended amount of PA, school nurses can convince schools to change policies to increase PA, P.E. class time, and between-class exercise time to achieve 30 minutes of PA every day.
- ❖ The fact that students spend too much time on sedentary behavior is worth further assistance

Thanks for your attention!!

