

新高中體育課程詮釋

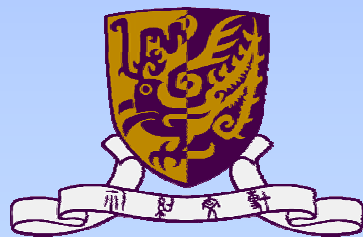
23.1.2008

健康生活：知識、態度和技能

Healthy Living: Knowledge, Attitude, and Skills

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Health

Tradition

- Free from disease

1947 WHO

- Health is a state of complete physical, mental, and social well-being, and not merely the absence of disease and infirmity

Physical Fitness

- Physical fitness is ability to perform muscular work satisfactorily
- Determined by several variables including habitual physical activity level, diet, and heredity

Physical fitness

Health-related fitness

Cardio-respiratory
endurance
Muscular endurance
Muscular strength
Body composition
Flexibility

Skill-related fitness

Agility
Balance
Co-ordination
Speed
Power
Reaction time

Physiological Fitness

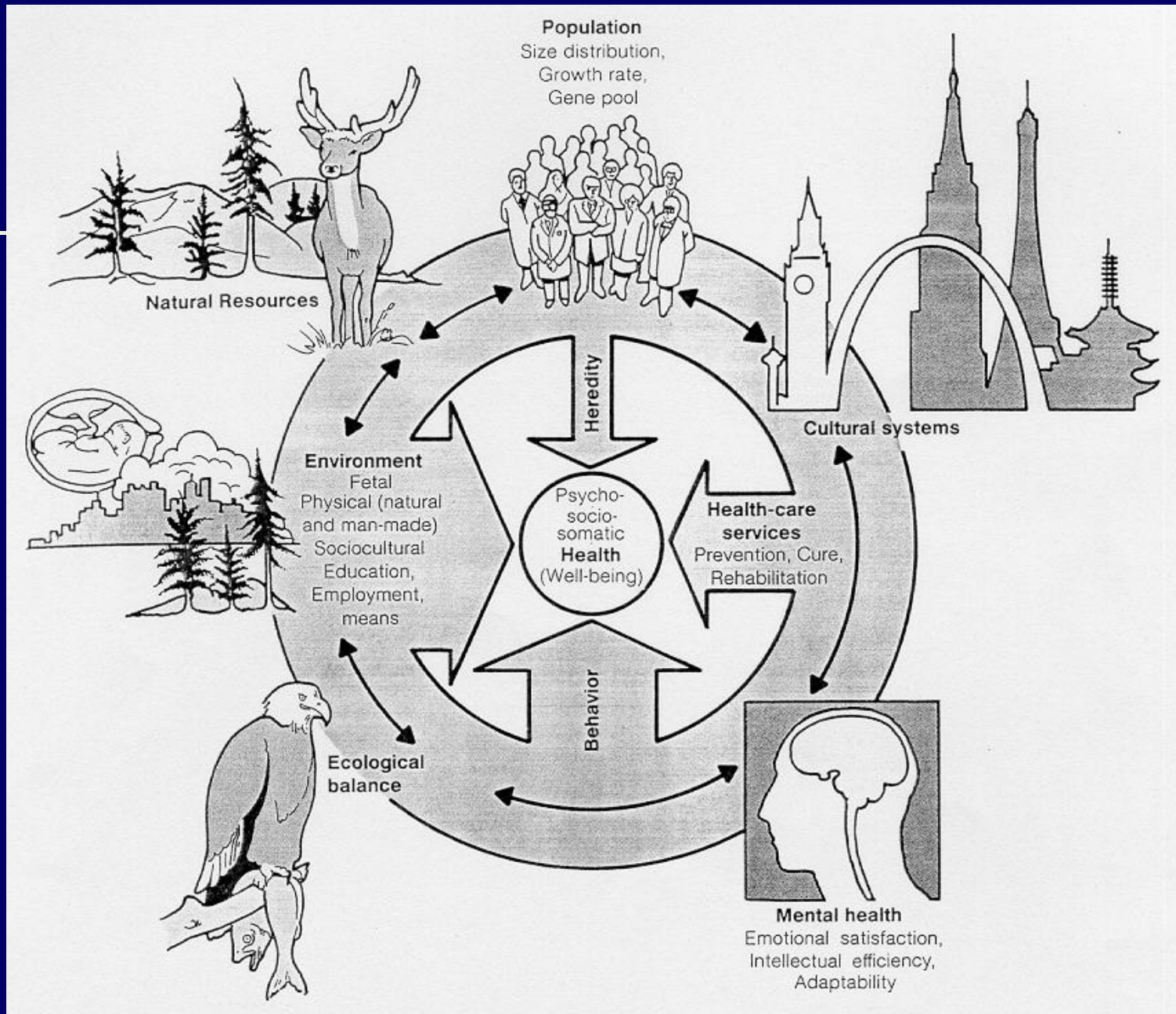
- Physiological fitness refers to biological system
- Comprises blood pressure, glucose tolerance & insulin sensitivity, blood lipid level & lipoprotein profile, body composition & fat distribution, stress tolerance
- Influenced by the level of habitual PA

Lifestyle

- Lifestyle comprises the aggregate of an individual's behaviors, actions, and habits which can affect personal health
- Major lifestyle factors
 - Cigarette smoking
 - Alcohol and drugs
 - Eating habits
 - Exercise
 - Stress control
 - Safety care

“Environment of Health” Model

- Is a model to describe the major determinants of health
- Four major determinants of health
 - Environment
 - Behavior
 - Heredity
 - Health-care services



Behaviors (lifestyle)

- Behaviors are individual responses or reactions to internal stimuli and external conditions
- Personal choices and the social and physical environment surrounding individuals can shape behaviors. The social and physical environment include all factors that affect the life of individuals, positively or negatively, many of which may not be under their immediate or direct control

Physical Activity (PA)

- PA is any bodily movement produced by skeletal muscles and resulting in energy expenditure
- The most important components of overall energy expenditure include basal metabolic rate, PA, and the thermic effect of food. Basal metabolic rate accounts for the largest portion of daily energy expenditure. PA is clearly the most variable component of total daily energy expenditure

Physical Activity (PA)

- Regular physical activity throughout life is important for maintaining a health body, enhancing psychological well-being, and preventing premature death

Effects of PA on Health and Disease

- Overall mortality Cardiovascular diseases
- Cancer
- Non-insulin-dependent diabetes mellitus
- Osteoarthritis
- Osteoporosis
- Falling
- Obesity
- Mental health
- Health-related quality of life

Current Situation: Sedentary Living

- Technology-based reduction in habitual PA
- PA has become a recreational option rather a survival necessity
- Workplace energy provided by human muscles reduced from 1/3 in 1850' to less than 1% in 1980'
- < 50% of American adults exercise regularly once a week
- 50% of Australian men and 2/3 of women aged 25-64 rarely or never engaged in exercise

按年齡及職業組別分析年齡 15 歲至 64 歲缺乏體能活動的人士

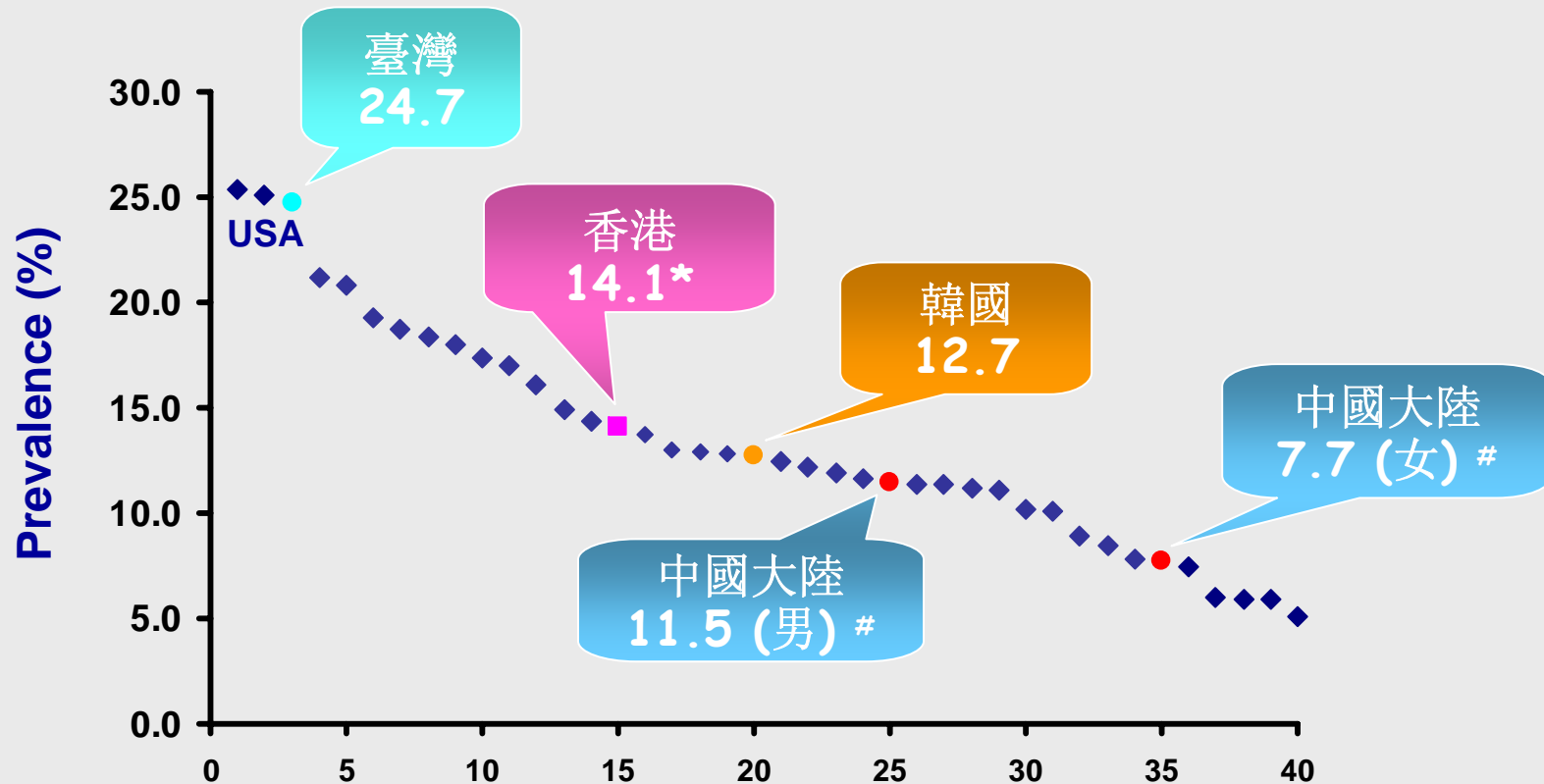
年齡組別	比率*	職業	比率*
15-24	32.8%	經理及行政級人員	36.2%
		專業人員 / 輔助專業人員	37.5%
25-34	37.9%	文員	42.8%
		服務工作及商店銷售人員	31.0%
35-44	35.5%	工藝及有關人員	31.2%
		機台及機器操作員及裝配員	30.3%
45-54	31.7%	非技術工人	32.0%
		漁農業熟練工人	#
55-64	25.6%	非從事經濟活動人士†	28.9%

註: * 在有關年齡組別或職業組別內所佔的比率。† 非從事經濟活動人士包括料理家務者、全日制學生及退休人士。# 由於樣本數目少，以致抽樣誤差大，有關統計數字不予公佈。

缺乏體能活動人士的計算及定義是根據“Guidelines for Data Processing and Analysis of the International Physical Activity Questionnaire (IPAQ) –Short Form (Version 2.0 April 2004)”。

資料來源: 衛生署二零零三至二零零四年人口住戶健康調查(臨時數字)。

38個國家和地區超重兒童的比例



* 正視肥胖問題: 肥胖的成因、現況與預防措施. 衛生署. 衛生防護中心. 2005

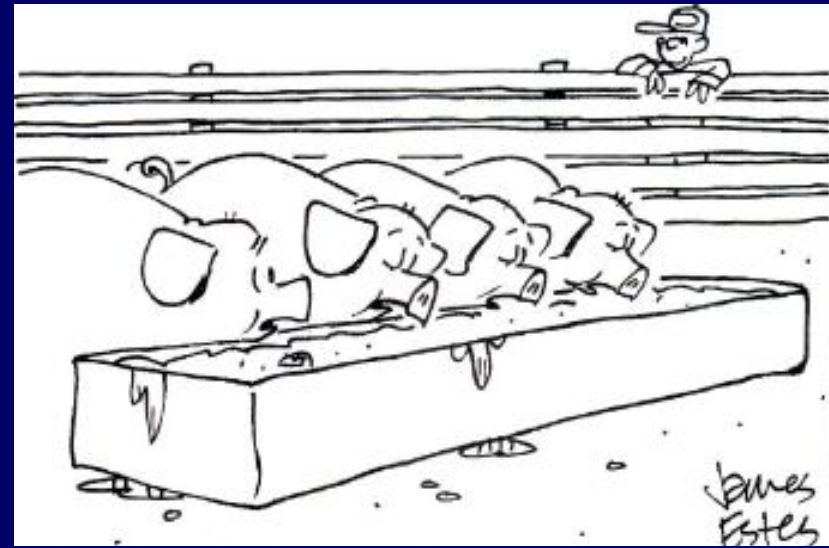
2002年學生體質健康監測報告. 中國教育部

Janssen et al, 2005; Kim et al, 2005; Chu 2005

體力活動水平的減少和飲食習慣的改變是引發肥胖的重要因素 (Kimm et al, 2005; Biddle et al, 2004)



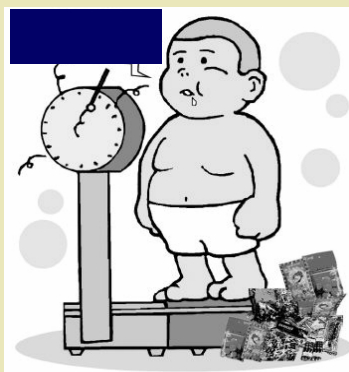
“This is so cool! It almost feels like we’re actually playing outside!”



“Rich, heavy food and no exercise – doesn’t he realize we’re all just gonna get FAT?”

可控制

遺傳



生活方式

體力活動水平

飲食結構

環境

Research in Physical Activity (PA)

- Increased interest in the study of the health benefits of regular PA over the past 40 years
- Surgeon General's Report (CDC, 1996) as a blueprint document for global research in health and PA




Physical Activity and Health

A Report of the Surgeon General
Executive Summary

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention
National Center for Chronic Disease Prevention and Health Promotion
The President's Council on Physical Fitness and Sports



運動活動與時間之關係

體力活動	運動時間	
洗車和打蠟	45 - 60分鐘	<p>體力活動量較低， 時間相應增加</p>  <p>體力活動量較高， 時間可相應減少</p>
洗窗和抹地	45 - 60分鐘	
園耕工作	30 - 45分鐘	
步行 1哩 (20分鐘/哩)	35分鐘	
射籃	30分鐘	
踏單車5哩	30分鐘	
步行2哩 (15分鐘/哩)	30分鐘	
來回游泳	20分鐘	
籃球比賽	15 - 20分鐘	
踏單車4哩	15分鐘	
跳繩	15分鐘	
跑步1哩 (10分鐘/哩)	15分鐘	
行樓梯	15分鐘	

註：American College of Sports Medicine (2001) Dose-Response Issues Concerning Physical Activity and Health: An Evidence-Based Symposium, Medicine and Science in Sports and Exercise, Vol. 33, No. 6.

體力活動等級

(UK Department of Health, 2004)

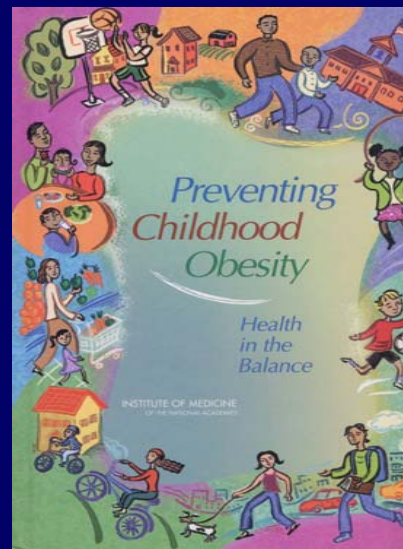
分級	特徵	典型生活方式	健康益處
1	不活躍 Inactive	通常架車返工或乘坐公共交通工具 工作性質以靜態為主 很少的家務和園藝勞動 沒有休閒體力活動	無
2	輕微活躍 Lightly active	有下列一種或幾種習慣： 有時以步行或踩單車作為交通工具 工作性質包括部分步行、搬運等 有部分不吃力的家務或園藝勞動 參加一些輕度的休閒體力活動	對慢性疾病有一定的保護作用，可看做是通往理想水平的起始階段
3	中度活躍 Moderately active (推薦水平)	有下列一種或幾種習慣： 經常以步行或踩單車作為交通工具 工作性質經常包括部分步行、搬運等 經常性的家務或園藝勞動 經常參加中等強度的休閒體力活動	對慢性疾病的保護性作用高；發生運動損傷和其他副作用的幾率小
4	非常活躍 Very active	有下列多種習慣： 經常以步行或踩單車作為交通工具 非常活躍的工作性質，如園藝工人等 經常性的家務或園藝勞動 經常參加高強度的休閒體力活動	對慢性疾病的保護作用最高，運動損傷或其他副作用幾率輕微增加
5	高度活躍 Highly active	經常進行高強度運動或體能訓練， 通常以參加競技體育為目的	對慢性疾病的保護作用最高，運動損傷或其他副作用幾率增加

日常生活中不同強度體力活動舉例

體力活動舉例	強度	METs	能量消耗(千卡) (以60公斤体重的成年人作30分钟运动计算)
熨衣物	轻度	2.3	69
家居清洁	轻度	2.5	75
散步(闲逛)-2英里每小時	轻度	2.5	75
油漆/粉刷工作	中度	3.0	90
散步-3英里每小時	中度	3.3	99
吸尘打扫	中度	3.5	105
高尔夫	中度	4.3	129
乒乓球-业余	中度	4.5	135
网球-双打	中度	5.0	150
步行-中速, 4英里每小時	中度	5.0	150
割草-使用除草机	中度	5.5	165
踏单车-10-12英里每小時	中度	6.0	180
有氧操	剧烈	6.5	195
踏单车-12-14英里每小時	剧烈	8.0	240
游泳-慢游, 每分钟50码	剧烈	8.0	240
网球-单打	剧烈	8.0	240
跑步-6英里每小時	剧烈	10.0	300
跑步-7英里每小時	剧烈	11.5	345
跑步-8英里每小時	剧烈	13.5	405

Research in Physical Activity (PA)

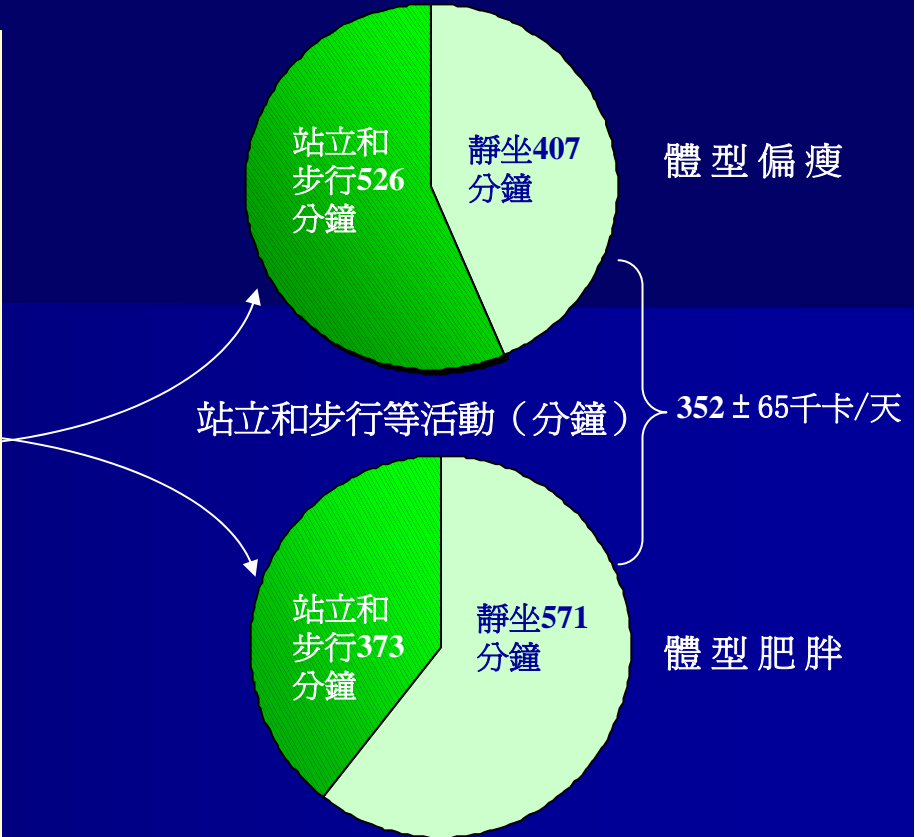
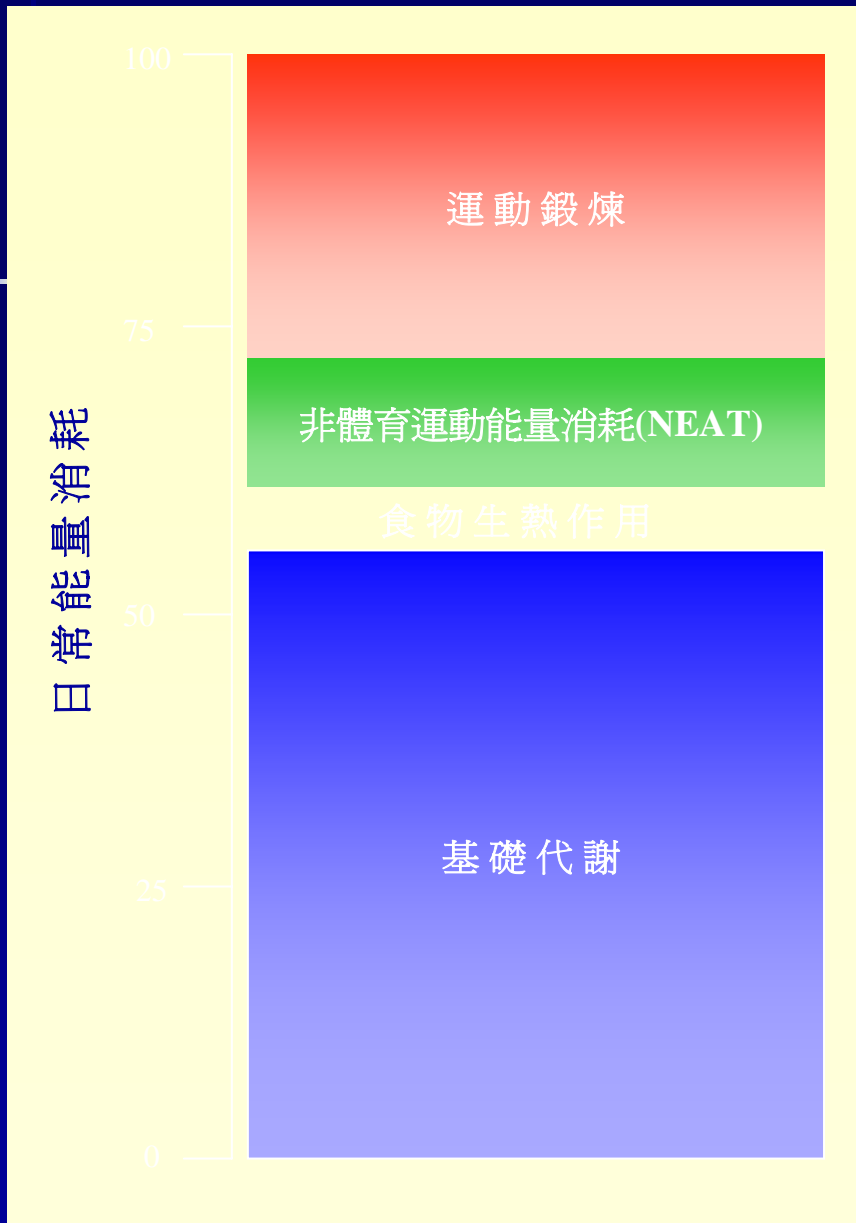
- Physical inactivity has been identified as possibly one of the controllable risk factors (WHO 2002; UK Department of Health, 2004; Institute of Medicine, 2005; Booth et al., 2002)



At least five a week

Evidence on the impact of physical activity
and its relationship to health

A report from the Chief Medical Officer



人體每日需要消耗的能量可以分為三部分：基礎代謝（占50-70%）、食物生熱作用（占10%）和體力活動所需能量（占20-40%）之和。其中體力活動包括有計劃的運動鍛煉和非體育運動能量消耗（NEAT）。2005年「科學」雜誌上發表的研究指出生活行為習性與體重有關聯。研究人員用特殊裝備記錄志願者在日常活動中消耗的能量，發現如果較肥胖的志願者比較瘦的志願者每日少坐164分鐘就能夠多消耗352±65千卡的能量（相當於一個杯面所含有的熱量）。倘若持久地將生活運動化，亦能夠燃燒脂肪控制體重的增加。

[資料來源: *Science*, 2005 (307): 584-586.]

Level and Strength of Evidence for a Relationship Between PA and Chronic Conditions

Condition	Preventive effects			Therapeutic effects	
	Level of evidence [¶]	Strength of effect	Evidence of a dose response relationship	Level of evidence [¶]	Strength of effect
Cardiovascular disease					
Coronary heart disease	High	Strong	Yes	Medium	Moderate
Stroke – occlusive	High	Moderate	–	Low	Weak
– haemorrhagic	Medium	Weak	–	Low	Weak
Peripheral vascular disease	No data/ Insufficient data	–	–	Medium	Moderate
Obesity and overweight	Medium	Moderate [§]	–	Medium	Moderate [§]
Type 2 diabetes	High	Strong	Yes	Medium	Weak
Musculoskeletal disorders					
Osteoporosis [¶]	High	Strong	–	Medium	Weak
Osteoarthritis	No data/ Insufficient data	–	–	Medium	Moderate
Low back pain	Medium	Weak	–	High	Moderate
Psychological well-being and mental illness					
Clinical depression	Low	Weak	–	Medium	Moderate
Other mental illness	No data/ Insufficient data	–	–	Low	Weak
Mental well-being	–	–	–	Medium	Moderate
Mental function	Low	Moderate	–	Low	Weak
Social well-being	No data/ Insufficient data	–	–	Low	Weak
Cancer				} No data/ Insufficient data [¶]	–
Overall	Medium	Moderate	Yes		
Colon	High	Strong	Yes		
Rectal	Medium	No effect	–		
Breast	High	Moderate	Yes		
Lung	Low	Moderate	–		
Prostate	Medium	Equivocal	–		
Endometrial	Low	Weak	Yes		
Others	Low	Equivocal	–		

Effects of Lifestyle Activity vs Structured Aerobic Exercise in Obese Women A Randomized Trial

Rose E. Andersen, PhD
Thomas A. Wadden, PhD
Susan J. Bartlett, PhD
Bahette Zemel, PhD
Tony J. Verde, PhD
Shawn C. Frankowiak

OBESITY IS A SERIOUS AND common health problem. The most recent National Health and Nutrition Examination Survey (NHANES III) reported that 33.4% of Americans are overweight, representing an increase from the 25% prevalence observed in the 1976-1980 survey.

Although it is commonly believed that easy access to high-fat foods and over-eating are the simple causes of obesity, mean energy intake and fat consumption in industrialized countries have declined substantially as obesity rates have escalated.¹⁻³ During this time, levels of physical activity have steadily declined and a report by the surgeon general⁴ indicates that only 22% of US adults are currently active enough to derive the health benefits conferred by physical activity. These findings have prompted public health advisors to recommend that all Americans strive to accumulate 30 minutes or more of moderate-intensity physical activity on most, or preferably all, days of the week.⁵ Blair and colleagues⁶ have described a lifestyle approach to physical activity;

See also pp 327 and 375 and Patient Page.

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Context Physical inactivity contributes to weight gain, but only 22% of Americans are regularly active.

Objective To examine short- and long-term changes in weight, body composition, and cardiovascular risk profiles produced by diet combined with either structured aerobic exercise or moderate-intensity lifestyle activity.

Design Sixteen-week randomized controlled trial with 1-year follow-up, conducted from August 1995 to December 1996.

Participants and Setting Forty obese women with chronic stroke. **Interventions** Structured aerobic exercise of about 1200 kcal/d.

Main Outcome Measures Changes in vascular risk profiles, and physical fitness at 1-year follow-up.

Results Mean (SD) weight losses during 8.3 (3.8) kg for the aerobic group and 7.5 (3.8) kg for the lifestyle group, $P = .08$; fat-free mass (0.5 (1.3) kg) than the lifestyle group regained 0.08 (4.6) kg. At week 16 (esterol levels were reduced significantly 10.1% reductions, respectively) but did not were not different from baseline or between groups.

Conclusions A program of diet plus 150 min of moderate-intensity physical activity on most, or preferably all, days of the week is a suitable alternative to diet plus structured aerobic exercise.

Key Words: CHRONIC STROKE, OBESITY, PHYSICAL ACTIVITY, WEIGHT LOSS, BODY COMPOSITION, CARDIOVASCULAR RISK PROFILES.

JAMA. 1999;281:325-340.

in which sedentary adults incorporate short bouts of moderate-intensity activity into their daily routines, such as increasing the amount of walking in the daily routine, performing more yard work, and using the stairs when possible.

The purpose of this investigation was to examine short- and long-term changes in weight, body composition, and cardiovascular risk profiles produced by diet

A Community-Based Group Exercise Program for Persons with Chronic Stroke

JANICE J. ENG^{1,2}, KELLY S. CHU^{1,2}, C. MARIA KIM^{1,2}, ANDREW S. DAWSON³, ANNE CARSWELL^{1,2}, and KATHERINE E. HEPBURN²

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ABSTRACT

ENG, J. J., K. S. CHU, C. M. KIM, A. S. DAWSON, A. CARSWELL, and K. E. HEPBURN. A Community-Based Group Exercise Program for Persons with Chronic Stroke. *Med Sci Sports Exerc*, Vol. 35, No. 8, pp. 1271-1278, 2003. **Purpose:** The purpose of this study was to evaluate the physical and psychosocial effects of an 8-week community-based functional exercise program in a group of individuals with chronic stroke. **Methods:** Twenty-five subjects (mean age 63 yr) participated in a reported measures design that evaluated the subjects with two baseline assessments 1 month apart, one postintervention assessment, and one retention assessment 1 month postintervention. Physical outcome measures assessed were the Berg Balance Test, 12-Minute Walk Test distance, gait speed, and stair climbing speed. Psychosocial measures assessed were the Reminiscence in Normal Living Index (RNL) and Canadian Occupational Performance Measure (COPM). The 8-wk training consisted of a 60-min, 3x/week group program that focused on balance, mobility, functional strength, and functional capacity. The program was designed to be accessible by reducing the need for costly one-on-one supervision, specialized settings, and expensive equipment. **Results:** Improvements from the exercise program were found for all physical measures and these effects were retained 1-month postintervention. Subjects with lower function improved the most relative to their initial physical status. Significant effects were found for the COPM, but not the RNL Index; however, subjects with lower RNL improved the most relative to their initial RNL Score. **Conclusion:** A short-term community-based exercise program can improve and retain mobility, functional capacity, and balance and result in a demonstrable impact upon the performance of activities and abilities that were considered meaningful to the subjects. Implementation of such community-based programs has potential for improving activity tolerance and reducing the risk for secondary complications common to stroke (e.g., falls resulting in fractures and cardiac events). **Key Words:** CEREBROVASCULAR ACCIDENT, PHYSICAL ACTIVITY, DISABILITY, FUNCTION, WALK

Over 50,000 Canadians suffer from stroke each year, making it the number one cause of neurological disability in Canada today (22) and a leading cause of disability in the community (18). Ninety percent of stroke survivors have some functional disability, with mobility being the major impairment (20). Although some individuals with stroke will have received some rehabilitation during the acute and subacute phase, rarely does rehabilitation extend beyond 1 yr postinjury due to the belief that functional recovery has plateaued by this time (41). Impairments resulting from stroke, such as muscle weakness, pain, spasticity, and poor balance, in addition to the lack of accessible and appropriate community-based exercise programs, can lead to reduced tolerance to activity, further sedentary lifestyle, and additional declines in function and disability status (31).

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论著

有组织、半封闭形式社区减肥活动的效果评价

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摘要 通过分析一次有组织、半封闭形式的社区减肥活动,观察减肥效果,探讨适宜的减肥目标、速度和持续时间,适宜的能量摄入量,适宜的运动强度和运动量,提出建设性意见。结果显示,有组织、半封闭的减肥活动是一种有效的社区减肥形式,对无法通过自我行动实施减肥的人尤为合适,设立的减肥目标以体重指数(BMI)减少10%左右为宜,年龄较轻者和体重过大者,减肥速度可大于1-3kg/月,减肥持续时间以1个月左右为宜,能量摄入量可控制在1600kcal/d(男)或1300kcal/d(女)以内,运动强度中等(最大运动心率的50%-70%),运动量达到中等活动水平,减肥活动应在有关专家指导下进行,避免运动性损伤和其它医学问题,可适量补充复合维生素和矿物质,必要时可使用一些减缓饥饿感的药物。

关键词 减体重, 能量摄入, 运动强度, 体力活动水平

Evaluation of the Outcome of an Organized, Semi-Closed Program for Weight Reduction in Community

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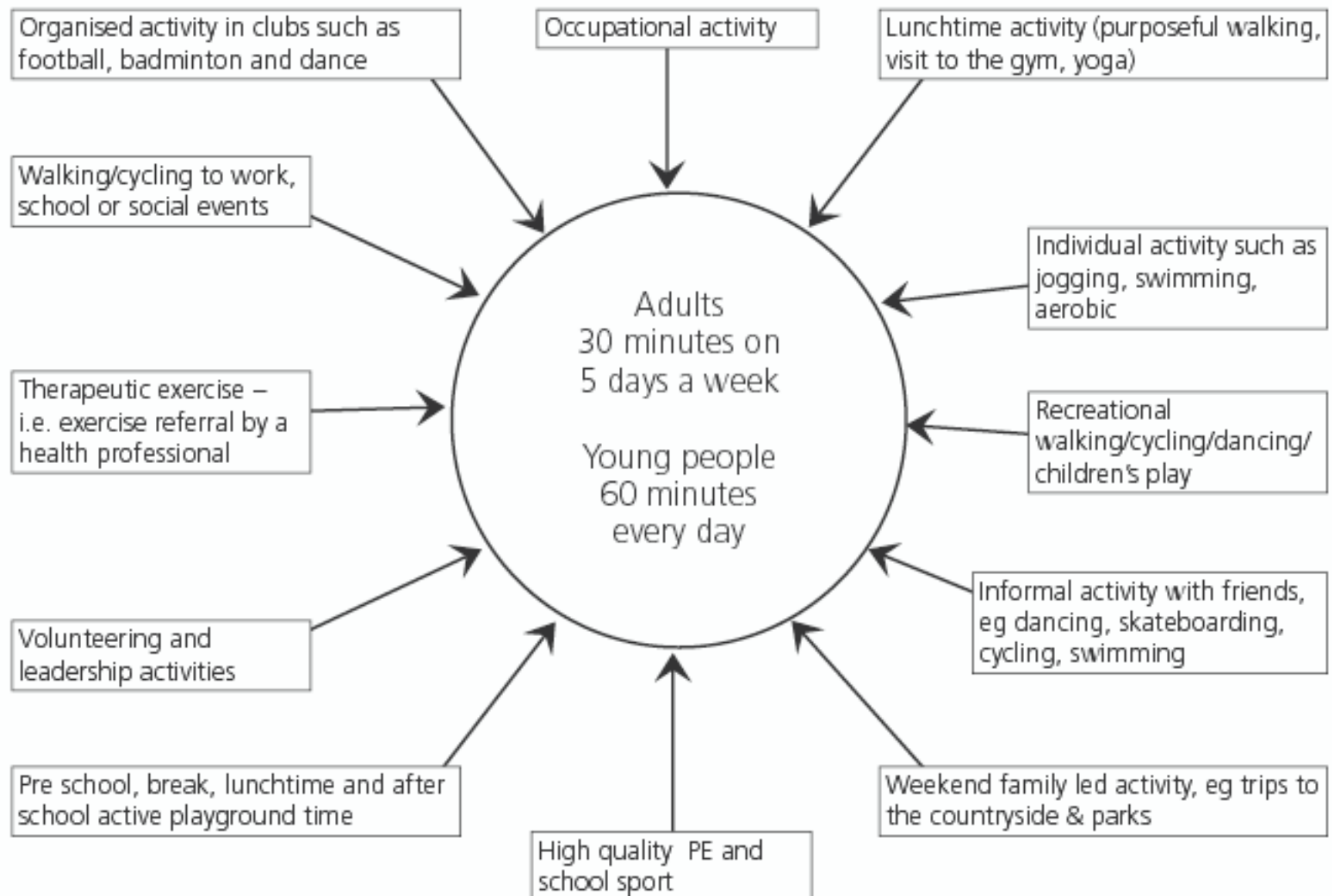
Abstract The purpose of the present study is to evaluate the outcome of an organized, semi-closed program for weight reduction in community, and to provide the helpful suggestions for the reasonable goal, rate-duration, energy intake, exercise intensity and amount for weight-reduction program. The results showed that the organized semi-closed program for weight reduction in community is effective and especially suitable for one who are unable to control body weight by themselves. Reducing 10% of body mass index (BMI) is reasonable target in the program. The rate of 1-3kg per month for reducing weight is acceptable for the young obese adults with severely overweight. The recommendation for the program duration is about one month. It is better to keep dietary energy intake under 1600 kcal/d for man and 1300 kcal/d for woman. It is appropriate to take moderate exercise intensity within 50-70% of maximal heart rate and moderate exercise amount. The weight-reducing program should be supervised under experts or specialists to avoid any exercise-induced injuries and other medical problems. The supplementation of complex of vitamins and minerals is recommended during the period of weight reduction. Certain medicines for inhibiting the sense of hunger can be used if necessary.

Key words weight reduction, energy intake, exercise intensity, physical activity level

我国的超重和肥胖人群呈逐年上升的趋势,肥胖与心脑血管疾病、糖尿病、高血压、高血脂、胆结石、脂肪肝、某些癌症等疾病关系密切,肥胖病已成为严重的公共卫生问题^[1-4]。随着公众对超重和肥

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The Activity Menu for Adults and Children



PA Recommendation for Children

(Department of health and aging, Australia, 2005)

- Children need at least **60 minutes** (and up to several hours) of moderate to vigorous physical activity every day.
- Children should not spend more than two hours a day using electronic media for entertainment (e.g. computer games, TV, internet), particularly during daylight hours.



Physical Activity Evaluation Handbook



DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention



The Effectiveness of Interventions to Increase Physical Activity: A Systematic Review

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Overview: The *Guide to Community Preventive Services*'s methods for systematic reviews were used to evaluate the effectiveness of various approaches to increasing physical activity; informational, behavioral and social, and environmental and policy approaches. Changes in physical activity behavior and aerobic capacity were used to assess effectiveness. Two informational interventions ("point-of-decision" prompts to encourage stair use and community-wide campaigns) were effective, as were three behavioral and social interventions (school-based physical education, social support in community settings, and individually-adapted health behavior change) and one environmental and policy intervention (creation of or enhanced access to places for physical activity combined with informational outreach activities). Additional information about applicability, other effects, and barriers to implementation are provided for these interventions. Evidence is insufficient to assess a number of interventions: classroom-based health education focused on information provision, and family-based social support (because of inconsistent findings); mass media campaigns and college-based health education and physical education (because of an insufficient number of studies); and classroom-based health education focused on reducing television viewing and video game playing (because of insufficient evidence of an increase in physical activity). These recommendations should serve the needs of researchers, planners, and other public health decision makers.

Medical Subject Headings (MeSH): exercise, leisure activities, physical fitness, physical endurance, decision making, evidence-based medicine, economics, preventive health services, public health practice, meta-analysis, review literature (Am J Prev Med 2002;22(4S):73-107)

Introduction

Regular physical activity is associated with enhanced health and reduced risk of all-cause mortality.¹⁻⁴ Beyond the effects on mortality,

physical activity has many health benefits, including reduced risk of cardiovascular disease,^{5,6} ischemic stroke,⁷⁻⁹ non-insulin-dependent (type 2) diabetes,¹⁰⁻¹⁶ colon cancers,¹⁷⁻²⁰ osteoporosis,²¹⁻²³ depression,²⁴⁻²⁷ and fall-related injuries.²⁸⁻³¹ Despite the benefits of regular physical activity, only 25% of adults in the United States report engaging in the recommended amounts of physical activity (i.e., 30 minutes of moderate-intensity activity on 5 or more days per week, or 20 minutes of vigorous-intensity activity on 3 or more days per week).³² 20% report no leisure-time regular physical activity³³ and only 27% of students (grades 9 through 12) engage in moderate-intensity physical activity (30 minutes, 5 or more days per week).³²

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In *Healthy People 2010*,³⁴ physical activity is ranked as a leading health indicator. *Healthy People 2010* has developed goals to improve levels of physical activity among adults, adolescents, and children and to reduce sedentary behavior among adolescents (Table 1).

Recommendations to increase physical activity have been made for individuals and clinical settings but not for community settings. Increased physical activity has

Intervention	Intervention Description	Task Force Recommendation for Use	Indicators Measured in Reviewed Studies
Behavioral and Social Approaches (continued)			
School-based physical education (PE)	Modified curricula and policies to increase the amount of moderate or vigorous activity, the amount of time spent in PE class, or the amount of time students are active during PE class. Interventions included changing the activities taught or modifying the rules of the game so that students are more active.	Strongly recommended	Minutes per week spent in moderate to vigorous physical activity (MVPA). Percentage of class time spent in MVPA. Estimated energy expenditure.

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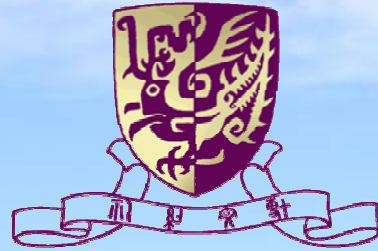
- A Worldwide Perspective on Obesity in Children
- The Causes of the Obesity Epidemic in Children
- Are children/youth more/less active than previous generations?
- Is physical inactivity contributing to obesity in children and youth?
- What are the practical implications of the physical activity deficit?
- What are the public policy and public health implications of the physical activity deficit?
- Are there successful, innovative community-based physical activity interventions?



Research Focus

- Mechanisms and relationship on health & PA
- PA assessment
- Dosage of PA
- PA promotion on youth and elderly
- School-based PA promotion
- Occupational PA promotion
- Surveillance (link to 2 MMR documents)





Thank You!

