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Chapter 1 : Plants with potential use on obesity and its complications

1. *World Rev Nutr Diet. ; Energy expenditure of preschool children in a subtropical area. Ho ZC, Zi HM, Bo L, Ping H. PMID:*

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Chapter 2 : Jobs search - Germany | Expatica Germany

The knowledge of human nutrition and the peoples of the world / Debabar Banerji --Studies of the dietary habits, food consumption, and nutrient intakes of adolescents and young adults / N.L. Bull --Energy expenditure of preschool children in a subtropical area / Zhi-chien Ho [and others] --Vitamin requirements in normal human pregnancy / H. Van.

Guangzhou Canton , China Introduction Understanding energy expenditure and the caloric requirements of different kinds of labourers is a basic problem of the nutritional sciences 1. Objective In a subtropical area, we estimated the energy expenditures of three categories of labourers: Experimental Design Subjects and Methods Ninety-two labourers, 22 to 36 years old, participated in these studies. Subjects were certified as healthy on the basis of medical examination. All of them were informed about the purpose, meaning, and procedures of this study. All of them were volunteers. All miners were male, as were most of the shipbuilders, except for a few females working on lathes, but all the peasants working in vegetable fields were female, as is the custom in this area. The energy expenditure was estimated by an indirect method, i. The apparatus for collecting expired air was set up while the subjects were performing their usual work. About 20 minutes or more were required by each subject to adapt well enough to the apparatus so that he or she could work normally. The air expired by each subject during a specific occupational activity was collected for a specified time. The volume of air was determined by airometer, and samples were taken for analysis. Subsequently, the physical activities, in terms of kind and duration, of each subject during 24 hours 1, minutes were directly observed using a printed chart that listed typical activities. By interviewing each subject, we verified that the schedule of activities observed by us, including housework and social activities. The averages of daily energy expenditure for specific activities of different categories of workers were calculated, and typical schedules of daily activities for specific groups were established. The total hour energy expenditure was obtained as the sum of basal metabolism, a small increment due to specific dynamic actions of food, and the energy expended in various types of physical activity. The energy cost of occupational work was measured. We also measured some of the off-the-job activities, such as walking on steep mountain slopes in the case of the miners. The energy expenditures in other activities, such as sleeping, were estimated from the data reported in the literature 5. Occupational Activities All the subjects observed were in medium-sized mines or factories where physical labour still constituted an important part of their work; that is, for the most part, workers used semi-manual machines, and the peasants basically performed manual labour in the field. The specifications of working activities were as follows: The drillers, using pneumatic drills, bored blast-holes in the rocks or ores. All drills had to be held by hand because of the vibration of the machine. The driller chose the time to shift drilling position and move the drill. He had an assistant for heavy tasks when a medium-sized drill was required. The ore porters worked in association with two miners in transporting the ore from the pit to the storage shed outside the mine. The ore, shovelled by hand into the ore car, weighed about kg, and the total weight of the car was about kg. Hammer operators used a hammer weighing about 5 lb to pound the drill rod to make blast-holes in the rock when pneumatic drills could not be used, especially in vertical mines and inclined mines. Two workers held the drill rod and the hammer hit the rod about 15 times a minute. Sometimes the hammerer smoothed the newly developed pit by knocking off the irregular parts of the rock with the hammer after blasting. Ore-dressing workers transferred the ores from storage sheds to the dresser and controlled the water flow for ore processing. They used an iron picker in the ores in order to separate the mineral ores with a sieve. They worked standing, but most often in a bent posture. The prop-setting workers made supports for the roof of the pits, especially after a new drilling had been made, mostly using timber posts that they adapted to the location. They carried all the wooden material to the pit on their shoulders and used a hand-saw and bush knife for processing the timbers. The cutters used an oxyhydrogen or acetylene oxygen flame to cut steel plates and sheets of varied thickness to different sizes or shapes. They handled the plates manually when they were small, but used cranes for the bigger ones. The hammerers used a hand-held hammer weighing 3 to 5 kg

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to give a specified shape or curve to steel sheets. The planers used a portable pneumatic planer weighing 6 to 7 kg to cut off the extra or irregular parts, or to smooth parts of the ship surface. They worked up and down the ship body in different postures-i. Electrical welders used regular welding equipment, and climbed up and down the ship body. Engine lathe operators used mostly automatic lathes of different kinds for milling, shaping, planing, and drilling different metal parts of the ship, working in a standing position, sometimes having to remove tools and processing units by hand. The carpenters used mostly power-driven tools to process different wooden ship materials. Vegetable Growers There were 11 kinds of tasks carried out by peasants cultivating vegetables. These workers also participated in some of the operations involved in growing rice. Transporting materials on their shoulders. In hoeing, the hoe was lifted about cm high about times per minute. The wheel rotated about 20 to 30 times per minute. Transporting materials by a two-wheel cart: The fertilizer in liquid or powder form was spread around the roots of the plants by walking around the edge of a plot. The work was similar to sowing. Gathering of rice seedlings. The ore porters in the mines expended the greatest amount of energy, about 7. The drillers in the mine had a much lower energy expenditure, about 2. Additional energy was expended by the miners in climbing up the ladders of a shaft or walking up an inclined mine during working hours table 1.

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Chapter 3 : Items where Year is - ResearchOnline@JCU

Energy expenditure of preschool children in a subtropical area. World Review of Nutrition and Dietetics ; 75 - Huenemann RL, Shapiro RL, Hampton MC, Mitchell BW.

Find articles by Claudia I. Alberto Gallegos-Infante Find articles by J. Alberto Gallegos-Infante Martha R. This article has been cited by other articles in PMC. Abstract Obesity is the most prevalent nutritional disease and a growing public health problem worldwide. This disease is a causal component of the metabolic syndrome related with abnormalities, including hyperglycemia, dyslipidemia, hypertension, inflammation, among others. There are anti-obesity drugs, affecting the fundamental processes of the weight regulation; however they have shown serious side effects, which outweigh their beneficial effects. Most recent studies on the treatment of obesity and its complications have focused on the potential role of different plants preparation that can exert a positive effect on the mechanisms involved in this pathology. For instance, anti-obesity effects of green tea and its isolated active principles have been reported in both in vitro cell cultures and in vivo animal models that possess healthy effects, decreasing adipose tissue through reduction of adipocytes differentiation and proliferation. A positive effect in lipid profile, and lipid and carbohydrates metabolisms were demonstrated as well. In addition, anti-inflammatory and antioxidant activities were studied. However, the consumption of green tea and its products is not that common in Western countries, where other plants with similar bioactivity predominate; nevertheless, the effect extension has not been analyzed in depth, despite of their potential as alternative treatment for obesity. In this review the anti-obesity potential and reported mechanisms of action of diverse plants such as: *Camellia sinensis*, *Hibiscus sabdariffa*, *Hypericum perforatum*, *Persea americana*, *Phaseolus vulgaris*, *Capsicum annum*, *Rosmarinus officinalis*, *Ilex paraguariensis*, *Citrus paradisi*, *Citrus limon*, *Punica granatum*, *Aloe vera*, *Taraxacum officinale* and *Arachis hypogaea* is summarized. We consider the potential of these plants as natural alternative treatments of some metabolic alterations associated with obesity. The disease has acquired epidemic proportions projected to reach 2. This is a series of metabolic abnormalities including hyperglycemia, dyslipidemia, hypertension, inflammation, oxidative stress, among others Grundy et al. Perturbed intravascular lipid and lipoprotein metabolism is a common feature of obesity, leading to a dyslipidemia involving elevated plasma concentrations of triglycerides and apolipoprotein apo B-containing lipoproteins very low density lipoprotein: VLDL and low density lipoprotein: LDL and subnormal levels of high density lipoprotein: The metabolic syndrome consequence of obesity is associated in part by the alterations in adipose tissue; however, it is not the only one involved, participating other tissues such as liver, among others Hirosumi et al. Adipocytes produce a variety of biologically active molecules Saltiel and Kahn, [] collectively known as adipocytokines or adipokines e. Tumor necrosis factor alpha: In obesity, hypertrophy of adipocytes could lead to regions of hypoxia, which could instigate an inflammatory response Ye et al. This phenomenon could alter the adipokine profile via reduced adiponectin expression Wree et al. Insulin resistance is one of the most common alterations on obesity Boden, [18] , and is closely linked with diseases such as type 2 diabetes, fatty liver, atherosclerosis, hypertension, among others Bray, [21]. The alterations on insulin metabolism involve glucose transport, glycogen synthesis, and changes on lipolysis Boden, [18]. There are different pharmacological treatments; for example, Orlistat Xenical , which reduces intestinal fat absorption through inhibition of pancreatic lipase Thurairajah et al. Most recent studies on the treatment of obesity have focused on the potential role of plants used for obesity and its metabolic disorders treatments, exerting a positive effect on lipid and glucose metabolism, and anti-inflammatory activity. For instance, anti-obesity effects of green tea; its bioactive compounds have demonstrated in both in vitro cell cultures and in vivo animal models that possess a healthy effect, decreasing adipose tissue through reduction of adipocytes differentiation and proliferation. A positive effect in lipid profile, and lipid and carbohydrates metabolisms, and anti-inflammatory activities were observed as well Tipoe et al. However, the consumption of green tea in

Western countries is not that common as other plants with similar effects. For this reason and due to the huge worldwide public health problem that obesity represents, we have summarized the information on some traditional plants with anti-obesity potential based in the current scientific literature. Epidemiology of Obesity Obesity is a clinical condition, whose prevalence has sharply increased in the last decades in Western countries and, later on, worldwide. Obesity has been defined as a pandemic and one of the major health problems ever. In Mexico the incidence of obesity has been increased in the past 30 years, where the female population has been the most affected group approximate 1. This prevalence is associated with the extreme dietary changes occurred in Western countries such as Mexico, which may be summarized as an increase in consumption of non-nutritional carbohydrates, especially sugar-sweetened beverages that has led to an increasing rate of chronic diseases related to obesity such as diabetes and cardiovascular diseases. The main activity of brown adipocytes is the regulation of thermogenesis. This is due to brown adipocytes cells that have numerous mitochondria; therefore, they express high concentration of uncoupling protein 1 UCP-1 Dulloo et al. On the other hand, adipocytes are responsible for fat storage. High caloric diet promotes hyperplasia and hypertrophy of adipocytes. When a hypertrophy occurs, the size of adipocytes increases and the diffusion of oxygen is affected leading to hypoxia Poulain-Godefroy et al. As a result of hypoxia, adipocytes express the factor hypoxia-inducible HIF-1a and the unfolded protein response in the endoplasmic reticulum Goossens, [51]. HIF-1a modulates the genes involved with the expression of pro-inflammatory cytokines, for example: Other feature of hypertrophic adipocytes is that they show poor sensibility to insulin, due to the reported affectation of membrane receptors as consequence of obesity. This contributes to inflammation through diapedesis of monocytes to visceral stroma Deng and Scherer, [34]. The lower insulin sensitivity in hypertrophic adipocytes, is related in part to the non-esterified fatty acids, glycerol, hormones, and other factors released by these cells. Obesity and its complications: However, inflammation is a common feature that has been implicated in the pathophysiology of many obesity-associated disorders. For instance, the main biological effect of leptin is the control of adipose tissue growth via its central nervous system action Berglund et al. In obesity there are increased levels of leptin, resulting in an apparent decrease of its anorexigenic effects and weight loss, result of a mechanism of resistance to it Fonseca-Alaniz et al. Leptin acts directly on macrophages increasing phagocytic activity and pro-inflammatory cytokine production. Leptin also stimulates proliferation and migration of endothelial cells and smooth muscle cells, thus favoring the development of atherosclerosis Cachofeiro et al. Another example of the relation of disorders of obesity and inflammation is interleukin 6 IL This molecule is associated with the regulation of insulin signaling, decreasing the expression of the insulin receptor substrate 1 IRS1 , and upregulating the expression of suppressor of cytokine signaling SOCS-3 Rieusset et al. SOCS-3 belongs to a family of inflammatory mediators that contributes to obesity-induced insulin resistance, which constitutes a negative feedback pathway in cytokine signaling Lubis et al. The definition of insulin resistance implies a lower sensitivity to insulin by cells and alterations on glucose metabolism for example: In obesity and type 2 diabetes a decrease in insulin-stimulated glucose transport is observed; in addition, alterations on metabolism of adipocytes, skeletal muscle, and hepatic glucose output are also reported Reaven, []. Even though, insulin resistance is closely associated with several chronic diseases such as atherosclerosis, hyperlipidemia, and hypertension, among others Reaven, []; Meigs et al. The metabolic insulin resistance is usually accompanied by compensatory hyperinsulinemia, which may stimulate unaffected MAPK-dependent pathways in the vasculature, leading to decreased production of oxide nitric NO and increased secretion of endoteline 1 ET-1 Eringa et al. As a consequence, vasoconstriction of resistance arteries and terminal arterioles occurs, causing impaired regulation of muscle perfusion, glucose uptake, and blood pressure Levy et al. Plants used as an alternative for obesity and its complications The complex pathogenesis of obesity indicates the need of different intervention strategies to confront this problem. Herbal supplements and diet-based therapies for weight loss are among the most common complementary and alternative medicine modalities Barnes et al. As an alternative treatment of obesity and its complications, in the market are a variety of natural products that

includes medicinal plants, either as pure compounds or as extracts Hasani-Ranjbar et al. Different plants contain a large variety of several components with different anti-obesity effects on body metabolism and fat oxidation, and for this reason have been investigated and reported to be useful in treatment of obesity, diabetes and other chronic diseases Hasani-Ranjbar et al. *Camellia sinensis* The most studied plant due to its wide range of effects including anti-obesity and antioxidant properties is *Camellia sinensis*. Various studies have shown its beneficial effects on obesity. For example, Tian et al. A recent study showed that not only the leaf of *C.* Different anti-obesity acting mechanisms have been reported for *C.* The chemical compounds with the presumed anti-obesity effect are especially catechin type polyphenols. An in vivo animal model study reports that Epigallocatechin 3-gallate, which is the major catechin like flavonoid in *Camellia sinensis* reduces body weight gain Bose et al. In human experiments, acute ingestion of green tea extracts increases the proportion of whole-body fat utilization by augmenting oxidation and lipolysis Basu et al. An increasing number of studies have shown beneficial effects of green tea in metabolic disorders associated to obesity such as inflammation, metabolic syndrome, type-2 diabetes and cardiovascular disease. For example, Park et al. These anti-inflammatory activities of green tea extract were also accompanied by improvements in tissue glutathione status, mitigated the development of non-alcoholic steatohepatitis in an NFkB-dependent manner by improving tissue redox status. On the other hand, Park et al. Also, treatment with green tea polyphenols administered to male fat Wistar rats decreased total cholesterol, LDL, and triglycerides serum concentrations than obese controls at any experimented doses Tian et al. Due to all this evidence, research in depth of the different health properties of *C.* Additionally, in order to understand the effects and mechanisms of action of others plant material with similar effects is common observed to *C.* *Hibiscus sabdariffa* This plant is the second most studied after green tea and commonly used as a local soft drink against inflammation, hypertension, and liver disorders. In clinical trials, an anti-obesity effect of *H.* The consumption for 12 weeks of *H.* Several anti-obesity acting mechanisms were reported for *H.* Additionally, Kim et al. Also, a down-regulation of pancreatic lipases and fatty acid synthases have been reported Kim et al. The main phytochemicals with biological effect reported in *H.* In addition to its anti-obesity activity, several studies have reported beneficial effect on complications associated to obesity. It has also reduced serum triglycerides approx. In addition to its antioxidative effect, *H.* On the other hand, Ali et al. Also, they observed that *H.* This body of evidence interpreted together, suggests that *H.* For this reason, further studies are suggested. Several studies report that *H.* One anti-obesity acting mechanism reported for *H.* This increased level of serotonin reduces the food intake and suppresses the appetite Yegorova and Jiang, []. Among the compounds with biological activity reported for *H.* In addition to these results, *H.*

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Chapter 4 : Food, nutrition and agriculture - 30/

World Health Organization equations have shortcomings for predicting resting energy expenditure in persons from a modern, affluent population: generation of a new reference standard from a retrospective analysis of a German database of resting energy expenditure. The American Journal of Clinical Nutrition, Vol. 80, Issue. 5, p.

Critical windows for the programming effects of early-life nutrition on skeletal muscle mass. Resent Research in Nutrition. Current Developments in Nutrition. Integrating CHWs as part of the team leading diabetes group visits: A randomized controlled feasibility study. A serious video game intervention": Methodological issues - Other Cullen, K. Methodological issues [Letter to the Editor]. Journal of Nutrition Education and Behavior. A longitudinal study of low-income, Latina mothers. Assessment of the cooking habits of mothers of preschoolers and their perceptions of recipes for a video game - Peer Reviewed Journal Ugalde, M. Assessment of the cooking habits of mothers of preschoolers and their perceptions of recipes for a video game. Impact of child summertime obesity interventions on body mass index, and weight-related behaviours: A systematic review and meta-analysis protocol - Review Article Moreno, J. A systematic review and meta-analysis protocol. Sugar-sweetened beverage intake associations with fasting glucose and insulin concentrations are not modified by selected genetic variants in a ChREBP-FGF21 pathway: Building mobile technologies to improve transitions of care in adolescents with congenital heart disease - Abstract Only Lopez, K. Building mobile technologies to improve transitions of care in adolescents with congenital heart disease [abstract]. Genome-wide interactions with dairy intake for body mass index in adults of European descent - Peer Reviewed Journal Smith, C. Genome-wide interactions with dairy intake for body mass index in adults of European descent. Molecular Nutrition and Food Research. Food parenting practices for 5 to 12 year old children: A concept map analysis of parenting and nutrition experts input. Omega-6 fatty acid biomarkers and incident type 2 diabetes: Pooled analysis of individual-level data for adults from 20 prospective cohort studies - Peer Reviewed Journal Wu, J. Pooled analysis of individual-level data for adults from 20 prospective cohort studies. Food and eating behaviors among adolescents with type 1 diabetes and their parents - Abstract Only Goynor, C. Food and eating behaviors among adolescents with type 1 diabetes and their parents [abstract]. October , ; Innsbruck, Austria. Characterizing diabetes burnout in parents of youth with type 1 diabetes T1D [abstract]. October , , Innsbruck, Austria.

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Chapter 5 : InBody in Studies - InBody USA

Zhi-chien Ho. Department of Nutrition and Food Sciences, Zhong Shan Medical College. Guangzhou (Canton), China. Introduction. Understanding energy expenditure and the caloric requirements of different kinds of labourers is a basic problem of the nutritional sciences (1).

The rural women of Nepal: Habitual physical activity and health. Energy intake and expenditure of Indian schoolboys. Physical activity patterns of rural Senegalese adolescent girls during the dry and rainy seasons measured by movement registration and direct observation methods. The use of time allocation data in developing countries: Energy expenditure and heart rate of obese high school girls. The economic activities of children in a village in Bangladesh. Population and Development Review, 3: University of the Philippines, Quezon City. Rural Household Studies in Asia. Singapur, Singapur University Press. Women, men and time in the forest of east Kalimantan. East-West Environment and Policy Institute. Physical work capacity and daily physical activities of handicapped and non-handicapped children. Physical activity of adolescents. Total daily energy expenditure and patterns of physical activity assessed by two different methods in adolescents. Resource allocation decisions in low-income rural households. Physical activity patterns determined by heart rate monitoring in year-old children. Peasants, subsistence ecology, and development in the highlands of Papua New Guinea. Princeton, Nueva Jersey, EE. Energy expenditure and dietary intake of one to nineteen years old children. Patterns of household labour allocation in a Javanese village. Rural household studies in Asia. Energy expenditure of preschool children in a subtropical area. Time allocation among the Machiguenga of Shima. Cross-cultural studies in time allocation, Vol. Human Relations Area Files Press. Relative importance of inactivity and overeating in the energy balance of obese high school girls. Daily physical activity patterns of prepubertal children involved in a vigorous exercise program. Total energy expenditure and patterns of activity in year-old obese and nonobese children. A study of the food intake and activity of a group of urban adolescents. A study of the energy expenditure and food intake of five boys and four girls. The value and allocation of time in rural Botswana. Journal of Development Economics, Time allocation in four societies. An anthropological approach to the study of the economic value of children in Java and Nepal. Use of time in Finland. Time allocation among the Irapa-Yukpa. Daily physical activity investigated by time budget studies and physical performance capacity of school boys. Evaluation of somatic effects of a health education program for schoolchildren. The habitual activity and physical fitness of twelve year-old boys. Total daily energy expenditure of healthy, free ranging school children. Caloric intake in relation to energy output of obese and non-obese adolescent boys. Physical activity and sport involvement in year old children in Sweden. Energy cost of various physical activities in healthy children. Activity, energy expenditure and energy requirements of infants and children. International Dietary Energy Consultancy Group. Energy requirements of children and adolescents. Energy expenditure and intake of pubertal girls of low-income families in Guatemala. Energy requirements and dietary energy recommendations for children and adolescents 1 to 18 years old. Helpers at the nest: Since , this concept has been the basis of the recommended three levels of daily energy intake for groups of adults with occupational activities that require different levels of physical effort. While it was also recognized at the time that these levels probably applied to adolescents and older children, FAO and the World Health Organization WHO , the principal organizations responsible for making global dietary recommendations, did not have the necessary information to determine the age at which differing recommendations should apply or to quantify the differences involved. An analysis of studies conducted for a variety of purposes by experts in different disciplines - nutritionists, physiologists, anthropologists, economists and behavioural scientists - indicated that there were already differences at the age of six years that permitted specific dietary recommendations for populations with different lifestyles, and that it was possible to determine the extent of these differences. Thus, the dietary recommendations soon to be released by FAO, WHO and the United Nations University make a distinction between children and adults whose lifestyles may

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involve light, moderate or heavy activity. For children and adolescents, the difference between one lifestyle and another is about 15 percent, and for adults 20 percent. While some of these figures have been inferred from studies or are based on subjective observations, and could therefore change as more and better scientific evidence comes to light, it would nevertheless be seriously mistaken to continue proposing one single dietary recommendation for populations with clearly different energy requirements.

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Chapter 6 : Resting metabolic rate of Vietnamese adolescents | Masayo Nakamori - www.nxgvision.com

The Compendium of Energy Expenditures for Youth is useful to researchers and practitioners interested in identifying physical activity and energy expenditure values in children and adolescents in.

A cross-sectional study involving healthy subjects was carried out at the Basic Nutrition Department, National Institute of Nutrition, Vietnam. The RMR was measured by indirect calorimetry and anthropometric indices were recorded. A total of subjects who had normal body mass index 5th-85th percentile and divided into two groups by sex. Further studies on establishing reference of daily energy needs for Vietnamese adolescents should be carried out. European Journal of Clinical Nutrition 61, doi: It has been mentioned or derived from predictive equations. Therefore, a series of equations for calculating BMR according to age, overestimation or underestimation of BMR would affect the sex and body weight. However, the data used to develop the overall estimation of energy requirement Poh et al. Data of subjects from other functions during absolute rest. BMR includes the energy parts of the world are limited. Moreover, BMR data of expended in ventilation, blood circulation, intestinal con- adolescents were very few compared with the data of adults traction, the activities of internal organs and maintenance Schofield, Resting metabolic rate RMR is the Henry and Rees developed predictive equations for energy expended while an individual is resting quietly in a calculating the BMR of tropical people by re-analyzing data supine position. Although, there are some small differences from several studies carried out in tropics. To check the adherence to instructions, equations also overestimated the BMR by 10 and Studying in these ethnic differences, and reminded them to avoid nicotine, alcohol and caffeine. Henry showed that BMR in Beninese and Indonesian In addition, on this day, every subject was asked to record children is lower than in the United States and Europe physical activity and all foods and beverages consumed over Torun et al. It is suggested that specific equations 24 h. Girl subjects were asked about the date of their should be derived and applied to certain races or to children menstrual cycle to ensure testing at the same phase of the who live in some parts of the world. A early morning after a 12 h fast, in a non-strenuous manner. All measurements were carried out between 22nd and Up to now, there has 22nd°C and barometric pressure of 760 mm Hg. First, the test tion predictive equations. The gas exchange measurement was done via the extremely fast O₂ Materials and methods and CO₂ analyzers. A total of boys and girls aged 15th-17 years were beginning of each measurement. In addition, in order to randomly selected from an urban high school by systematic minimize the bias from measurement, any subject who had random sampling Levy and Lemeshow, Details of the relatively high or low RMR, or deviations of RMR greater study were explained carefully to all subjects. RMR was derived using the was examined by a medical doctor. A total of healthy Weir equations Weir, , The intra-individual subjects 59 boys and 51 girls who were without disabilities, coefficient of variation of measured RMR on three con- hypertension, goiter, chronic diseases of the heart or lungs secutive days was 2. In addition to the measured values, RMR was selected. Anthropometric measurement Body weight and height were measured in light clothing and Statistical analyses without shoes to the nearest 0. Data are presented as means±s. Linear regression equations were derived for groups of subjects according to sex and age. Correlation analysis was Body fat percent done to determine relationships between variables. A P-value Body fat percent was measured by bioelectrical impedance 0. On the other hand, the measured values were The boys and girls differed significantly RMR and in The girls, respectively, as 1. Differences between populations and found that the predicted values for boys ences were statistically significant between the two groups were 0. There was no difference between predictive and UNU equations, the overestimation was 7. Majority of the where In the boys, the underestimation of the predictive equation was 5. The maximum underestimation and over- Boys estimation was 3. Figures 3 and 4 show the individual differences between measured and predicted values of RMR plotted against the measured values using the technique of Bland and Altman Table 2 Correlation coefficients r between measured RMR and age in boys and girls. In addition, we used the standard errors and confidence interval CI to see how Body weight kg 0. The standard error of limits

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d72s. In circumstances where individual values are Thus, the of the world Spurr et al. We conducted our RMR measurements under carefully Our study found significantly lower RMRs than predicted controlled conditions, with considerations of many factors. This may be due to in adolescents. A previous study has reported that the small sample size in the present study. In order to find reference of daily energy needs for overestimation by these predictive equations has been Vietnamese people, further studies on RMR by more accurate reported in other papers Henry and Rees We methods, such as doubly labeled water measurement, should explored the accuracy of the Schofield equations to estimate be established and the new dietary reference intake should BMR of children and adolescents from various published and be referred for Vietnamese. The measured values calculate BMR tend to overestimate the BMR of children were quite closer to the estimated values by Japanese and and adolescents Torun et al. More Henry and Rees equations. These suggest that the equations evidence about the tendency of current predictive equations generated for Asians may be appropriate for Vietnamese. In addition to these ethnic differences, it is of the National Institute of Nutrition for their assistance in suggested that BMR in Beninese and Indonesian children is our survey. In comparison to the predicted values by Japanese predictive equations Health Service Bureau, Ministry of References Health and Welfare, , there is no significant difference for girl subjects and slight underestimation for boys 5. Statistical methods for assessing agreement between two methods of clinical measurement. Lancet The predicted values by Henry and Rees equations I, " However, the predicted values using Deurenberg P Resting metabolic rate in Italians: Acta Diab 37, 77" Energy and protein The individual differences between measured and pre- requirements. Predictive equations rate predictive equations: Eur J Clin Nutr 48, " Mal J Nutr 5, 1" Energy Recommended Dietary allowance for the Japanese 6th Revision. Dai-Ichi Shuppan Publishing, pp 2" New predictive equations for the S Predicting basal metabolic rate, new Nutr 45, " Energy expenditure of pre-school Suppl 1 , 5" World Rev Nutr Diet 57, 75" Basal metabolic rate in normal and Institute of Medicine of the National Academics Dietary marginally undernourished Mestizo children in Colombia. Cholesterol, Protein, and Amino Acids. Basal metabolic rate of Press: Washington DC, pp " Colombian children 2"16 years of age: Am J Clin Nutr 56, " Mal J Nutr 4, 81" Differences in resting energy tions for children and adolescents 1 to 18 years old. Eur J Clin Nutr expenditure in prepubertal black children and white children. J Pediatr , " Torun B, Viteri FE Methods and and effects of varying energy intakes on protein metabolism. Nutr Bull 5 Suppl , " Min Q, Ho ZC The basal metabolism rate of adolescent girls in Weir JBD New methods for calculating metabolic the sub-tropical areas of China. Acta Nutrimenta Sinica 13, " New methods for calculating metabolic rate with rate in Vietnamese adults. Eur J Clin Nutr 59, "

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Hemodialysis International ; Nephrology Does the presence of an arteriovenous fistula alter changes in body water following hemodialysis as determined by multifrequency bioelectrical impedance assessment? Does the presence of an arteriovenous fistula alter changes in body water following hemodialysis as determined by multifrequency bioelectrical impedance assessment? Changes in muscle and fat mass with haemodialysis detected by multi-frequency bioelectrical impedance analysis. European Journal of Clinical Nutrition 69, " Extracellular volume expansion and the preservation of residual renal function in Korean peritoneal dialysis patients: Clin Exp Nephrol, Nov Association between ratio of measured extracellular volume to expected body fluid volume and renal outcomes in patients with chronic kidney disease: BMC Nephrology , Body composition measurements using bioimpedance analysis in peritoneal dialysis patients are affected by the presence of dialysate. Nephrology 19 " Am J Nephrol ; Nephrology Extracellular volume expansion, measured by multifrequency bioimpedance, does not help preserve residual renal function in peritoneal dialysis patients InBody UK Kieran McCafferty, Stanley Fan, Andrew Davenport. Extracellular volume expansion, measured by multifrequency bioimpedance, does not help preserve residual renal function in peritoneal dialysis patients. Therapeutic Apheresis and Dialysis Positive association of vigorous and moderate physical activity volumes with skeletal muscle mass but not bone density or metabolism markers in hemodialysis patients. Int Urol Nephrol Nephrology Characteristics and clinical outcomes of hyponatraemia in peritoneal dialysis patients InBody 4. Characteristics and clinical outcomes of hyponatraemia in peritoneal dialysis patients. Nephrology 18 " Journal of Renal Nutrition, November , Vol. Transplantation Proceedings, 45, " Nephrology Are oral protein supplements helpful in the management of malnutrition in dialysis patients? Are oral protein supplements helpful in the management of malnutrition in dialysis patients? Indian J Nephrol ; Nephrol Dial Transplant ;0: Journal of Renal Nutrition ;Vol 23,No. Changes in upper limb extracellular water content during hemodialysis measured by multi-frequency bioimpedance. Int J Artif Organs ;36 3:

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Chapter 8 : Dissertations and Master's Theses (Campus Access) | University of Rhode Island

Food sources of energy and nutrients of public health concern and nutrients to limit with a focus on milk and other dairy foods in children 2 to 18 years of age: National Health and Nutrition Examination Survey,

The rural women of Nepal: Centre for Economic Development and Administration. Nutritional intake, height and weight of 11 to year-old Northumbrian children in compared with information obtained in Andersen KL, Masironi R. Habitual physical activity and health. Patterns of physical activity among 11 to 16 year old British children. Iwaoka K, Hatta H. Daily physical activity levels in preadolescent boys related to VO₂ max and lactate threshold. Intake and sources, in selected Australian subpopulations, of dietary constituents implicated in the etiology of chronic diseases. Energy intake and expenditure of Indian schoolboys. Food and nutrient intakes by British women aged years with particular reference to dieting habit and iron intakes. Ortisi, MT, Incerti P. Mazzoleni V, Martinoli G. Nutritional survey on a sample of one-year-old infants in Milan: Dietary changes in Swedish adolescents. The use of time allocation data in developing countries: From influencing development policies to estimating energy requirements. Critical evaluation of energy intake data using fundamental principles of energy physiology 2: A method to assess energy expenditure in children and adults. Nutrition in childhood and its relationship to early somatic growth, body fat, blood pressure and physical fitness. Energy expenditure and heart rate of obese high school girls. Energy intake of Montreal school-age children. Dietary habits of 15 to year-olds. The economic activities of children in a village in Bangladesh. University of the Philippines, Quezon City. In Rural household studies in Asia, eds H Binswanger et al. Computerized dietary analysis in children aged months 1: The use of heart-rate monitoring in the estimation of energy expenditure using whole body calorimetry: Women, men and time in the Forest of East Kalimantan. East-West Environment and Policy Institute. Seventh-day adventist adolescents-life-style patterns and cardiovascular risk factors. The energy, nutrient and food intakes of teenagers aged years in Britain. The Irish National Nutrition Survey The Irish Nutrition and Dietetic Institute. Total energy expenditure during childhood and adolescent. Total energy expenditure and energy intake in the pre-school child: The diets of British schoolchildren. Reports of health and social subjects Do we fatten our children at the television set? Obesity and television viewing in children and adolescents. Physical work capacity and daily physical activities of handicapped and non-handicapped children. Iron status, energy intake and nutritional status of healthy young Asian children. Methods to assess physical activity and the energy expended for it by infants and children. International Dietary Energy Consultancy Group. Physical activity of adolescents. Energy balance in childhood and adolescents. Self regulation of food intake among rural Mexican preschool children. Energy expenditure in the whole body. Comparison of heart rate monitoring combined with indirect calorimetry and the doubly labelled water 2HO method for the measurement of energy expenditure in children. Energy and protein requirements. The assessment of human energy intake and expenditure: Measured resting energy expenditure in children. Daily energy expenditure by five-year-old children, measured by doubly labeled water. Dietary trends of and year-old children in a biracial community: Resource allocation decisions in low-income rural households. Energy intake in children at high and low risk of obesity. Physical activity patterns determined by heart rate monitoring in 6 to 7-year-old children. Critical evaluation of energy intake data using fundamental principles of energy physiology: Derivation of cut-off values to identify under-recording. Total energy expenditure in 4 to 6-year-old children. Inactivity, diet and the fattening of America. Nutritional status of adolescent girls in regard to zinc, copper and iron. Peasants, subsistence ecology, and development in the highlands of Papua New Guinea. Energy expenditure and dietary intake of one to nineteen years old children. A 2-year longitudinal nutritional survey of North-umberland children initially aged Food habits and nutrients intake in childhood in relation to health and socioeconomic conditions. A Swedish multicentre study Patterns of household labour allocation in a Javanese Village. In Rural household studies in Asia, eds Hans Binswanger et al. Basal metabolic rate and race. Nutrition of

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healthy children in the second and third years of life. Energy expenditure of preschool children in a subtropical area. Energy, nutrient and food intake during infancy and early childhood. The Leiden Preschool Children Study. Kishi K, Tanimoto H. Actual energy and protein intakes and nitrogen balance in one year old Japanese children. Relationships between blood pressure and measures of dietary energy intake, physical fitness and physical activity in Australian children aged years. Diet and blood pressure in 9-year-old Australian children. Relative importance of inactivity and overeating in the energy balance of obese high school girls. Time allocation among the Machiguenga of Shima. Cross-cultural studies in time allocation, volume 1. Human Relations Area Files Press. Influence of noon meal on nutrient intakes and meal patterns of selected fifth-grade children. Nutrient intake in Jerusalem: Determinants of total and high density lipoprotein cholesterol in boys from Finland, the Netherlands, Italy, the Philippines and Ghana with special reference to diet. A comparison of physical activity in Gambian and UK children aged months. Dietary intakes of preschoolers. Daily energy expenditure in free-living children: Validation of estimates of energy intake by weighed dietary record and diet history in children and adolescents. Simultaneous measurements of free-living energy expenditure by the doubly labeled water method and heart-rate monitoring. Accuracy of weighed dietary records in studies of diet and health. Effect of social class and nutrient intake on height and plasma insulin-like growth factor in Andean Ecuadorian children. Daily physical activity patterns of prepubertal children involved in a vigorous exercise program. Nutritional studies during childhood IV: Energy and nutrient intake at age 4. Growth and dietary quality of young French Canadian school children. Nutrient intakes of female adolescents from eight southern states. The energy and nutrient intake of a random sample of infants. A study of the energy expenditure and food intake of five boys and four girls.

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Chapter 9 : Energy expenditure of preschool children in a subtropical area.

He Zhichi (Zhi-chien Ho) Technical assistance; Pan Xuejun, Guo Jieqiang, Huang Xiaolan, Zhao Xiaolan, Li Huijian, and Zhang Aiguo (Department of Pediatric Nutrition Research Sun Yet-Sen University of Medical Sciences, Guangzhou); THE ENERGY REQUIREMENTS OF SUBTROPIC PRESCHOOL CHILDREN 1.

Categories mild, moderate, severe of stunting and wasting are from Waterlow. Their activity level does, however, show a short-term response to food energy intake in the form of a midday meal. Undernourished 8- to 11-year-old girls do not increase their overall level of physical activity in response to energy supplementation but do increase growth and fatness. One difficulty in interpreting the studies of undernutrition in free-living children is that investigators have used different anthropometric indicators of nutritional status. Theoretically, weight-for-height should be the most sensitive indicator because it responds most rapidly to changes in the components of energy balance. Height-for-age, on the other hand, is the outcome of growth over a relatively long period, and at any given point in time children of low height-for-age could be in energy balance and growing in height at a velocity expected for their age. Weight-for-age is a composite of the other two indices and therefore more difficult to interpret. The functional significance of the impact of mild to moderate undernutrition on physical activity has not been very well defined. For example, in the study of Cali boys in the summer camp setting, it would be useful to know whether the lower level of physical activity in undernourished boys was the result of standing on the sidelines watching others play or playing a less vigorous game. The components of the latter are aerobic fitness, strength, flexibility, and leanness. One interpretation of this discrepancy is that increases in fatness have been offset by decreases in fat-free mass, and further that such a change could occur as a consequence of decreases in physical activity and a corresponding decrease in physical fitness (Gortmaker et al). There is a general perception that levels of physical activity have declined in children in industrialized countries, but unfortunately there are few data on trends in physical activity in children. Overnutrition is also blamed for the increases in fatness in children. Food intake, however, has not increased in parallel with the increase in obesity. For example, in Sweden 8-year-olds had higher body weights and higher triceps skinfolds but lower energy intakes in 1975 than they did 10 years earlier (Sunnegårdh et al). These results suggest that physical activity declined during the same period. TV viewing has been categorized as "nonphysical activity" or "inactivity" because it is associated with very low levels of energy expenditure (Gortmaker et al, Klesges et al). Obesity is a recognized health risk for adults. However, given that obesity in childhood is associated with obesity in adulthood (Gutin et al, Williams et al), and adult obesity is a difficult condition to treat, the consensus view is that we need to prevent it in children (Troiano et al). At the most basic level, however, obesity represents an accumulation of stored energy, which is a reflection of a history of positive energy balance—that is, a history of energy intake greater than energy expenditure. If the components of energy expenditure are physical activity, BMR (basal metabolic rate) and TEF (thermic effect of food), then a reduction in any one, or all of them, could contribute to a situation where expenditure is less than intake. There is little evidence to suggest, however, that either low BMR (Bandini et al, Manos et al) or low TEF (Bandini et al, Hultquist et al, Manos et al) contributes to obesity in children who are already obese. That leaves physical activity as the most likely candidate. Nonetheless, a genetic predisposition to obesity can only be expressed in a permissive environment where energy intake is consistently or chronically greater than energy expenditure. Measures of Overnutrition in Children There is little agreement on how fatness or obesity should be measured in children. The commonly used measures are shown in Table 1. A number of investigators have used skinfolds, especially the triceps skinfold. This is based on the high correlation of triceps skinfold with percent body fat measured using other techniques (Roche et al). The use of BMI is becoming more common. However, some investigators consider it inappropriate because it is significantly correlated with stature, especially in children, and is as much a measure of lean body mass as of fatness (Garn et al). In all these measures, the percentile cutoffs are somewhat arbitrary in

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terms of health outcomes. Physical Activity and Fatness To understand the role of physical activity in regulating body weight in children, researchers have used several different approaches: In all these studies, energy intake is assumed to be adequate. DuRant et al observed the physical activity of 3- to 4-year-old children in three ethnic groups Afro-Americans, Anglo-Americans, and Mexican-Americans. They found that the children who spent more time watching TV were less physically active but not fatter. Davies et al used doubly labeled water to assess energy expenditure in activity in English children between 1. They found a significant negative correlation between fatness and physical activity measured as the ratio of total energy expenditure to basal metabolic rate and as TEE minus BMR. They found no relationship between energy expenditure in activity and body fatness in either group of children. Interestingly, they found energy expenditure in activity was greater in the Mohawk children, even though they watched more TV according to the recall questionnaire. They found no association between level of physical activity and fatness measured by triceps skinfold. They did find a negative association between high levels of physical activity and BMI, but the usefulness of BMI as a measure of adiposity in children in this age range is questionable, and hence the results are not convincing. Analyzing the data cross-sectionally, they found that fatness measured as skinfolds was inversely correlated with physical activity measured by heart rate. Analyzing the data longitudinally, however, they did not find that physical activity contributed significantly to the level of fatness in the fourth year of the study. Fatness in the fourth year of the study was largely explained by fatness in the first year and dietary energy intake. That is, fatness "tracks" well in 4-to 7-year-olds. For older school children, there are four additional studies. Two studies Pate et al, Sunnegirdh et al used recall questionnaires to assess physical activity in large, nationally representative samples. In the Swedish study Sunnegirdh et al of 8- to year-old children there was no correlation between level of physical activity and body fatness skinfolds, but investigators did find a tendency for higher fatness to be associated with lower levels of physical activity in both males and females. In the US study Bouchard et al of 8- to 9-year-olds, fatness skinfolds was positively associated with hours of TV watching and negatively with participation in organized sports and the exercise patterns of both parents. They also found that physical activity and fitness were positively associated but that the absolute magnitude of the association was low. The study did not, however, find any significant associations between fatness and measures of physical activity in Pima girls or in the Anglo-American comparison group. In this study, body fatness was inversely correlated with physical activity, but the relationship was weak. It is not clear, however, whether the investigators controlled for the effect of age. Any relationship between fatness and physical activity would be confounded by the tendency of body fat to increase and physical activity to decrease with age between 6 and 17 years. In sum, the studies reviewed above are not entirely consistent and on the whole do not provide strong support for the idea that leanness is associated with high levels of physical activity. There are a number of factors that may help explain the inconsistent results. First, three of the four studies used recall questionnaires. Recall instruments in general have known reliability and validity problems and may not be sensitive enough to detect the relationship of interest, especially at low levels of physical activity as was the case with Pima females Fontvieille et al b. It is noteworthy that the two questionnaire studies reporting a significant negative association between fatness and physical activity Fontvieille et al b, Pate et al found it between fatness and participation in organized sports rather than between fatness and overall level of physical activity. This relationship may be an artifact of the use of recall questionnaires, if participation in formally scheduled sports activities are recalled better than more spontaneous activities. In addition, the relationship observed between leanness and participation in sports may be confounded if there is a tendency for leaner children to be involved in sports because they are leaner. Each child was observed for two days during waking hours by a trained observer. Children in the high adiposity group were less physically active. Results of studies using recall questionnaires are inconsistent. Further, the obese children reported spending more time watching TV than did the nonobese children. Studies that have used heart-rate monitoring to assess physical activity in small groups of obese and nonobese children are also inconsistent. One study found a trend for obese children

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to spend more time sleeping and resting and less time at high levels of physical activity, but between-group differences were not significant. The other study Maffeis et al found that obese children spent more time in sedentary activities than nonobese children. Studies of energy expenditure in obese and nonobese children Maffeis et al , Manos et al have found few or no between-group differences. These results, however, do not necessarily indicate that obese children are as physically active as nonobese children, because energy expenditure in activity is a function of body size. Therefore, at any given level of physical activity, energy expenditure in obese children will be greater because of their greater body mass. In summary, studies comparing obese with nonobese school-aged children are inconclusive, but suggest that obese children are less physically active. However, we do not know if obese children are obese because of low levels of physical activity, or whether they have low levels of physical activity because they are obese. Lower levels of physical activity could be a cause, or an effect, of obesity, or both because of the likelihood of the establishment of a positive feedback loop as body weight increases. Prospective studies are needed to improve our understanding of the role of physical activity in becoming obese. MacConnie et al demonstrated that the physical activity level of 7-year-old children could be increased significantly using a training program of 25 minutes of vigorous aerobic exercise four times per week for eight months. This is an adult standard of exercise intensity and equivalent to 1. This training program did not affect the body composition of the children, all of whom were on about the 50th percentile for weight. Burke et al reported a school-based intervention study in Western Australia with 10-year-old children that included a fitness as well as a nutrition-education component. The study demonstrated that it was possible to decrease body fatness and increase fitness. Unfortunately, in this type of study, it is difficult to disentangle the effects of physical activity on fatness from the effects of the nutritional component of the intervention. Several intervention studies Dwyer et al , Sallis et al , Walter et al have been based on school physical education programs. The results of these studies are inconsistent, but the interventions with the more vigorous levels of physical activity have shown a trend toward lower levels of fatness. These and other intervention studies Epstein have demonstrated that the physical activity level of children can be increased through organized exercise programs. Studies with adults have shown that they do tend to increase energy intake Hill et al Here, again, prospective studies are needed. In undernutrition, the level of physical activity appears to increase with increases in energy intake. When children are not forced to accommodate to low energy availability, the level of physical activity is probably determined by cultural and environmental factors. In overnutrition, the short-term effect of energy intake on physical activity is not clear. The most common research design for assessing the interrelationship of nutrition and physical activity has been to use two-group designs comparing undernourished and controls, or overnourished and controls. Whether there are thresholds in under- and overnutrition at which lower levels of physical activity would be expected is unclear. Similarly for overnutrition, there is probably some level of fatness at which physical activity is reduced because of the high cost of movement to the organism. Assessment of physical activity in children is problematical. At present, heart-rate monitoring combined with observations probably provides the most useful information overall. In industrialized countries, the tendency has been to use an adult standard in terms of duration and intensity of activity, but this may be incompatible with the more "natural spontaneous activity patterns" of children Livingstone et al Finally, we do not have a very clear understanding of how social, cultural, and environmental differences affect the physical activity of children. The assumption seems to have been that some level exactly what is unclear of physical activity in children is biologically driven and therefore that social, cultural, and environmental differences are not relevant. It is quite clear, however, that the level of physical activity in children is a biocultural phenomenon and needs to be approached that way. In industrialized countries where food is abundant and fatness is a preoccupation of adults, physical activity in children is encouraged and even formally organized.