



UNIVERSITI PUTRA MALAYSIA

**EFFECT OF OBESITY ON GROSS MOTOR DEVELOPMENT AMONG
CHILDREN OF DIFFERENT AGES**

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**EFFECT OF OBESITY ON GROSS MOTOR DEVELOPMENT AMONG
CHILDREN OF DIFFERENT AGES**

BY

NAFISEH KHALAJ

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia,
in Fulfilment of the Requirements for the Degree of Master of Science**

October 2010



This thesis is dedicated to my husband, parents and sister who have been stressing the importance of academic excellence and always been the fountain of my strength.



Abstract of thesis presented to the Senate of Universiti Putra Malaysia in
fulfilment of the requirement for the degree of Master of Science

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October 2010

Chairman: Saidon bin Amri, PhD

Faculty: Educational Studies

Gross motor skills are basis for almost all physical activities. Proper gross motor development among four and seven year old children is critical and essential. The failure to achieve gross motor skills by four years old children lead to impaired achievement of basic locomotor and object control skills. Similarly, gross motor development deficiencies in children aged seven years lead to lack of improved, smoothed and coordinated gross motor skills; and prevent children from mastering the gross motor skills. Therefore, this study was set up to determine and compare the gross motor development of obese children age four and seven years old, to find out whether any differences exists between gross motor development of obese children from different ages.



This study is an Ex post facto study. The independent variables are age and obesity and dependent variable is gross motor development. Total sample size was 256 (gender; boys= 156; girls= 100), which was determined by using the Cohen (1992) sample size table. Participants were obese (n=128) and normal weight (n=128) children aged four and seven years at kindergartens (mean age; obese=55.3 months; normal weight=57.5 months) and primary schools (mean age; obese=89.6 months; normal weight=88.9 months) in Qazvin (a city in north part of Iran). TGMD-2 was used to assess gross motor development. This test evaluates 12 gross motor skills, classified as six locomotor (running, leaping, galloping, hopping, horizontal jumping and sliding) and six object control skills (striking stationary ball, kicking, dribbling, catching, overhand throwing and underhand rolling). The methods of analysis were correlation Pearson product, independent t-test and descriptive analysis.

The results of the study determined that obese children have delay in their gross motor development (both locomotor and object control skills). Also, it was determined that there is a significant difference in GMQ score between obese children age four years old and obese children age seven years old; obese children who are age seven years old showed more delay in their gross motor development (both locomotor and object control skills) compare to obese children age four years old.



It is important to identify gross motor development early so treatment can minimize the effect of the problem. Future studies, should attempt to find the appropriate exercise and physical activity programs according to age for obese children to improve their gross motor skills and prevent motor development delays.



Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia
sebagai memenuhi keperluan untuk ijazah Master Sains

**KESAN OBESITI TERHADAP PAKEMBANGAN MOTOR KASAR DI
KALANGAN KANAK-KANAK DARI DALAM UMUR BERBEZA**

Oleh

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Kemahiran motor kasar adalah asas bagi kebanyakan aktiviti fizikal. Perkembangan motor kasar yang bersesuaian dalam kalangan kanak-kanak yang berumur empat dan tujuh tahun adalah kritikal dan penting. Kegagalan mencapai kemahiran motor kasar oleh kanak-kanak berumur empat tahun adalah menyebabkan rencatan terhadap pencapaian pengurangan pencapaian kemahiran asas bagi lokomotor dan kawalan objek. Begitu juga kelewatan perkembangan motor kasar bagi kanak-kanak berumur tujuh tahun memberi petunjuk kekurangan penambahbaikan, kelancaran dan koordinasi kemahiran motor kasar dan menghalang kanak-kanak daripada menguasai kemahiran motor kasar. Oleh itu, kajian ini dijalankan untuk menentukan dan membandingkan perkembangan motor kasar kanak-kanak obes berumur

empat dan tujuh tahun, untuk mengetahui sama ada wujud sebarang perbezaan perkembangan motor kasar antara kanak-kanak obes daripada kumpulan umur yang berbeza.

Kajian ini adalah kajian *Ex post factor*. Pemboleh ubah tidak bersandar adalah umur dan obesiti, dan pemboleh ubah bersandar adalah perkembangan motor kasar. Jumlah saiz sampel adalah 256 kanak-kanak (Jantina; lelaki=156; perempuan=100) yang ditentukan menggunakan jadual saiz sampel Cohen (1992). Peserta kajian merupakan kanak-kanak obes ($n=128$) dan berat badan normal ($n=128$) berumur empat dan tujuh tahun daripada tadika (min umur; obes=55.3 bulan; berat normal= 57.5 bulan) dan sekolah rendah (min umur; obes=89.6; berat normal= 88.9) di Qazvin (bandar di bahagian utara Iran). Perkembangan motor kasar ditaksir menggunakan TGMD-2. Ujian ini menilai 12 kemahiran motor kasar yang diklasifikasikan kepada enam kemahiran lokomotor (berlari, melompat, bergalop, melompat sebelah kaki, lompat mendatar, menggelongsor) dan enam kemahiran kawalan objek (memukul bola statik, menendang, menggelecek, menangkap, membaling, menggolek). Kaedah penganalisan adalah analisis deskriptif, kolerasi *Pearson product* dan ujian-t tidak bersandar.



Dapatan kajian ini mendapati, kanak-kanak obes mengalami kelewatan bagi perkembangan motor kasar (kemahiran lokomotor dan kawalan objek) mereka. Di dapati juga, terdapat perbezaan yang signifikan bagi skor GMQ antara kanak-kanak obes berumur empat tahun dan kanak-kanak obes berumur tujuh tahun; kanak-kanak obes berumur tujuh tahun menunjukkan kelewatan bagi perkembangan motor kasar (kemahiran lokomotor dan kawalan objek) mereka berbanding kanak-kanak obes berumur empat tahun.

Adalah penting bagi mengenal pasti perkembangan motor kasar awal supaya rawatan dapat meminimumkan kesan daripada permasalahan. Kajian masa depan perlu mengenal pasti program latihan dan kegiatan fizikal yang sesuai berdasarkan umur kanak-kanak obes bagi memperbaiki perkembangan motor kasar mereka dan mencegah kelewatan perkembangan motor.



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I certify that a Thesis Examination Committee has met on 7th October 2010 to conduct the final examination of Nafiseh Khalaj on her thesis entitled “Effect of obesity on gross motor development among children at different age categories” in accordance with the Universities and University Collage act 1971 and the Constitution of the Universiti Pertanian Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Master of Science.

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DECLARATION

I declare that the thesis is my original work except for quotations and citation which have been duly acknowledged. I also declare that it has not been previously, and is not concurrently, submitted for any other degree at Universiti Putra Malaysia or other institutions.

NAFISEH KHALAJ

Date: 7 October 2010



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