

Effects Of Body Weight On Some House Works Efficacy And Some Physiological Parameters Of Females

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Abstract

In this work the effect of excess body weight on house works and some physiological parameters were conducted on twelve females' university students. The students were divided into a control (normal weight) group and experimental (overweight) group. The weakly cleaning of the living room was chosen as house work. A room was prepared as a living room with some furniture like tables, chairs, a sofa and cupboard in addition to a carpet on the ground and curtains on the walls. Observation of complexion, tremors, behavior reflecting boredom, level and time of performance as well as any complaint as tiredness, back pain, leg pain. Some physiological parameters as pulse, blood pressure, respiratory rate forced respiratory capacity and expiratory time were measured.

The results showed that overweight has passive effect on time and level of performance; also it affects the circulatory functions more than the respiratory functions. So house works are not considered as hard work and not sufficient to reduce body weight in overweight women. Also house works can be tolerated and there is no need to restrict activity to guard against respiratory distress

Introduction

Excess weight in females actually represents a multi-aspect problem. Beside the harmful health effects accompanying excess weight; it also has social and psychological effects (Friedman *et al.*, 1995). Many housewives suffer from excess weight especially at the age of forty as a result of biological changes (Pronk *et al.*, 2004). Some females believe that just physical activities either in house or office works are sufficient for preserving weight stability, avoiding many diseases and improving general health (Stunkard *et al.*, 1996). Studies demonstrated that a most lazy subject can enjoy good health if he spends 30 minutes or more in daily physical activities. Steidl and Braton (1967) indicated that body weight directly affect physical performance and bearing the daily life burdens and that excess weight increase the complaining of feeling tired, back and joint pain as well as leg difficulties. In spite of cultural progress, which was supposed to raise the individual awareness of health care and caring for beauty measures, rates of excess weight increased (Malnick and

Knobler., 2006) That's due to the excessive dependence on modern machines; unawareness of importance of sports practice and sedentary life (Maffeis *et al.*, 1998).

The relation between body weight and work performance especially in the field of housework doesn't receive the enough care. So the aim of this work is to throw light on the effect of excess body weight on performance of housework and some physiological parameters in woman.

Individual And Methods

Twelve female university students were chosen. Their weight range between (60-99 kg), their age ranged between (18-22 years) and clinically free as regard cardiopulmonary diseases, diabetes and skeletal deformity.

Student with body weight range from 60 kg to 65 kg and height range from 160 cm to 165 cm were considered of normal weight while those with body weight range from 92 kg to 99 kg and height range

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from 160 cm to 165 cm were considered of overweight (Pekelis., 1987), so they were divide to two groups:-

Control group: 6 students with weight range (60-65 kg).

Excess weight group: 6 students with weight range (92-99 kg).

The weekly cleaning of the living room, considering it from the hard houseworks was chosen (Nickell &Dorsey, 1976). A room was prepared as a living room with some furniture like tables, chairs, a sofa and cupboard in addition to a carpet on the ground and curtains on the walls.

The following parameters were determined at the beginning and the end of performance.

- **Circulatory parameters:** Pulse and blood pressure (using sphygmomanometer and stethoscope)
- Respiratory parameters: Respiratory rate, forced vital capacity and expiratory time (using spirometer)
- Time of performance (using stopwatch)
- Observation of complexion, tremors, behavior reflecting boredom and level of performance (Anoakly, 1976) as well as any complaint (tiredness, back pain, leg pain)

Results

Pulse rate showed an insignificant preperformance and a significant ($P <$

0.001) postperformance increase in overweight group as compared to control normal weight group .Blood pressure showed an insignificant preperformance and a significant ($P < 0.01$) postperformance increase in overweight group as compared to control normal weight group (Table: 1).

The respiratory rate showed an insignificant preperformance decrease and postperformance increase in overweight group as compared to control normal weight group. The forced vital capacity showed an insignificant pre and postperformance increase in overweight group as compared to control normal weight group. The expiratory time showed an insignificant pre and postperformance increase in overweight group as compared to control normal weight group.(Table ,2).

The excess weight group showed some psycho-physiological changes in the form of tiredness (66.6%), back pain (100%), leg pain (100%), tremors (83%) and cyanosis (50%). This group showed also some disturbances in performance in the form of slow movements (83%), random intermittent hand movements (66.6%) and periods of cessation (83% .Table 3)

The excess weight group showed a significant ($P < 0.01$) increase in time of performance and a significant ($P < 0.01$) decrease in level of performance as compare to control group (Table 4)

Table (1): Circulatory changes in control and excess weight groups before and after performance

Test parameters Groups (n=6)		Pulse (Mean \pm SD)		Systolic B P (Mean \pm SD)		Diastolic B P (Mean \pm SD)	
		Before	After	Before	After	Before	After
I	Control group	77.8 \pm 5.9	96.7 \pm 6.1	116.7 \pm 9.3	122.2 \pm 8.3	77 \pm 5.22	79 \pm 4.22
II	Overweight group	84.2 \pm 9.0	130.2 \pm 5.3	124.8 \pm 6.6	128.5 \pm 8.1	81 \pm 5.8	88 \pm 4.1
		insignificant	$P < 0.001$	insignificant	$P < 0.01$	insignificant	$P < 0.01$

Table (2): Respiratory changes in control and excess weight groups before and after performance

Test parameters Groups (n=6)		Respiratory rate (Mean ±SD)		Forced vital capacity (Mean ±SD)		Expiratory time (Mean ±SD)	
		Before	After	Before	After	Before	After
I	Control group	17±1.4	25.2±2.2	89.8±6.2	95.2±7.5	7.1 ±1.2	6.2±0.1
II	Overweight group	18.2±1.7	28.5±4.8	116.8±5.3	121.8±6.2	4.2 ±0.9	5.7±0.9
		insignificant		insignificant		insignificant	

Table (3): Psycho-physiological changes in excess weight group and its effects on performance

Parameter	Symptom and signs	Frequency	Percentage
Psycho-physiological	Tiredness.	4	66.6
	Back pain.	6	100
	Leg pain.	6	100
	Tremors.	5	83
Effects on performance	Slowing in movements.	5	83
	Random intermittent hand movements.	4	66.6
	Periods of cessation.	5	83

Table (4): time and level of performance in control and excess weight groups

Test parameters Groups (n=6)		Time of performance (min) (Mean ± SD)	Level of performance (Mean ± SD)
I	Control group	57 ± 3.22	492.3 ± 11.3
II	Overweight group	93 ± 15.02	395.7 ± 26.0
		P < 0.01	P < 0.01

Discussion

Body weight is an important factor affecting physical activity. Most people ignore the bad effects of overweight which is reflected on the individual behavior, as well as in-door and out-door performance (Ross et al. ,2001). Neglecting sports practice and sedentary life are important factors in overweight Prentice et al (1996).

The present study showed that the individuals of overweight group were suffering from subjective psycho physiological manifestations as boredom, tension, general fatigue, back aches and leg aches when practicing work. In addition, there were tremors and changes in complexion. Physiological measures showed significant

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increase in pulse rate and ABP as compared to control group. These changes may be attributed to the overweight which may be considered as a burden on the body systems, particularly the musculoskeletal and cardiovascular systems (Goldfield *et al.*, 2007). This can be assured by the slow and intermittent movements of the hands during work performance in addition to stoppage for moments which was interpreted by the individuals as fatigue. This was reflected on the level of performance, in overweight group as compared to control group. Madsen *et al.*, 1998, mentioned that fatigue led to decreased work ability accompanied by increased work mistakes and low level of performance.

The results showed a significant increase in time of performance in overweight group compared to control normal weight group which agrees with the results of Crandell *et al.*, (1973) who attributed this to stoppage of movements, slow and random movements due to fatigue and boredom (José *et al.*, 2007). These results agree also with Anderson *et al.*, (1988) and Gannong (2005).

In the current study, individuals of the overweight group showed insignificant preperformance increase in pulse rate as compared with normal weight group which could be considered as a physiological response because of increased demand on the heart to pump an increased blood volume (Bray, 2004). After work performance, there was a significant increase in pulse rate in both groups but it was more apparent in overweight group which may be due to sympathetic response to over activity during work (Mansi and Drolet, 1997). In spite of the marked increase of pulse rate in excess weight group it was still within the physiological range and may be due to the cumulative effect of both stress of work and overweight (Gannong, 2005).

Overweight group showed a non significant before performance increase in both systolic and diastolic blood pressure which is normal in overweight persons to insure good perfusion to the excess body mass (Caroline *et al.*, 2002). Significant increase in both systolic and diastolic blood pressure after performance were found.

This could be explained by the positive inotropic effect of sympathetic stimulation (Guyton and hall, 2006). The increased blood pressure was more marked in excess weight group which indicates that the excess weight is an additional burden on the circulatory system to cover these excess weight needs of O₂ and nutrients (Heiman *et al.*, 1997).

As regards the respiratory rate both groups showed an insignificant post-performance increase which was proportional in both groups indicating that the excess weight had no additional effect on the respiratory system. So the increased respiratory rate is most probably due to the effect of work stress on the respiratory center (Diana *et al.*, 2006).

The forced vital capacity (FVC) as well as the expiratory time showed insignificant post performance increase in both groups indicating that both the work and the excess weight were not enough burdens to increase respiratory effort (Gillison *et al.*, 2006). As the regulation of respiration is mainly metabolic and as the work led to insignificant changes in respiratory parameters this indicates that the house works are not sufficient to reduce body weight in overweight women (Keim *et al.*, 1990). It was noted that the effect of work was more apparent on the circulatory than the respiratory system which indicates that the house works is a light work and not a hard work. This is contradictory to Gross *et al.*, (1973) and Nickel & Dorsy (1979) who consider these works as sever works. This contradiction may be due to difference in methodology as their study was as survey subjective reports without measuring physiological parameters.

In this study it may be conclude that house works are not sever works, so there is no need to restrict activity to guard against respiratory distress or consider these works as an exercise that can be useful for weight reduction in overweight women.

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تأثير وزن الجسم على كفاءة أداء بعض الأعمال المنزلية وبعض القياسات الفسيوولوجية للإناث

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أجريت هذه الدراسة على إثنى عشرة طالبة جامعية قسمن إلى مجموعتين :
مجموعة ذوات الوزن العادى (٦ طالبات) ومجموعة ذوات الوزن الزائد (٦ طالبات) .
وقد قامت كل طالبة بتنظيف حجرة صممت على غرار حجرة المعيشة (تحتوى على
بعض الأثاث – كراسى ؛ كنية؛ دولاب ومنضدة – بالإضافة إلى سجادة وستارة) مع
حساب الوقت اللازم للتنظيف وملاحظة درجة الأداء وتعبيرات الوجه الدالة على
الأرهاق أو الألم وكذلك إجراء بعض القياسات الفسيولوجية كالنبض وضغط الدم
الشريانى ومعدل التنفس والسعة التنفسية الحيوية القسرية وزمن الزفير)
وقد أثبتت الدراسة أن لزيادة وزن الجسم تأثير سلبى على زمن ودرجة الأداء
كما أبدت طالبات مجموعة الوزن الزائد الاما بالظهر والرجلين . كذلك أوضحت
القياسات الفسيولوجية زيادة ذات دلالة إحصائية فى وظائف الجهاز الدورى (النبض
والضغط) وعدم تغير فى وظائف الجهاز التنفسى (معدل التنفس والسعة التنفسية
الحيوية القسرية وزمن الزفير)
وقد أثبتت الدراسة أن الأعمال المنزلية من الأعمال المحتملة و ليست من
الأعمال الصعبة كما كان يعتقد وبالتالي لا يعول عليها كوسيلة لإنقاص وزن الجسم
الزائد . كذلك خلصت الدراسة إلى أن الأعمال المنزلية لا يوجد عليها تحفظات من
الناحية الإجهادية للجهازين الدورى والتنفسى وأنه ليس هناك بد من التمارين الرياضية
كوسيلة لإنقاص وزن الجسم الزائد