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To exercise or not to exercise and the effortless exercise alternative

Abstract

We report six experimental and clinical studies conducted in several clinics around the world with a total of 407 multiracial subjects that examined the effects of an effortless exercise method, on visceral fat reduction, lipids profile, hormonal fluctuations, and muscle mass increase. The technology that acts as a virtual gym was invented in London University by the co-inventor of the first pacemaker. The first two within-subjects longitudinal experimental studies demonstrated a significant reduction in both visceral and subcutaneous adipose tissue, and a statistically significant increase of muscle mass on MRI scans. Additionally, there was a statistically significant increase in DHEA and T3. A statistically significant decrease in triglyceride serum levels was also noted. Two independent clinical studies revealed reduced body fat and increased muscle mass. One of these clinical studies also demonstrated increased BMR and bone density and decreased metabolic age, indicating an enhancement in the longevity quotient. When this effortless exercise (virtual gym) method was compared to gym workouts in a between-subjects design, it demonstrated a statistically significant advantage in terms of increased range and speed of motion on the goniometer results, metabolic boost and increased blood flow on the PET measurement. Cortisol Plasma levels and Cortisol Urinary Free levels decrease after the virtual gym method, indicated that the stress associated with effortless exercise is significantly less than gym workouts. Time taken to run around the gym three times and time recorded to swim from one end of the pool lengthwise to the other, showed a significant advantage of fitness attained after the effortless virtual gym method, when compared to physical regular gym workouts. Moreover, effortless exercise demonstrated several advantages over the physical exercise gym workouts in terms of a reduction of body fat, inch loss, body shaping appearance, BMI reduction and evidenced a substantially greater muscle mass increase.

Keywords: exercise, effortless exercise, DHEA, triglycerides, visceral fat, subcutaneous fat, muscle mass, fitness, T3, metabolism, cortisol, inch loss, BMI, range of motion, speed of motion

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Background

Exercise has been consistently recommended as part of a healthy lifestyle along with a reasonable diet designed to reduce high caloric intake, cholesterol, and food-induced inflammation associated with several clinical conditions including Diabetes 2 and arthritis.[1–3] Unfortunately, most current career-driven professionals or housewives are habitually used to their unhealthy lifestyles or find exercise time-consuming, cumbersome or unmanageable, especially those over the age of 50 with progressive physical fragility who suffer from muscle and neurological pains. Obese individuals who need exercise the most due to the deleterious effects of their visceral fat on their wellness quotient avoid physical activity due to its been energy taxing, exhaustive, or difficult and often because they feel uncomfortable being dressed in gym clothes that outline their weight.

Several publications have introduced the effortless exercise modality- a virtual gym method invented and built in London University. These studies have reported optimization of Creatinine, Bilirubin; Cortisol, Testosterone, Free Triiodothyronine (T3), the active thyroid hormone involved in the regulation and control of metabolism, Insulin Growth Factor-1 (IGF-1), and the inflammatory marker C-reactive protein (CRP). After four weeks of treatment, reduced glucose and insulin have improved diabetic status. Lower values of visceral fat, VLDL (very low-density lipoprotein) and triglycerides have been juxtaposed with higher levels of high-density lipoprotein (HDL) and increased muscle mass. Additionally, this type of research has postulated a balanced profile of leptin and ghrelin that is necessary to stabilize, and eliminate cravings to avoid subcutaneous and visceral fat rebound.[4–11]

Methodology

We used the same London University virtual gym technology to conduct six experimental and clinical studies. This method of virtual exercise is based on a proprietary formula that synthesizes and regulates the complex waveforms which are intertwined during treatment to contract the entire body for 8 seconds, with 2 seconds resting interval, generating the sensation of a multi-exercise regimen, experienced as fast-paced or slow resistance physical training. The invention involves 144 voltage-driven, unlimited resolution complex signals, each composed with up to 8,000 waveforms, the composites of which are in sync with the central nervous system (CNS). Signals that are not in sync with the CNS are rejected as noise. Due to their compatibility, the invention's complex signals resonate with the CNS which carries them to the brain, simulating the process of regular exercise by triggering hormonal secretion and brain-triggered motor nerve excitation resulting in 8 secs rhythmical, synchronized brain-motor nerve-induced contractions of the entire body musculature. The technology was invented by G. Pollock, an electronics engineer, and D. Gilbert, a molecular biology London University professor after 35 years of research in search of a signal that will replace the function of the motor nerve in multiple sclerosis patients. The technology boards were patented in 1983, a few years after the empirical research started. It is classified as IEC class I according to the IEC60601-1 standard. It has DH clearance from the UK where it is built and a CE marketing directive with electromagnetic compatibility regulations applied standards EN50081-1 and EN50082-1. It has FDA clearance as a class II device under prescription with FDA clearance numbers K123158 and K132179.

Experimental study1: effects of effortless exercise (virtual gym) on visceral fat reduction, hormonal balance and muscle mass increase

This study was a randomized longitudinal study on the lipid, visceral fat, hormonal and muscle profile of 12 obese individuals from a multiracial population (4 Caucasians, 5 American Indians and 3 Hispanic). Subjects were tested prior to the effortless exercise treatment and after seven months. The study was conducted over a period of three weeks, during which time the subjects received 12 treatments 3 treatments weekly, spaced 2 to 3 days apart.

Research objectives

We used Magnetic Resonance imaging (MRIs) -- cross-sectional areas of subcutaneous and visceral adipose tissue and muscle tissue to evaluate the results pre-treatment and 7 months later. Lipids, DHEA and Free T3 concentrations were also measured.

Subjects: Seven obese women of mean age =52.3; Mean Body Mass Index BMI= 28.8 kg/m2 and 5 obese men of mean age = 48.9; Mean Body Mass Index BMI= 31.6 kg/m2

Results

I. Significant decrease of Visceral Fat: ($p< 0.001$))

II. Significant decrease of Subcutaneous Fat ($p< 0.001$)

III. Significant decrease of Triglycerides ($p<0.01$)

IV. Increased Muscle Mass ($p<0.001$)

V. Significant increase in DHEA levels (DHEA levels before: ($p<0.01$)

VI. Increase in Free T3 levels ($p<0.03$)

DHEA is an endogenous steroid hormone acting as a metabolic intermediate in synthesizing androgen, estrogen, testosterone and sex steroids. DHEA has been associated with skin rejuvenation and hair growth.[12–14]

Triiodothyronine (T3) is the active hormone produced by the thyroid gland along with thyroxine or tetraiodothyronine (T4). Thyrotropin-releasing hormone (TRH) is released by the hypothalamus while thyroid-stimulating hormone (TSH) is released by the anterior pituitary gland. TRH, TSH, T4 and T3 work synergistically to control metabolism, body growth, and sustain feedback mechanisms that maintain homeostasis.[15–17]

Visceral fat has been associated with the pathogenesis of several clinical conditions including type 2 diabetes, stroke, cancers, gallbladder disease, dyslipidemias, osteoarthritis, pulmonary diseases, and coronary heart disease. Visceral fat has also been highly correlated with fatty liver, generally all vital organs' dysfunction, hyperinsulinaemia, hyperapolipoprotein and hyperleptinemia that reinforces excessive food consumption.[17,18]

Experimental study 2: effects of effortless exercise (virtual gym) on visceral fat reduction, hormonal balance and muscle mass increase

Since the sample size of the first study was rather small, we replicated the results with a second longitudinal within-subjects design study, in which we measured the effects of effortless exercise before and four months later. Twenty-eight obese individuals from a multiracial population (14 Caucasians, 8 Asians and 6 American Indians), participated in this second longitudinal study. Subjects received a total of 12 treatments, three treatments per week spaced 2 to 3 days apart, over a period of four weeks.

Subjects: Twelve obese women of mean age =48.6 Mean Body Mass Index BMI=27.6 kg/m2 and sixteen obese men of mean age = 44.6; Mean Body Mass Index BMI= 28.2 kg/m2

Measures: We used Magnetic Resonance Imaging (MRIs)-- cross-sectional areas of subcutaneous and visceral adipose tissue and muscle tissue, as well as measurements of lipid, DHEA, Free T3 concentrations. Subjects were measured before treatment and after four months.

Results: This study replicated the results of the first study, reported above demonstrating:

I. Significant decrease of Visceral Fat: ($p< 0.01$))

II. Significant decrease of Subcutaneous Fat $p< 0.001$)

III. Significant decrease of Triglyceride Levels ($p<0.02$)

IV. Increased Muscle Mass ($p<0.004$)

V. Increased DHEA ($p<0.05$)

VI. Increased Free T3 levels ($p < 0.05$)

Clinical study1: effects of effortless exercise (virtual gym) on visceral fat reduction, BMR, bone density and muscle mass increase

Dr. L. Koh, M.D. a gynecologist with an additional specialty in anti-aging medicine conducted an independent clinical study, testing the effects of effortless exercise on six female subjects with obesity and infertility. Subjects' age varied from 32- 38 years of age. None of the subjects had a history of or suffered from any known medical condition during the time of the study other than their infertility and obesity. None of the subjects had a cardiac pacemaker, implanted defibrillator or other implanted metallic or electronic devices. None of the subjects had injured or otherwise impaired muscles. Results of his study are given in the table below. All values are averages by adding all measurements taken by all 6 subjects and by finding the mean value for each measurement.

Before Treatment							
Weight	Body Fat%	TBW%	Muscle mass%	BMR	Metabolic age	Bone density	Visceral Fat %
86.1 Kg	46.1	39.5	43.9	1501	61.9	2.9	11
After Treatment							
Weight	Body Fat%	TBW %	Muscle mass%	BMR	Metabolic age	Bone density	Visceral Fat %
85 Kg	**39.1**	**42.4**	**51.6**	**1622**	**55**	**3.3**	**9**

Results

I. Visceral fat decrease: $p>0.05$

II. Metabolic Age decrease: $p>0.001$

III. Body fat decrease: $p>0.001$

IV. Muscle mass increase: $p>0.001$

V. BMR increase: $p>0.01$

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VI. Bone density increase: p>0.01

This study included variables like metabolic age that significantly decreased after treatment and increased basal metabolic rate (BMR) which is the rate with which calories are burnt at rest. Increased BMR is significant in determining the visceral and overall fat rebound effects. The fact that BMR increased indicated that this treatment will have no fat rebound effects, confirming the results of the experimental longitudinal studies that indicated no subcutaneous or visceral fat rebound. Metabolic age decrease is significant in terms of enhancing the longevity quotient. Viscreal fat, overall body fat decrease and muscle mass increase replicated the results of the experimental studies, providing additional external validity for this technology. However, the sample size of this study was small and although BMR increase has been documented in other published studies,[4–11] bone density increase and metabolic age decrease have not been yet researched by other investigators. Therefore, more clinical and/or experimental data is necessary before solid conclusions are drawn on bone density and metabolic age. Anecdotally, two of these women got pregnant 2-4 months after treatment. However, effects of this virtual gym method on infertility have not been methodically researched yet.

Clinical study 2: effects of effortless exercise (virtual gym) on body fat and muscle increase

Another clinical study was conducted by the owner of five clinics in Indonesia. His operators measured body fat reduction and muscle mass increase in seven obese female subjects between 36-54 years of age who underwent 10 effortless exercise treatments every two to three days over a period of four weeks. None of these subjects suffered from any medical condition. None of the subjects reported any adverse reactions, or side effects.

Mean values of the results are given below:

Date	Body fat %	TBW %	Muscle mass %
8/8	49.70%	37.10%	39.40%
10/8	42.30%	39.20%	45%
12/8	40.10%	36.10%	47.30%
15/8	40%	37.40%	48.60%
17/8	35.70%	36.80%	52.10%
20/8	33.20%	38%	56.70%
22/8	32.10%	38.20%	55.90%
24/8	28.90%	37.90%	57.90%
26/8	28%	38.50%	58.90%
28/8	27.20%	37.40%	61.40%
1/9	27%	37.60%	63.30%
3/9	25.80%	37.30%	63.20%

Results

I. Body fat decrease: p>0.0001

II. Muscle mass increase: p>0.0001

In this clinical study overall body fat was decreased by 23.9% and muscle mass was increased by 23.8%.

Experimental fitness study: effects of effortless exercise (virtual gym) when compared to physical exercise

We used the same London University technology to conduct a randomised, double-blind experimental study to demonstrate the effects of this effortless exercise/ virtual gym method on fitness, range and speed of motion, blood flow and metabolic activity when compared to exercise. We also looked at cortisol levels to evaluate the amount of stress associated with effortless exercise in comparison to gym workouts.

Subjects: Subjects' ages were between 32-52 years of age. The total number of 239 subjects had an average weight of 80 Kg. 190 of these subjects were females and 49 were males. None of the subjects had a history or suffered from a major medical or psychiatric disorder at the time of treatments. The experimental group of the effortless virtual gym exercise of 239 subjects received six effortless exercise procedures spaced 2-3 days apart. Results of the experimental group were compared among themselves in a pre-post within-subjects experimental design and against the results of a control/gym group of 86 subjects (53 men and 33 women) who received six 3-hour gym workouts spaced 2-3 days apart.

Measures

I. Goniometer to measure increased range of motion.

II. Blood Flow was measured with positron emission tomography (PET)* which offers local skeletal muscle blood-flow measurements.

III. Metabolic activity was also measured with positron emission tomography (PET)*.

IV. Cortisol Plasma levels and Cortisol Urinary Free levels

V. Minutes and seconds taken to run around the gym three times

VI. Minutes and seconds taken to swim from one end of the pool lengthwise to the other.

*PET is a highly specialized imaging technique that uses short-lived radioactive substances to produce three-dimensional coloured images of those substances functioning within the body. PET scanning provides information about the body's chemistry not available through other procedures. Unlike CT (computerized tomography) or MRI (magnetic resonance imaging), techniques that look at anatomy or body form, PET studies metabolic activity or body function. In PET the subject receives a short half-lived radiopharmaceutical (produced by a cyclotron or a generator). Because the radioisotope used in a PET scan is short-lived, the amount of radiation exposure the subject receives is about the same as two chest X-rays. The radiopharmaceuticals discharge positrons from wherever they are used in the body. As the positrons encounter electrons within the body, a reaction producing gamma rays occurs. The subject lies on a table that slides into the middle of the scanner. Within the scanner are rings of detectors containing special crystals that produce light when struck by a gamma ray. The scanner's electronics record these detected gamma rays and map an image of the area where the radiopharmaceutical is located.

Results: within subjects design

Statistical Analysis produced the following results for the within-subjects design when the experimental (virtual gym) group pre and post-treatment results were compared.

I. Increased range of motion data analysis with t-test comparing values before and after all treatments revealed a statistically significant result ($p< 0.05$)

II. Increased localized blood flow as measured by PET analysis with t-test comparing values before and after all treatments revealed a highly statistically significant result ($p< 0.01$)

III. Decreased Cortisol ($p<0.05$)

IV. Increased metabolic activity as measured by the PET ($p<0.05$)

V. Significantly reduced time for the gym run ($p<0.001$)

VI. Significantly reduced time for the swim test ($p<0.01$)

VII. Significantly reduced BMI ($p<0.05$)

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Statistical Analysis produced the following results for the within-subjects design when the control gym group pre and post-gym workout results were measured

I. Increased range of motion data analysis with t-test comparing values before and after all 6 gym workouts did not reach statistical significance. N/A

II. Increased localized blood flow analysis with t-test comparing values before and after all treatments revealed a highly statistically significant result ($p< 0.1$)

III. Increased Cortisol levels indicated the stressful effects of physical exercise ($p<0.05$)

IV. Increased metabolic activity as measured by the PET ($p<0.05$)

V. Reduced time for the gym run of pre-post measurement of the physical exercise gym/control group subjects ($p<0.1$)

VI. Reduced time for the swim test of pre-post measurement of the physical exercise gym/control group subjects ($p<0.1$)

Results: between subjects design

The between-subjects design that compared the experimental effortless virtual gym method group with the control physical exercise gym group produced significant results:

I. Effortless exercise / experimental subjects showed an advantage over the gym/ control subjects in terms of increased range of motion ($p< 0.05$)

II. Effortless exercise / experimental subjects showed an advantage over the gym/ control subjects in terms of increased localized blood flow analysis as measured by the PET ($p< 0.01$)

III. Effortless exercise / experimental subjects showed an advantage over the gym/ control subjects in terms of increased metabolic activity as measured by the PET ($p<0.05$)

IV. Effortless exercise / experimental subjects showed an advantage over the gym/ control subjects in terms of significantly reduced time for the gym run ($p<0.01$)

V. Effortless exercise / experimental subjects showed an advantage over the gym/ control subjects in terms of significantly reduced time for the swim test ($p<0.01$)

VI. Effortless exercise / experimental subjects showed an advantage over the gym/ control subjects in terms of reduced BMI ($p<0.05$)

Experimental study: effects of effortless exercise (virtual gym) when compared to physical exercise

This experiment tested both parametric (the inches measure that can be measured on a normal distribution and therefore can be seen as deviations from the mean) and non-parametric variables including the percentages of body fat and muscle mass. Three judges rated all subjects before and after pictures. The judge's conclusions were measured on an ordinal scale non-parametric data that dealt with medians rather than means.

Subjects: A total of 92 subjects with sedentary lifestyles participated in this study. Subjects received six effortless exercise treatments spaced 2-3 days apart. These 92 subjects (62 females and 30 males) were compared with 23 subjects (12 women and 11 men) with sedentary lifestyles who were asked to work out in the gym for at least three hours on six different days spaced 2-3 times apart.

The inches measure was analysed with t-tests. The BMI, body fat, muscle mass and self-reports on muscle conditioning for the between-subjects design (comparing the control and experimental groups on the pre and post-conditions) used the Chi Square test. However, we also wanted to test the within-subjects differences (i.e the pre and post results within the experimental group and the pre and post results within the control group). Since these samples were related, and consisted of repeated measurement from the same set of subjects, the McNemar non-parametric test was used to analyze the data.

The results on the ratings of self-reports and the before and after pictures were analyzed by the Wilcoxon signed-ranks test which is a non-parametric test appropriate for related samples and "before" and "after" measures given with an ordinal scale.

	Virtual gym pre experimental group	Virtual gym post experimental group	Gym group pre control group	Gym group post control group
BMI	29.9	25.8	30.2	30.1
Inches waist	52.9	39.5	53.7	53.9
Inches naval pt	58.6	45.2	57.2	57.3
Body fat %	44.70%	36.80%	45. 5 %	42.80%
Muscle mass %	39.70%	49.90%	40.10%	43.90%
Self-reports		No muscle soreness		Sore muscles

Results Significance table is given below.

	Between Subjects Design	Within Subjects Design Effortless Exercise Virtual Gym Group pre and post treatment comparison)	Within Subjects Design Control physical/ Gym Group pre and post treatment comparison)
BMI	p<0.01	p<0.001	N/S
Inches waist	p<0.01	p<0.001	N/S
Inches below naval pt	p<0.01	p<0.001	N/S
Body fat %	p<0.01	p<0.001	P< 0.1
Muscle mass %	p<0.01	p<0.001	P< 0.1
Judges rating	p<0.001	p<0.001	N/S

All subjects treated with the effortless virtual gym reported that the procedure was comfortable. All experimental group subjects reported no muscle soreness. None of these subjects reported side effects or adverse reactions after the six treatments.[19–27]

Conclusion

The randomized double-blind experimental studies showed that both regular and effortless exercise increase fitness, blood flow,

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range of motion and metabolic activity. Both regular and effortless exercise, demonstrate body fat reduction and muscle growth and some BMI decrease. However, while effortless exercise decreases cortisol, signifying reduced stress, regular exercise increases cortisol and has after-effects of muscle soreness. Additionally, the effortless virtual gym method results in inch loss and a statistically significant BMI reduction, evidencing pronounced body shaping results in a very short time period.

When effortless exercise is compared to gym workout, it demonstrates a statistically significant advantage in terms of increased range of motion, metabolic boost and blood flow. Additionally, the effortless virtual gym method demonstrates an advantage over physical activity/gym workouts in terms of a reduction of body fat, inch loss and BMI and reveals a greater muscle mass increase.

Additional experimental studies using MRIs showed a conclusive visceral fat increase and muscle mass increase after the effortless virtual gym method. Additionally, they showed a statistically significant reduction in triglycerides and a statistically significant increase in DHEA and T3. Clinical studies revealed a statistically significant inch loss and muscle mass increase after the effortless virtual gym method. One of these clinical studies also demonstrated BMR increase providing additional external validity for previously published studies, bone density increase and a metabolic age decrease that should be further researched before drawing any conclusions. In conclusion, this effortless virtual gym method can offer an optimal alternative for those who are unwilling or unable to exercise due to career and other obligations or aging fragility. This effortless virtual gym method can also be adopted as part of a fitness regiment to enhance healthy lifestyle and overall wellness that can proactively protect against several medical disorders associated with reduced range of motion, muscle atrophy, visceral fat and obesity.

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Conflict of interest

The author declares no conflict of interest. All treatments were performed by operators without the direct presence of the author.

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