EFFECT OF EXERCISE VS MACHINE PROGRAMME BY SELECTED MALE CLIENTS FOR ANTHROPOMETRIC MEASUREMENT IMPROVEMENT

DR. DEEPAK KUMAR DOGRA

Director (Operation), Laxmibai Sports Education & Welfare Society, New Delhi (India)

dogradeepak82@yahoo.in

ABSTRACT : *The objective of the present study was to compare the effectiveness of 12 weeks exercise based programme vs machine based programme by selected male clinician clients for improvement of body weight and girth measurements. For this purpose, a total of 20 (Twenty) male clinician subjects were randomly chosen for the present study. These subjects were divided into two equated programme groups consisting of 10 (Ten) subjects in each and acted as exercise programme group - I and machine programme group – II respectively. Body weight and girth measurements i.e., chest girth, waist girth, right arm girth, left arm girth, right thigh girth, left thigh girth and hip girth were selected as a dependent variables and 12 weeks exercise based programme vs machine based programme were considered as independent variables. The data was analyzed by applying one way analysis of variance to draw appropriate conclusions and to find out the effect of 12 weeks exercise based programme vs machine based programme on body weight, chest girth, waist girth, right arm girth, left arm girth, right thigh girth, left thigh girth and hip girth among selected male clinician clients. The significance level was set at 0.05. The results indicated that the body weight, chest girth, waist girth, right arm girth, left arm girth, hip girth, right thigh girth, and left thigh girth among selected male subjects were found insignificant in both the groups namely exercise programme group - I and massage programme group – II subjects respectively. The findings of this study exhibited that 12 week exercise and machine based programme in commercial spa centers was not an effective treatment technique to improve a male body weight and girth measurements.*

Keywords: Exercise, Machine, Programme, Clinician, And Anthropometric Measurements

INTRODUCTION

The lack of physical activity is a major underlying cause of death, disease, and disability. Preliminary data from a WHO study on risk factors suggest that inactivity, or sedentary lifestyle, is one of the 10 leading global causes of death and disability. More than two million deaths each year are attributable to physical inactivity. In countries around the world between 60% and 85% of adults are simply not active enough to benefit their health. Sedentary lifestyles increase all causes of mortality, double the risk of cardiovascular diseases, diabetes, and obesity, and substantially increase the risks of colon cancer, high blood pressure, osteoporosis, depression and anxiety.

The etiology of overweight and obesity is clearly multi-factorial, but ultimately it is determined by the long-term balance between energy intake and expenditure. This will consider the effects on body weight and the risk of obesity of sedentary lifestyles, within the context of dietary habits (Jebb et. al. 1999). A sedentary life style includes less than 150 minutes of moderate physical activity or less than 60 minutes of vigorous physical activity per week (Sandrine et. al. 2005). Obesity can be defined as a state of excess adipose tissue mass (Kasper et. al. 2005). Currently over weight and obesity are classified by Body Mass Index (BMI) (weight in kilogram/square of the height in meter-kg/m2). In adults, overweight is defined as BMI of 25.0 to 29.9 kg/m2; obesity is defined as BMI ≥ 30 m2 (The Evidence Report: National Institutes of Health and Obesity Research, 1998).

The results of extensive research programs lead to the conclusion that physical activity increases longevity, to a large extent protect against development of the major non- communicable diseases such as coronary heart disease, hypertension, stroke, non-insulin diabetes mellitus, osteoporosis and colon cancer (WHO, 1998). Hypertensive heart disease was present in light workers five times more frequent than in heavy workers and obese individuals tend to be more inactive physically (Chaing et. al. 1969). There is increased risk of metabolic complications for men with waist circumference ≥ 102 cms and women with a waist circumference ≥ 88 cms (Park, 2007). Physical activity may be a critical target for the specific prevention of visceral fat accumulation

and corresponding health risk in obese subjects (Saelens et. al. 2007). Visceral fat is more metabolically active than subcutaneous fat and hence may be more deleterious to health (Montagu et. al. 2003). Avoiding a sedentary lifestyle during adulthood not only prevents cardiovascular disease independent of other risk factors but also substantially expands the total life expectancy and the cardiovascular disease-free life expectancy for men and women.

The improved ability of Electronic Muscle Stimulation units to stimulate innervated muscle has ignited interest in its use as a training technique for healthy individuals without neuromuscular pathology. The early work of Kots in the former Soviet Union suggested that EMS was more effective than exercise alone in strengthening skeletal muscle in elite athletes (Kots, 1977). The proposed advantage of using EMS is that the recruitment order is reversed relative to volitional exercise. During volitional activity, the central nervous system first activates the smallest alpha motoneurons. With increasing levels of required force, progressively larger motoneurons are activated. This recruitment order, dependent on the size of the alpha motoneuron, has been termed the ‘‘size principle’’ of motor unit recruitment. The size of alpha motoneurons is related to the type of muscle fiber innervated by the motoneuron Slowoxidative (SO) muscle fiber types are typically recruited first, whereas fast glycolitic (FG) are the most difficult to recruit during volitional activation. The order of muscle fiber recruitment is reversed when the muscle is activated via electrical stimulation, with the largest-diameter muscle fibers (FG) being recruited first and the smaller-diameter (SO) muscle fibers being recruited later. Recently, the potential benefits of EMS have been marketed to the general public as another ‘‘get-fit-quick’’gimmick.‘‘Building rock-hard abs’’or‘‘firming the flab on your buttocks and thighs’’ while working at your computer or watching TV, without having to exercise, is an attractive lure for many people. Although several over-the-counter electrical stimulation units are being marketed to the general public, the claims supporting the benefit of EMS in the general population have never been verified. Previous investigators who have examined the benefits of EMS have typically stimulated 1 or 2 isolated muscle groups, i.e., the quadriceps femoris or the hamstrings or both. The benefits of applying EMS to the entire body to achieve a full body conditioning program have not been examined.

Because of increased morbidity, mortality and diseases due to physical inactivity and obesity, we need to create awareness about the risk factors, complications and preventive measures among the respondent of the study groups. Hence, the above discussion leads to the present research study to identity and compare the 12 weeks exercise based programme vs machine based programme used in improving anthropometric measurements by selected male clinician clients.

METHODOLOGY

For this purpose, a total of 20 male clients who were regularly participating in a branded commercial fitness and SPA centers were randomly chosen for the present study. These subjects were further divided into two equated treatment programme groups consisting of 10 subjects in each and acted as exercise programme group - I and machine programme group – II respectively. The age of the subjects were ranging from 30 years to 40 years of ages. The average age was being 35 years. Body weight, chest girth, waist girth, right arm girth, left arm girth, right thigh girth, left thigh girth and hip girth were selected as a dependent variables and 12 weeks exercise based programme vs massage based programme were considered as independent variables. Exercise programme group – I selected male subjects were exposed to combination of cardio, strength and floor exercises' four times a week for 45 minutes session per day as prescribed and monitored by their respective clinics for a period of 12 weeks (84 days). While, the machine programme group – II male clients underwent their respective prescribed machine mode treatments two times a week. Before the administration of exercise and machine based programme by their respective joined fitness and SPA clinics, the body weight was measured in kilograms to nearest 0.01 grams by using electronic digital portable weighing machine. However, chest girth, waist girth, right arm girth, left arm girth, right thigh girth, left thigh girth and hip girth were respectively measured in centimeters to the nearest 0.01 by using steel tape at their respective venue on both the groups namely exercise programme group - I and machine programme group – II respectively to collect pre test data. After the completion of 12 weeks again the same selected girth measurements and body weight were taken to collect the post training data. One way analysis of variance was computed to analyze the data and the significance level was set at 0.05.

FINDINGS

The findings of the study are given below:

Variable	Groups	Sum of	df	Mean	F
Exercise Programme Group – I Body Weight	Between	69.655	3	23.218	0.409
	Within Groups	2044.973	36	56.805	
	Total	2114.628	39		
Machine Programme Group – II Body Weight	Between	55.041	3	18.347	0.082
	Within Groups	8007.637	36	222.434	
	Total	8062.678	39		
Exercise Programme Group – I Chest Girth (Cms)	Between	15.200	3	5.067	0.844
	Within Groups	216.064	36	6.002	
	Total	231.264	39		
Machine Programme Group – II Chest Girth	Between	30.043	3	10.014	0.581
	Within Groups	620.705	36	17.242	
	Total	650.748	39		
Exercise Programme Group – I Right Arm Girth	Between	8.253	3	2.751	1.730
	Within Groups	57.255	36	1.590	
	Total	65.508	39		
Machine Programme Group – II Right Arm Girth	Between	5.875	3	1.958	1.136
	Within Groups	62.056	36	1.724	
	Total	67.931	39		
Exercise Programme Group – I Left Arm Girth	Between	6.407	3	2.136	1.252
	Within Groups	61.411	36	1.706	
	Total	67.818	39		
Machine Programme Group – II Left Arm Girth	Between	6.023	3	2.008	1.184
	Within Groups	61.035	36	1.695	
	Total	67.058	39		
Exercise Programme Group – I Waist Girth	Between	52.449	3	17.483	1.262
	Within Groups	498.621	36	13.851	
	Total	551.070	39		
Machine Programme Group – II Waist Girth	Between	77.507	3	25.836	0.668
	Within Groups	1392.572	36	38.683	
	Total	1470.079	39		
Exercise Programme Group – I Hip Girth (Cms)	Between	28.037	3	9.346	0.741
	Within Groups	453.891	36	12.608	
	Total	481.928	39		
Machine Programme Group – II Hip Girth (Cms)	Between	59.369	3	19.790	1.126
	Within Groups	632.845	36	17.579	
	Total	692.214	39		
Exercise Programme Group – I Right Thigh Girth	Between	13.851	3	4.617	1.504
	Within Groups	110.520	36	3.070	
	Total	124.371	39		
Machine Programme Group – II Right Thigh	Between	6.063	3	2.021	0.243
	Within Groups	299.791	36	8.328	
	Total	305.854	39		
Exercise Programme Group – I Left Thigh Girth	Between	13.477	3	4.492	1.507
	Within Groups	107.281	36	2.980	
	Total	120.758	39		
Machine Programme Group – II Left Thigh Girth	Between	10.446	3	3.482	0.420
	Within Groups	298.378	36	8.288	
	Total	308.824	39		

Table No. 1.0. One way analysis of variance of initial, fourth, eighth, and twelve weeks of Exercise Programme and Machine Programme on Body Weight, Chest Girth, Waist girth, Hip Girth, Right Arm Girth, Left Arm Girth, Right Thigh Girth and Left Thigh Girth of Male Participants

*Significant at 0.05 level. 'F' 0 .05 (3, 36) df = 2.87 N = 10

Table no. 1.0 highlights the one way analysis of variance of initial, forth, eight and twelve weeks of exercise and machine programme on body weight and girth measurements i.e., chest girth, hip girth, right arm girth, left arm girth, right thigh girth and left thigh girth of male clinicians clients group differs insignificantly, as the obtained F value of exercise programme group – I body weight(0.409), chest girth (0.844) , right arm girth (1.730), left arm girth (1.252), waist girth (1.262), hip girth (0.741), right thigh girth (1.504) & left thigh girth (1.507) and machine programme group – II body weight (0.082), chest girth (0.581) , right arm girth (1.136), left arm girth (1.184), waist girth (0.668), hip girth (1.126), right thigh girth (0.243) & left thigh girth (0420) among the participants is much lesser than the required value of 2.87. at 0.05 level of confidence.

DISCUSSION

Findings of the present research study indicated that all the selected variables (i.e., chest girth, waist girth, right arm girth, left arm girth, right thigh girth, left thigh girth and hip girth) for improvement of anthropometric measurement in male clinicians' clients had not improved by both the treatment programmers' namely exercise based programme and massage based programme respectively. This could be the fact that selected male subjects in both the groups might have under taken these treatment programmes just for recreation or rejuvenation purposes only. Another reason could be that there is numerous varieties of techniques and methods those are in practice today but the expert might have not applied the appropriate techniques or modalities to the subjects under study since the research scholar did not keep any control instead allowed the independent programmers' of the commercial fitness and Spa centers experts. This could also be the fact that the poor quality of the stimulators used. The units did not have the ability to alter the phase duration of the pulsed waveform. They delivered a stimulus with relatively long pulse duration, making the stimulation quite uncomfortable. In addition, most commercially available medical grade stimulators have a ramp function that allows the amplitude to gradually increase each time the unit cycles on, thus increasing the comfort of the electrical stimulation. The long phase duration coupled with the lack of a ramp function may not have allowed the subjects to increase the amplitude of the stimulation to the critical threshold required to achieve a strong motor contraction. The order of muscle fiber recruitment is reversed during EMS relative to volitional contraction; thus, the very fatigable FG fibers are preferentially recruited (Van, 1999). In addition, there is synchronous activation of all axons of the same size and relative distance from the electrode (Baker et. al. 1993).

CONCLUSION

The results indicated that there was no significant improvement shown by exercise programme group – I and machine programme group – II selected female clients on anthropometric measurements. Therefore, it is concluded that both exercise and machine based programmes of commercial fitness and SPA clinics were not an effective treatment tool to improve a male anthropometric measurements.

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