International Journal of Physiotherapy and Research,
Int J Physiother Res 2017, Vol 5(6):2534-40. ISSN 2321-1822
DOI: https://dx.doi.org/10.16965/ijpr.2017.244

Original Research Article

SUPERVISED EXERCISE VERSUS WORKOUT VIDEOS FOR WEIGHT REDUCTION IN ADULTS BETWEEN AGE GROUP OF 20-50 YEARS

Hiral Janak Shah *[1], Khyati Kothary [2].

[*1] Intern, K.J. Somaiya College of Physiotherapy, Somaiya Ayurvihar Complex, Eastern Express Highway, Sion, Mumbai, India.

[2] Assistant Professor, K.J. Somaiya College of Physiotherapy, Somaiya Ayurvihar Complex, Eastern Express Highway, Sion, Mumbai, India.

ABSTRACT

Background: The prevalence of overweight and obesity are rising and they are associated with many medical complications and increased health care costs. In today's lives, lots of ways are being tried to reduce weight. There are different forms of exercises which can either be performed under the supervision of exercise trainer (supervised exercise) or with the use of workout videos. Now a day's lots of exercises are performed looking at DVD. The purpose of this study is to see whether supervised exercise or workout videos are effective for weight reduction.

Materials and Methods: This was a randomised control trial conducted in K.J. Somaiya College of Physiotherapy. 30 individuals belonging to the inclusion criteria were randomly selected and divided into 2 groups of 15 each. Evaluation in terms of weight, girth measurements and fat percentage was taken. The exercise protocol for supervised exercise (live) and workout videos (DVD) was same and a DVD/CD was given to DVD group. The study duration was 4 days/ week for 4 weeks.

Results: Weight loss from baseline to 4 weeks for supervised exercise and workout videos exercise was 1.53± 0.83 and 0.413± 0.5181 kg which was statistically significant ($p< 0.0001$) and ($p< 0.0004$) respectively. Similarly the reduction in waist girth post 4 weeks for group A and group B was 2.4± 0.9856 and 1.4± 0.6325 cm and in hip girth was 2.86± 1.506 and 1.16± 0.87 cm. The reduction in fat percentage in group A and group B was 1.58± 1.053 and 0.413± 0.5181.

Conclusion: Individuals who participated in the 4 weeks exercise program achieved reduction in all outcome measures however supervised (live) exercise program achieved greater results in weight, fat percentage, waist girth, hip girth and BMI as compared to workout videos(DVD exercise). Thus from the study can be concluded that there is reduction in weight in both the groups however Live exercises are better than DVD exercises for weight reduction.

KEY WORDS: Overweight, obesity, supervised exercise, workout videos, weight reduction, girth reduction.

Address for correspondence: Hiral Janak Shah, Intern, K.J. Somaiya College of Physiotherapy, Somaiya Ayurvihar Complex, Eastern Express Highway, Sion, Mumbai- 400022, India.
E-Mail: hiralshah560@gmail.com

Access this Article online

Quick Response code

DOI: 10.16965/ijpr.2017.244

International Journal of Physiotherapy and Research
ISSN 2321- 1822
www.ijmhr.org/ijpr.html

Received: 08-10-2017	Accepted: 15-11-2017
Peer Review: 10-10-2017	Published (O): 11-12-2017
Revised: 12-10-2017	Published (P): 11-12-2017

INTRODUCTION

The WHO has described obesity as one of the today's most neglected public health problems affecting every region of the globe. The prevalence of overweight and obesity are rising and they are associated with many medical complications and increasing health care costs. In the past 10 years, the number of obese people has doubled in the country according to National family health survey. The study titled "Global,

regional and national prevalence of overweight and obesity in children during 1980-2013". Fleming T et al. [1] showed 30 million people respectively. Studies have shown that this rise of obesity among world population could be attributed to an increase in calorie intake coupled with lack of adequate physical activity.

Obesity or overweight are defined as abnormal or excessive fat accumulation that may impair health. Obesity may be defined as an abnormal growth of the adipose tissue due to enlargement of fat cell size (hypertrophic obesity) or an increase in fat cell number (hyper plastic obesity) or a combination of both [2]. The WHO definition of overweight is a body mass index (BMI) between 25 and 30 kg/m2 whereas patient with a BMI of 30 kg/m2 or more are classified as obese. Obesity or excess accumulation of body fat is a heterogeneous disorder in which energy intake chronically exceeds energy expenditure. Obesity results from complex interaction of genetic, environmental, metabolic, physiologic, behavioural, social and perhaps racial influences. There are various risks of excessive body fat. Impaired glucose tolerance and overall diminished quality of life emerge among obese children and adolescents. Hypertension, elevated blood sugar, postmenopausal breast cancer and elevated total cholesterol and low density lipoprotein cholesterol heighten an overweight individual's risk of poor health at any given level of excess weight. Increased load on major joints can lead to pain and discomfort, complications from osteoarthritis, inefficient body mechanics and reduced mobility [3].

Obesity is largely preventable. Prevention and treatment of obesity is necessary to reduce the occurrence of obesity related co-morbidities. Exercise is a well known method to lose body mass and there is a well established dose-response relationship between amount of exercise and amount of total body mass loss. But the question is does exercise alone produce weight loss? The answer to this is exercise in combination with diet produces better maintenance of weight loss than diet or exercise alone. Calorie restriction strategies are one of the most common dietary plans. Low calorie diet refers to a diet with a total calorie intake of 800-1500 while very low calorie diet has less than 800 calories daily [4]. These dietary regimes need to be balanced in macronutrients, vitamins and minerals.

At the individual level, the individual can limit energy intake from total fats and sugars, increase consumption of fruits and vegetables and engage in regular physical activity. There are various forms of exercises: cardiovascular exercise, aerobics, strengthening, Pilates, etc. These exercises can either be supervised by a personal trainer (LIVE) or with the help of workout videos (DVD). In live exercise the protocol is performed under supervision of personal trainer. A trainer supervises at the trainee's current program, fitness level, eating habits and helps them make changes in their protocol to create effective workouts. The trainer also helps the individual determine if the goals they have set are realistic, helps them stay motivated to exercises, introduces new ways to exercise to prevent boredom. A trainer also teaches the right way to exercise so that injuries can be prevented. The exercise protocol can also be changed according to a person's fitness level. In workout videos, the exercises are performed looking at a DVD in which there is a fixed exercise protocol. These exercises can be performed at home, workplace or any place where the trainee wishes to exercise and also at any time according to the trainee's convenience. So in DVD exercise there is flexibility of time and place. These workout videos also provide tips and success stories to motivate the viewers to be physically active.

In today's lives, lots of ways are being tried to reduce weight. People use various ways: Dieting, exercises or both in an attempt to reduce weight. There are different forms of exercises which can either be performed under the supervision of exercise trainer (live) or with the use of workout videos (DVD). Now a day's lots of exercises are being performed looking at DVD. Limited studies have been done on this topic. The purpose of this study is to see whether supervised exercise or workout videos are effective for weight reduction.

MATERIALS AND METHODS

This study was randomised control trial conducted on 30 subjects between the age group

of 20-50 years for duration of 4 days/week for 4 weeks. The materials used in the study were weighing machine, measuring tape, fat analyzer and yoga mat. Individuals were screened for inclusion and exclusion criteria. 30 individuals belonging to the inclusion criteria were randomly selected and divided into 2 groups of 15 each using lottery method/ computer generated method. They were explained about the study and verbal consent was taken. Evaluation in terms of weight (in kilograms), girth measurements (in centimetres) and fat% was taken. Weight was measured on a weighing machine. Girth was measured with a measuring tape at the hip region and the waist region .Group A performed supervised exercises. Group B performed workout videos. The exercise protocol for live and DVD exercise consisted of warm up, aerobic exercise, mat exercise followed by cool down. The exercise protocol was for duration of 1 hour. The exercise protocol for both the groups was same and a DVD was given to the individuals of group B. The exercise protocol was as follows:

Warm up: Neck: Flexion, Extension, Rotation, Side flexion; Shoulder: Flexion, Abduction, Shrugs, Rolls; Elbow: Flexion, Extension, Rotator cuffs; Wrist: Flexion, Extension, Rolls; Trunk: Flexion, Extension, Lateral flexion, Rotation; Hip: Flexion, Extension, Abduction; Knee: Flexion, Extension, Rolls; Ankle: Heel raises, Toe raises. Each exercise was for 10 counts. Skipping and marching for 1 minute. Stretching: Trapezius, Pectoralis major, Triceps, Wrist flexors, Wrist extensors, Trunk flexors, Trunk extensors, Trunk rotators, Hamstrings and quadriceps. The hold of each stretch was 15 counts.

Aerobic exercise: Squat with lateral leg lift, 2 steps with shoulder retraction, Jumping jack, 2 steps with hands up, Butt kick, Jab cross kick, Slow burpees, Lunges with shoulder retraction, Cross jack, Hands up with rotation, Hand to feet, Skater hops, Forward jump, Kick boxing, Leg raise with crunch, Trikonasan, Sideways jump, Standing pull ups, Elbow to knee, 2 steps with elbow flexion extension. Each exercise was for 15 counts.

Mat exercise: Bridging (with heel raise then toe raise), Forward crunches, Air cycling, Oblique crunches, Air crunches, Leg raise (90 degree to 60 degree), Prone on elbows. Each exercise was for 15 counts.

Cool down: It was same as warm up but there was no stretching in cool down. Each exercise was for 5 counts.

The participant has to exercise for 4 days in a week. The participant has to put a tick on the days when he/she exercised.

If on a particular day the participant could not exercise then what was the reason for not exercising has to be mentioned.

RESULTS

Statistical analysis: Data was statistically analysed using wilcoxon- matched pair test, man- Whitney test and paired t-test. P value of less than or equal to 0.05 was considered significant. Mean and standard deviation of group A and B were calculated. The statistical significance was done using Graph pad in stat. 30 subjects aged 20-50 years were recruited in the study.

Weight loss from baseline to 4 weeks for supervised exercise and workout videos was 1.53± 0.83 and 0.73 ± 0.65 kg respectively. Similarly the reduction in waist girth post 4 weeks for group A and group B was 2.4± 0.9856 and 1.4± 0.6325 cm and in hip girth was 2.86± 1.506 and 1.16± 0.87 cm. The reduction in fat percentage in group A and group B was 1.58± 1.053 and 0.413± 0.5181.

Table 1: Type Of Obesity.

Type	Live	DVD
Overweight	66.60%	66.60%
Grade 1	33.30%	26.60%
Grade 2	0%	0%
Grade 3	0%	6.60%

Fig. 1a: Type of obesity for supervised exercise group.

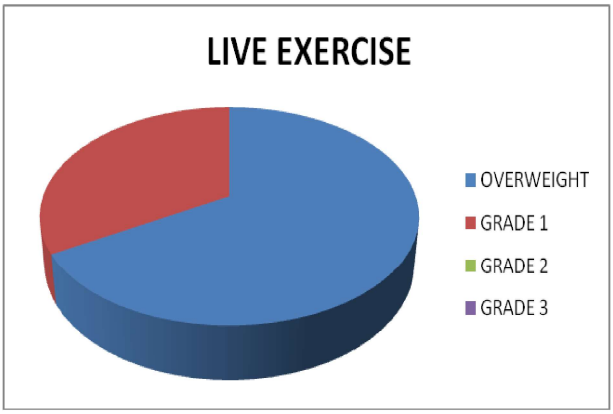
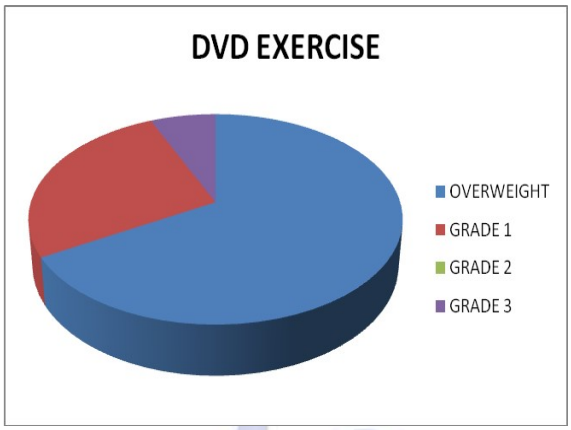


Fig. 1b: Type of obesity for workout video group.



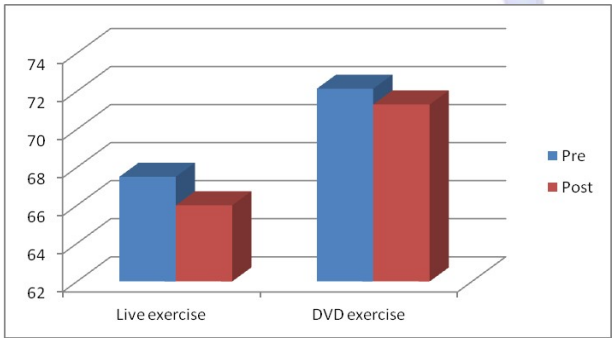
The above pie diagrams show that out of total subjects in live exercise group 66.6% were overweight, 33.3% were grade 1, 0% were grade 2 and 0% were grade 3. Similarly, in DVD exercise group 66.6% were overweight, 26.6% were grade 1, 0% were grade 2 and 6.6% were grade 3.

Table 2: Effect of supervised exercise and workout videos on weight.

Weight	Live exercise	DVD exercise
Pre:	67.53±8.210	72.13±13.73
Post:	66±8.062	71.33±13.481
P value:	<0.0001***	0.0004***
	(Significant)	(Significant)
Intergroup difference:	1.53±0.83	0.73±0.65
P value:	0.0068**	(Significant)

Table 2 shows the pre and post mean for supervised exercise was 67.53 and 66 and standard deviation was 8.210 and 8.062 respectively which was statistically significant (p<0.0001). Similarly the pre and post mean for workout videos was 72.13 and 71.33 and the standard deviation was 13.73 and 13.481 respectively which was statistically significant (p= 0.0004). The mean and standard deviation between the groups was 1.53 and 0.83 for group A and 0.73 and 0.65 for group B which was statistically significant (p= 0.0068).

Fig. 2: Effect on Weight.



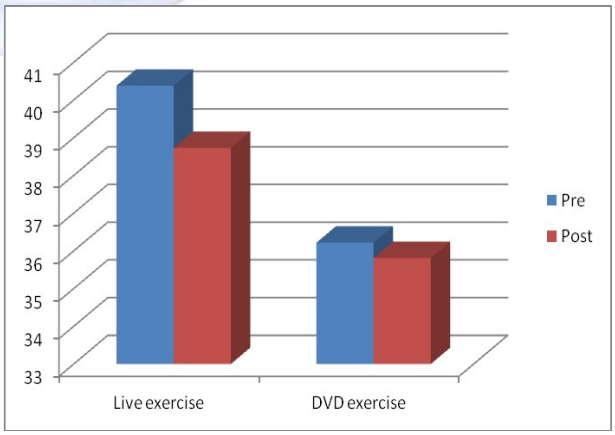
The above bar diagram shows the inter group and intra group difference of mean for both groups. The bar diagram shows that there was weight reduction in both the groups but the weight reduction was more in the live exercise group than DVD exercise group.

Table 3: Effect of supervised exercise and workout videos on percent body fat.

Fat %	Live exercise	DVD exercise
Pre:	40.38±4.017	36.76±5.937
Post:	38.73±4.065	35.81±6.184
P value:	<0.0001***	0.1026***
	(Significant)	(Not Significant)
Intergroup difference:	1.58±1.053	0.413±0.5181
P value:	0.0003**	(Significant)

Table 3 shows that the pre mean and standard deviation was 40.38 and 4.017 and post exercise mean and standard deviation was 38.73 and 4.065 for group A which was found to be statistically significant (p< 0.0001). Similarly for group B the pre and post mean was 36.76 and 35.81 and the standard deviation was 5.937 and 6.184 which was statistically not significant (p= 0.1026). The intergroup difference was statistically significant (p= 0.0003) with mean and standard deviation for group A being 1.58 and 1.053 and group B being 0.413 and 0.5181.

Fig. 3: Effect on Percent Body Fat.



The above bar diagram shows the inter group and intra group difference of mean for both groups. The above bar diagram shows that the percent body fat reduced in both the groups but the reduction in percent body fat was more in the supervised exercise group as compared to the workout videos group.

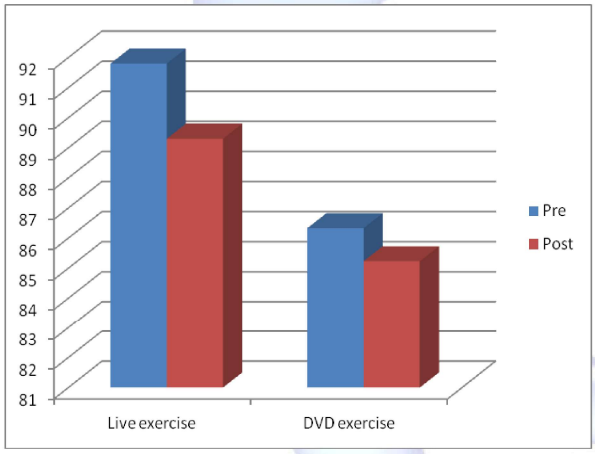
Table 4 shows that the pre and post mean for group A was 91.8 and 89.33 and the standard

deviation was 10.352 and 10.210 which was statistically significant (p< 0.0001). The mean pre and post was 86.33 and 85.23 and standard deviation was 11.57 and 11.22 which was statistically significant (p< 0.0001) for group B. The mean and standard deviation was 2.4 and 0.9856 for group A and 1.1 and 0.6325 for group B which was statistically significant (p=0.0002).

Table 4: Effect of supervised exercise and workout videos on waist girth:

Waist girth	Live exercise	DVD exercise
Pre:	91.8±10.352	86.33±11.57
Post:	89.33±10.210	85.23±11.22
P value:	<0.0001***	<0.0001***
	(Significant)	**(Significant)**
Intergroup difference:	2.4±0.9856	1.1±0.6325
P value:	0.0002**	**(Significant)**

Fig. 4: Effect on Waist girth.



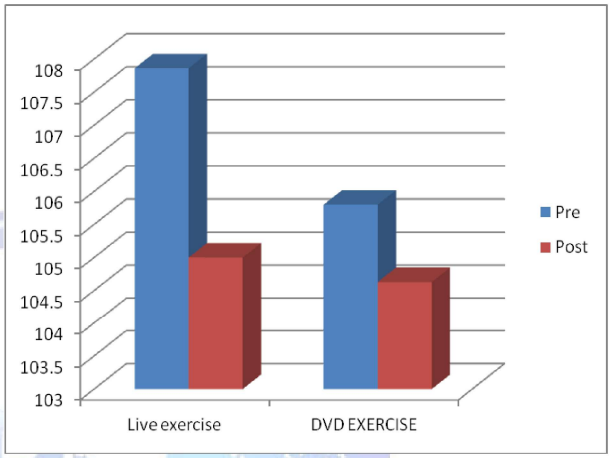
The above bar diagram shows the inter group and intra group difference of mean for both groups. The above bar diagram shows that the waist girth reduced in both the groups but the waist girth reduced more in supervised exercise group as compared to workout videos.

Table 5: Effect of supervised exercise and workout videos on hip girth.

Hip girth	Live exercise	DVD exercise
Pre:	107.86± 13.298	105.8±12.260
Post:	105±13.454	104.63±11.845
P value:	<0.0001*	0.0002***
	(Significant)	**(Significant)**
Intergroup difference:	2.86±1.506	1.16±0.87
P value:	0.0011**	**(Significant)**

Table 5 shows that the pre mean and standard deviation for group A was 107.86 and 13.298 and post was 105 and 13.454 for group A which was statistically significant (p< 0.0001). The pre and post mean for group B was 105.8 and 104.63and standard deviation was 12.260 and 11.845 which was statistically significant (p= 0.0002). The intergroup difference mean and standard deviation for group A was 2.86 and 1.506 and group B was 1.16 and 0.87 which was statistically significant (p= 0.0011).

Fig. 5: Effect on Hip girth.



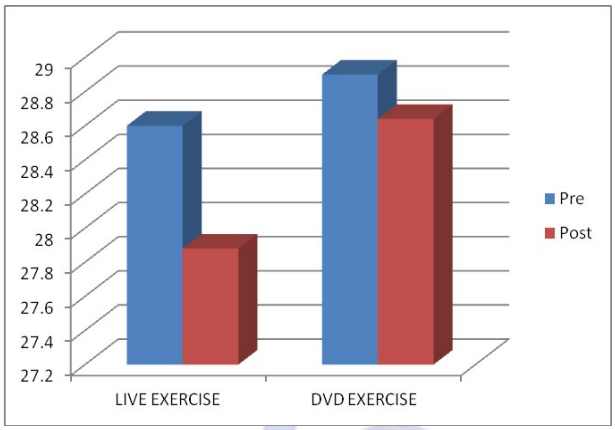
The above bar diagram shows the inter group and intra group difference of mean for both groups. The bar diagram shows that hip girth reduced in both the groups but the hip girth reduction was more in the live exercise group as compared to the DVD exercise group.

Table 6: Effect of supervised exercise and workout videos on bmi.

BMI	Live exercise	DVD exercise
Pre:	28.6±3.733	28.93±5.386
Post:	27.82±3.507	28.64±5.355
P value:	0.0001*	0.0005*
	(Significant)	**(Significant)**
Intergroup difference:	0.78±0.5240	0.28±0.2840
P value:	0.0024**	**(Significant)**

Table 6 shows that the pre and post mean for group A was 28.6 and 27.82 and the standard deviation was 3.733 and 3.507 which was statistically significant (p= 0.0001). Similarly the pre and post mean for group B was 28.93 and 28.64 and the standard deviation was 5.386 and 5.355 which was statistically significant (p= 0.0005). The intergroup difference mean and standard deviation for group A was 0.78 and 0.5240 and for group B was 0.28 and 0.2840 which was statistically significant (p= 0.0024).

Fig. 6: Effect on BMI.



The above bar diagram shows the inter group and intra group difference of mean for both groups. The above bar diagram shows that there was weight reduction in both groups but the weight reduction was more in supervised exercise than workout videos.

DISCUSSION

This study was designed to determine differences of weight change from baseline to 4 weeks between supervised group and workout video group during an exercise session of 4 days /week. Supervised group was group A and workout video group was group B. In the study, out of 15 subjects in group A, 66.6%were overweight and 33.3% were grade 1 obesity. Group B comprised of 66.6% overweight, 26.6% grade 1 obesity and 6.6% grade 3 obesity. The average age of the individual in group A was 44.46 years (Min 30 years and Max 50 years) and in group B was 33.5 years (Min 21 years and Max 46 years).

Both the groups showed statistically significant difference on weight and girth measurements. However, there was greater percentage of improvement in group A than group B.

In group A, weight reduced by 1.53 kilograms ($p<0.0001$), waist girth reduced by 2.4 centimetres ($p< 0.0001$), and hip girth by 2.86 centimetres ($p< 0.0001$). These improvements could be because the exercises were performed under the supervision of a therapist which improved the motivation of an individual to exercise. Every individual performed the exercise in a group which lead to higher level of social support and adherence to exercise program. Also the injury rate post exercise were comparatively less because they were continuously monitored by the therapist. The exercise could be modified according to the patient's condition. Killen, Lauren G et al proved in their study "Live versus DVD exercise in college aged females" published in "Journal of sports and conditioning research" that heart rate and rate of perceived exertion was higher during live session as compared during DVD workout. Also, Joseph E Donnelly in a study "Aerobic exercise alone results in clinically significant weight loss for men and women" [6] published in obesity concluded that exercise at 400 or 600 kcal/session resulted in a significant reduction in weight in weight compared to controls.

In group B, weight reduced by 0.73 kilograms ($p=0.0004$), waist girth reduced by 1.1 centimetres ($p<0.0001$), and hip girth by 1.16 centimetres ($p= 0.0002$). The improvements seen could be because there was flexibility in timing and place while exercising. The workout videos also provided tips and success stories which might motivate the individual. The videos also provide dietary tips which help in reducing the weight. Nicolai SP in "Supervised versus non- supervised exercise for reducing weight in obese adults" [7] published in "J sports med phys fitness" proved the loss in total body mass was 8 kg in supervised and 2.8 kg in control over a period of 4 months.

The reduction in fat percentage was 1.58 % in group A as compared to 0.413 % in group B which was also statistically significant ($p=0.0003$). Fat loss occurred in both the groups due to the fact that aerobic exercises enhanced fat mobilization and catabolism to accelerate body fat loss. Comparison between both the groups showed that reduction in weight ($p=0.0068$), waist girth ($p=0.0002$) and hip girth ($p=0.0011$) was statistically significant.

The prevalence of obesity is rising. Because obesity is associated with many health related risks and negatively associated with life expectancy this is a threat to public health. Physical exercise is well known method to lose fat mass. According to Nielsen survey, up to 52% of all gym goers also use exercise videos at home. But the question is does exercising looking at videos really work? Does it give the same result as those done under the supervision of a trainer? Limitations of the study were subjects with wide range group between 20-50 years were consid-

ered for study. Thus results could not be generalized to individual age. No follow up sessions were kept after final treatment due to which the maintenance of improved outcome could not be assessed. The duration of the study was comparatively shorter.

Recommendation for future research: Studies are needed to find out the long term effects of workout video exercises on weight reduction. Further studies can be carried out to study the effectiveness of exercise along with dieting on weight reduction.

CONCLUSION

Individuals who participated in the 4 weeks exercise program achieved reduction in all the outcome measures however supervised exercise program achieved greater loss in weight, fat percentage, waist and hip girth and BMI as compared to those in the workout videos. These results show that exercise supervised by qualified fitness professional in supervised exercise group was a good intervention for reduction of weight, body fat, waist and hip girth and BMI as compared to workout videos.

Conflicts of interest: None

REFERENCES

[1]. Fleming T., Robinson M., Thomson B.: Global, regional and national prevalence of overweight and obesity in children and adults during 1980-2013. Lancet, 2014 August 30;384(9945):766-81.

[2]. K. Park Preventive and Social Medicine (22nd edition) (pg. 367).

[3]. William D McArdle: Exercise Physiology: Overweight, Obesity and weight control (7th edition).

[4]. Fock km, Khoo J. Diet and exercise in management of obesity and overweight. J. Gastroenterol hepatol, 2013 december;28(sup 4):59-63.

[5]. Killen, Lauren G, Cooper Cathy, Coona: Live versus DVD exercise in college aged females. Journal of strength and conditioning research, December 2014;28(12):3393- 3398.

[6]. Joseph E. Donnelly, Jeffery J. Honas, Bryan K. Smith, Matthew S. Mayo, Cheryl A. Gibson, Debra K. Sullivan, Jaehoon Lee, Stephen D. Hermann, Kate Lambourne and Rik A. Washburn. Aerobic exercise alone results in clinically significant weight loss for men and women. Published in Obesity (Silver Spring), 2013 March;21(3):E219-E228.

[7]. Nicolai SP, Kruidenier LM, Leffers P, Hardeman R, Hidding A, Teijink JA. Supervised exercise versus non-supervised exercise for reducing weight in obese adults. J Sports Med Phys Fitness. 2009 March;49(1):85-90.

How to cite this article:

Hiral Janak Shah, Khyati Kothary. SUPERVISED EXERCISE VERSUS WORKOUT VIDEOS FOR WEIGHT REDUCTION IN ADULTS BETWEEN AGE GROUP OF 20-50 YEARS. Int J Physiother Res 2017;5(6):2534-2540. **DOI:** 10.16965/ijpr.2017.244