Neighborhood Diabetes Education Program
The Effect of Exercise Implementation on BMI

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ABSTRACT

East Flatbush and Crown Heights has a very high prevalence of diabetes with about 1 out of every 8 residents having diagnosed type 2 diabetes. The present study examined the effect of an exercise regimen of moderate intensity on BMI. 15 consenting adults ranging mostly from overweight to class II obesity by national BMI standards participated in a compound exercise regimen composed of aerobic exercises and resistance training. Exercises were added biweekly and performed daily in the form of three sets and ten reps. Each new exercise that was added to the regimen after the first two weeks was compounded to the existing exercise regimen. This routine was implemented daily for the entire sample group for a duration of 12 weeks. The sample population's progress was tracked and measured using the Body Mass Index. All 15 participants completed the exercise regimen for the duration of the program despite occasional absences by some participants. 13 out of 15 participants experienced a slight decrease in BMI for the duration of the program. One individual experienced no change, while another experienced an increase in BMI during the implementation of the program. Overall there was a 1.92 % decrease in BMI and weight over the duration of 12 weeks. In comparison with previous research, this study strengthens the use of exercise as a tool to decrease adiposity and lower BMI.

BACKGROUND

- Diabetes has become a major cause of death within the United States and is on the rise especially within the Brooklyn area. Various studies have shown a positive correlation between the advent of exercise in an individual and the decreased progression of type 2 diabetes.

- The numerous mechanisms by which exercise accomplishes this include improved glucose control, decreased adiposity, and increased cardiovascular endurance. Specifically, aerobic exercise and resistance training produce this outcome by increased insulin sensitivity, cardiovascular endurance and muscle mass.

- Furthermore, it is shown that exercise along with moderate dietary changes have a significant impact on the reduction of diabetic progression.

OBJECTIVES

- Lower participant's BMI through an exercise regimen of moderate intensity
- Learn form and proper technique for exercise regimen as to avoid injury
- Create a routine that can be sustained after duration of the program

METHODS

- A specific exercise was taught to the participants every two weeks. This exercise was practiced everyday until the start of the following two weeks in which a new exercise was taught and the cycle repeated. Once a new exercise was taught to the participants, it was added to their previous collection of routines and done in tandem.

- The exercises were performed in sets of three with 10-12 reps, with intervening 1-minute rests between sets. Lightweight dumbbells were used to increase intensity, but only according to participant's preference

- One exception to this routine was HIIT (High Intensity Interval Training). This involved high intensity movements based on an individuals potential, followed by periods of rest or lower intensity movement. The higher intensity movement lasted for a duration of 30 seconds while the lower intensity movements lasted for 1 minute. This alternating cycle lasted for a duration o 10 minutes.

Week	Heading
1	Squats
3	Lunges
5	Burpees
7	Kettle Bell Swings
9	Plank Push Ups
11	HIIT in the form of Sprints

- An example of this exercise regimen goes as followed: Exercise #1 is performed for 3 sets at 10-12 reps with intervening 1 minute rests. After the third set and rest, participant moves on to Exercise 2, following the same amount of sets, reps and rests with the exception of HIIT.

*Images taken from bodybuilding.com

RESULTS

Participants	Week 1 BMI/Weight	Week 2 BMI/Weight	Week 3 BMI/Weight	Week 4 BMI/Weight	Week 5 BMI/Weight	Week 6 BMI/Weight	Week 7 BMI/Weight	Week 8 BMI/Weight	Week 9 BMI/Weight	Week 10 BMI/Weight	Week 11 BMI/Weight	Week 12 BMI/Weight
1 CG	36.3/232	36.3/232	36.3/232	36.2/231	36.3/232	36/230	36/230	36/230	35.7/228	35.7/228	35.5/227	35.2/225
2 TSH	42/301	42/301	41.8/300	N/A	N/A	42/301	41.8/300	41.8/300	41.8/300	41.8/300	41.8/300	41.8/300
3 ST	30/164	30/164	30/164	30/164	29.8/163	29.6/162	29.3/160	N/A	N/A	29.3/160	29.4/161	29.1/160
4 FS	32.6/184	32.6/184	32.4/183	32.6/184	32.8/185	N/A	N/A	N/A	32.8/185	32.6/184	32.4/183	32.4/183
5 GT	27.8/162	27.8/162	N/A	N/A	N/A	28.1/164	28.1/164	28/163	27.6/161	27.5/160	N/A	27.5/160
6 NB	34.7/242	34.7/242	34.6/241	34.3/239	34.4/240	34.1/238	34.1/238	34.1/238	33.9/236	33.9/236	33.7/235	33.7/235
7 SB	21.4/121	21.4/121	21.3/120	21.3/120	21.3/120	N/A	N/A	21.3/120	21.3/120	21.3/120	21.3/120	21.3/120
8 NC	25.7/159	25.7/159	N/A	N/A	N/A	N/A	25.5/158	25.7/159	N/A	N/A	25.8/160	25.8/160
9 CP	24.2/141	24.2/141	24.4/142	N/A	N/A	24.4/142	N/A	24.2/141	24/140	24/140	24/140	24/140
10 TM	38.1/229	38.1/229	N/A	N/A	N/A	38.1/229	38.1/229	38.1/229	38.1/229	38.3/230	38.1/229	37.8/227
11 AAR	29.3/171	29.3/171	29.3/171	29.2/170	29/169	29/169	28.7/167	28.7/167	28.3/165	28/163	27.8/162	27.5/160
12 CW	N/A	42.4/203	42.4/203	N/A	42.2/202	42/201	41.8/200	41.8/200	42/201	41.8/200	42/201	41.8/200
13 SF	22.1/141	N/A	N/A	22.1/141	22.1/141	22.1/141	21.9/140	22.1/141	21.9/140	21.9/140	N/A	N/A
14 JL	34.6/183	34.4/182	N/A	N/A	34/180	34/180	33.8/179	34/180	33.6/178	33.4/177	33.4/177	33.4/177
15 JB	26.5/185	26.3/183	N/A	26.1/180	25.8/180	N/A	N/A	25.8/180	25.8/180	25.5/178	25.5/178	25.5/178

	Mean BMI	Range BMI	Mean Weight	Range Weight
Week 1	31.18	21.4–42.4	187.86	121–301
Week 12	30.58	21.3–41.8	184.26	120–300

RESULTS

- Mean BMI decreased by 1.92%
- Mean weight decreased by 1.92%

CONCLUSIONS

- A consistent exercise regimen of moderate intensity can lower BMI
- The exercise regimen be continued in conjunction with dietary modification to maximize program efficiency
- Periodic check-ins by a program director to track progress and change the occasional routine can contribute to program sustainability