



## *Type 2 Diabetes Observational Study* **Fitness Together**

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*A 6 month study by the Massachusetts Fitness Together Studios conducted in 2010/2011 under the auspices of Joan Hill (Diabetes Educator at CMIPA, Consultant at MA Department of Public Health, Owner at Hill Nutrition Consulting, LLC) and in conjunction with the New England Chapter of The American Diabetes Association. The study group consisted of 12 men and 12 women; 15 of them had diabetes and 9 were considered pre-diabetic.*

# *Type 2 Diabetes Observational Study*

## **Fitness Together**

### SYNOPSIS

The 6-month program was completed by 12 men and 12 women; 15 had diabetes and 9 had a pre-diabetes condition. After subjects gained clearance from their respective physicians, they were weighed, measured and given a fitness assessment by a certified personal Fitness Together trainer. They were also asked to fill out survey questions regarding their ability to manage their diabetes and their over all sense of well-being. As subjects continued in the fitness program, they were re-assessed approximately every 6 weeks. At the end of the study 4 areas that were tracked as key indicators of fitness showed marked improvement:

**1. *Weight, body fat and inches lost***

- a. The group had an average weight loss of 10 lbs per person
- b. The group had an average 13% reduction in body fat
- c. The group had an average loss of 2.5 inches in the waist and 1.9 inches in the hips

**2. *Lower A1C levels – average blood sugar***

- a. The group had an average drop in A1C of .86 (meds alone drop A1C by .80)
- b. For diabetics, the average drop was 1.2 or 50% improvement over meds

**3. *Doctors reducing their medication***

- a. Of those on meds, 8 had their meds reduced, 8 stay the same and 1 increased

**4. *Improvement in sense of well being***

***Response of Participants with Pre-Diabetes:*** In the initial survey, participants with pre-diabetes scored the statement “I’m failing with my diabetes routine” as the most significant challenge. The group scores also indicated the statement, “Not feeling motivated to keep up with my diabetes self-management” represented a significant challenge.

After participating in the Fitness Together program of strength training, cardio and nutritional guidance, participants in the pre-diabetes category repeated the Sense of Well Being Survey. This group’s scores indicated a marked improvement in their ability to manage a diabetes routine and their motivation to do so.

***Response of Participants with Diabetes:*** In the initial survey, participants with diabetes scored two statements as representing the biggest challenge to managing their diabetes: 1) “Not feeling motivated to keep up with my diabetes self-management” and 2) “Diabetes controls my life.”

After completing the 6-month study, participants with diabetes showed improvements in all areas of the Sense of Well Being survey. The group scored the greatest improvements in “feeling less overwhelmed by the demands of living with diabetes” and more confident in their ability to manage their condition.

### SUMMARY:

Results show that the Fitness Together Type 2 Diabetes Program was successful in improving the health of participants. Many participants continued to stay at Fitness Together after the study period was over and trained for another 6 months or longer.

# Type 2 Diabetes Observational Study

## Fitness Together

### INTRODUCTION

Since 1996, Fitness Together has helped men and women of all ages and abilities lose weight and get in shape through our tailored programs of one-on-one personal training, nutritional guidance and, more recently, small group personal training.

In recent years, building evidence has shown a direct correlation between rising rates of obesity and an increase in diabetes, with experts identifying this trend as one of the top public health problems in the United States. Conversely, evidence is mounting as to the efficacy of structured aerobic exercise and strength training in controlling obesity and reducing hemoglobin A1c levels for patients with diabetes.

A joint position statement by the American College of Sports Medicine and the American Diabetes Association on exercise and Type 2 diabetes concludes with certainty the major role exercise plays in the prevention and control of pre-diabetes, Type 2 diabetes, and diabetes-related health complications.

“Persons with type 2 diabetes should undertake at least 150 min/week of moderate to vigorous aerobic exercise spread out over at least 3 days during the week, with no more than 2 consecutive days between bouts of aerobic activity. In addition to aerobic training, persons with type 2 diabetes should undertake moderate to vigorous resistance training at least 2–3 days/week.”<sup>1</sup>

At Fitness Together, we wanted to find out if we could help people with diabetes and pre diabetes have measurable improvements in wellness. With the help of Joan Hill, Registered Dietitian, Certified Diabetes Educator and Licensed Dietitian/Nutritionist (RD, CDE, LDN), we designed an observational study that would measure the impact of Fitness Together’s One on One personal training on diabetes control, high blood pressure, sense of well-being and the costs of medications.

### FITNESS TOGETHER’S TYPE 2 DIABETES OBSERVATIONAL STUDY

Our volunteer search was limited to men and women age 30-60 years of age who were more than 30 pounds overweight and had been diagnosed with type 2 diabetes or who were considered pre-diabetic. Subjects were under a doctor’s care, with most taking prescribed medication to manage their diabetes or pre-diabetes.<sup>2</sup> Favorable candidates lived within 10 miles of a participating Fitness Together location.

Beginning late summer 2010, each subject, after receiving their physician’s clearance, signed up for Fitness Together’s 26-week program - with 50% of the cost subsidized by Fitness Together Studios and the other half paid by the subject.

#### Guidelines

Participants accepted into the study agreed to the following general guidelines:

- Obtain a signed letter from their physician granting approval for participation in the program.
- Complete an initial fitness evaluation, followed by fitness re-tests every 6 weeks
- Train with our trainers 3 times per week, in-studio
- Complete cardiovascular exercise at a minimum of 3 times per week
- Work within the guidelines of the Fitness Together balanced nutrition program, specifically to document all meals (maintain a nutritional journal).
- Conduct regular blood sugar tests as observed and recorded by Fitness Together

#### Methodology and Data Measured:

At the start of the study an initial Fitness Assessment was administered by one of Fitness Together’s certified personal trainers. Subsequently, the participant was asked to come in for 3 scheduled training sessions per week for 26 weeks. Fitness tests were administered approximately every 6 weeks, with the goal of completing a total of 5 tests by the end of the term to measure.

1 Colberg, Ph.d, FACSM, Et All, Sheri R. “Exercise and Type 2 Diabetes.” *Diabetes Care* 33.12 (2010): 2695. DiabetesinControl.com. 3 Dec. 2010. Web. 9 Sept. 2011. <<http://www.diabetesincontrol.com/component/content/article/64-feature-writer-article/10165-exercise-and-type-2-diabetes>>.

2 Our study was based on the premise that pre-diabetes is defined by an initial A1C of less than 6.5 and diabetes by an A1C greater than 6.5.

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## Fitness Together

changes in the following areas:

- Weight
- Body Fat
- Waist and hip measurement in inches
- Waist to hip ratio
- Blood pressure
- Changes in diabetes medications and doses<sup>3</sup>
- Changes in blood pressure medications and doses
- A1C statistics (Readings taken closest to the beginning and end of the study)
- Sense of Well Being Form in which the participant was asked to rate 6 areas of their ability to manage their diabetes and how living with diabetes affected their lives at the start and end of the study.

The study took place at 18 different Fitness Together locations.<sup>4</sup> Individual data were recorded on the participants' personal charts. Trainers reported any additional information for the client, such as personal or physical challenges, temporary or permanent setbacks.

### THE RESULTS

The initial study group consisted of a total of 34 participants.

- 24 of the initial 34 participants completed the program (70.6%)<sup>5</sup>
- There were 12 males and 12 females.
- 9 of the 24 had pre-diabetes, 15 of the 24 had diabetes
- Age range was 38-64 with a total average age of 52
- Average starting weight for the group was 219 lbs. with a range from 174-257 lbs.
- Average ending weight for the group was 209.75 with a total loss for the group of 238.5 lbs and an average loss of -10 lbs. per person
- Beginning A1C levels ranged from 6.0 – 10.1 with an average of 6.76
- Ending A1C levels ranged from 5.5-7.9 with an average of 6.4 and an average reduction of 8.7%
- Of the total group listing meds, one subject (had diabetes) had an increase in meds, 8 members of the total group had a decrease and 8 kept their same doses.

#### *Pre-Diabetes*

- There were 9 people identified with pre-diabetes, 4 males and 5 females with a starting A1C of 6.5 or lower.
- Average age of males with pre-diabetes was 47
- Average age of females with pre-diabetes was 52
- Men averaged a weight loss of one pound and a reduction in body fat of -13%
- Women averaged a weight loss of 13.2 pounds and a reduction in body fat of -14.4%
- Men lost an average of -1.7" in waist, -1.8" in hips with a 1% improvement in waist to hip ratio
- Women lost an average of -4.65" in waist, -3.4" in hips and a 5% improvement in waist to hip ratio
- Men showed a 1.6% improvement in A1C levels
- Women showed a 3.2% improvement in A1C levels

#### *Diabetics*

- 15 subjects had been diagnosed by their doctors as having diabetes, 8 males and 7 females with a starting A1C of 6.5 or higher
- Average age of males was 55
- Average age of females was 56
- Men averaged weight loss of -13.2 lbs. and a reduction in body fat of -12%

<sup>3</sup> Not all studios measure blood pressure as a practice, so data collection in this area was not comprehensive.

<sup>4</sup> Study subjects worked with different trainers at each studio. Some studios had more than one participant, in which case the trainer may or may not have been the same. Though the guidelines were the same for each studio, each trainer devised his or her own program specifically for that client, so there were variations in the types of exercise applied at each session.

<sup>5</sup> 10 participants were unable to complete the program due to personal, job or family issues, other health issues or compliance issues. 3 of the initial 34 participants completed only 3-4 months of the study (8.8%). 7 of the initial participants dropped out of the program for personal reasons (20.6%).

# Type 2 Diabetes Observational Study

## Fitness Together

- Women averaged weight loss of -8.6 lbs and a reduction in body fat of -7.9%
- Men lost an average of -2.5” in waist, -1.07” in hips with a 2% improvement in waist to hip ratio
- Women lost an average of -2.29” in waist, -1.9” in hips with a 3% improvement in waist to hip ratio
- Men showed a 14% improvement in A1C levels
- Women showed a 16% improvement in A1C levels

### SENSE OF WELL-BEING

The previous measurements were important indicators for measuring the physiological impact of the Fitness Together program on participants. However, in an attempt to measure the less tangible emotional and psychological impact of the program on diabetes management, participants were asked to fill out a survey at the start and the conclusion of the 6-month study. Designed by Joan Hill R.D., C.D.E., LDN, the Sense of Well Being (SOWB) survey measured the degree in which participants felt challenged by living with type 2 diabetes or pre-diabetes. An improvement in the scores at the end of the study would indicate that participation in Fitness Together's One on One personal training program had enabled participants to better manage their health.

The Sense of Well Being surveyed participants on 6 areas of their diabetes management.

The questions were as follows:

- I'm not feeling confident in my day-to-day ability to manage diabetes or pre-diabetes
- I'm not testing my blood sugars frequently enough
- I'm failing with my diabetes routine
- Diabetes or the risk of diabetes controls my life
- Feeling overwhelmed by the demands of living with diabetes
- Not feeling motivated to keep up with my diabetes self-management

Clients rated these questions on a scale from 1 to 6 with the following designations for each score rating:

- Not a problem
- A Slight Problem
- A Moderate Problem
- Somewhat Serious Problem
- A Serious Problem
- A Very Serious Problem

**Pre-diabetes Group Responses:** In the initial survey, the area deemed most challenging by the subjects with pre-diabetes as a group was statement number 3, “I’m failing with my diabetes routine.” They also found question number 6, “Not feeling motivated to keep up with my diabetes self-management” to be a significant challenge. This group ranked question number 4, “diabetes controls my life” as the least of their concerns both before and after.

At the end of the 6-month study, participants indicated improvements in almost all areas, with questions 3 and 6 showing the most improvement, with a 50% improvement in the score rating for question number 3 and a 57% improvement for question number 6. The improvement of these scores would indicate that after participating in the Fitness Together program of strength training, cardio and nutritional guidance, the pre-diabetes subjects felt they were more motivated and better able to manage their diabetes routine.

**Diabetes Group Responses:** In the initial survey, the 2 areas deemed most challenging to the group with diabetes were identified as questions 6, “Not feeling motivated to keep up with my diabetes self-management” and 4, feeling that “Diabetes controls my life.”

At the end of the 6-month study, diabetes participants showed improvements in all areas, with questions 1 and 5 showing the most improvement, with a 56% improvement in the score rating for question number 1 and a 51% improvement for question number 5. Though many still felt the inescapable presence of the disease, the group as a whole showed a dramatic improvement in feeling less overwhelmed by the demands of living with diabetes (question number 5) and had gained a marked sense of confidence in their ability to manage their condition, (question number 1).

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## Fitness Together

### PHYSICIAN REVIEWS

**DAVID M. HARLAN, M.D.** William and Doris Krupp Professor of Medicine Chief, Diabetes Division  
Co-Director, Diabetes Center of Excellence at UMass Worcester.

*I'm impressed that the Fitness Together program, which partners a trainer with each subject or group of subjects (many of whom had concluded exercise could not work for them), appears to have re-energized most enrolled individuals. That is, most individuals who signed up for the 6 month Fitness Together program study lost weight, improved their exercise tolerance, and noted important improvements in their blood pressure and diabetes control. As if not more important, participants noted big improvements in their sense of well being allowing them to regain a sense of control over their diabetes. I would like to see all my patients with diabetes so empowered!*

**GLENN D. MEYERS, M.D.** Cardiology, Florida

*The most impressive piece noted has got to be the documented improvement in "sense of well being" experienced by these patients after they took advantage of the appropriate training offered in the Fitness Together training program. It's not surprising that these patients need less medication and have better labwork and blood pressure once their lifestyle habits had changed for the better. An amazing set of results.*

### AMERICAN DIABETES ASSOCIATION REVIEW

**CHRISTOPHER BOYNTON** Executive Director American Diabetes Association

*Obesity is the number one risk factor for diabetes, so we know that 60-70% of the people who are obese have diabetes and the converse is true. There is a direct correlation between obesity and diabetes. The real answer is that in 2011 we already have a cure for about 70-75% of all of these diseases, and its quite simple, it's diet and exercise, and yet when you tell people we have the cure already, they would rather wait for a pill...that is very telling about our society...that's where an organization like FT comes in to help people get the motivation to do that (to diet and exercise).*

### ANECDOTAL REPORTS FROM TRAINERS AND CLIENTS

**Joe, Emmy's trainer in Belmont, MA.** *This client's A1C dropped from 6.9 to 5.8.*

*Emmy was a very dedicated client...the change in her attitude, self image and quality of life was just a great thing to see. For her, this was a great program!"*

**Bob in Cohasset, MA.** *This client lost 20 lbs and his A1C went from 7.5 to 6.9*

*I feel better in general and doing every day tasks has become so much easier, such as walking up the stairs instead of taking the elevator.*

**Carol in Natick, MA.** *Her A1C went from a 7.5 to a 6.4.*

*The doctor was happy with blood work and my blood pressure was 116/78 the day I went, which is the lowest it has ever been! He didn't lower or take me off meds YET...but he is pleased with the progress I've made. Hopefully I can lose another 10 pounds and that will be a total of 40 pounds lost. This was the best thing I've ever done for myself. I even enrolled in an on-line Senior Fitness Trainer certification course through ISSA. Hope to stay focused and on track for the rest of my life.*

**Don in Tyngsboro, MA.** *This client lost more than 25 lbs. His A1C went from a 6.6 to a 6.1.*

*Major drop in the amount of insulin use, and it still went down. All the rest of the numbers going down (triglycerides, etc.) Blood pressure and heart rate going down (on the retests) and no more blood pressure medicine.*

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## Fitness Together

### OVERVIEW

#### Notes:

Our study is based on the premise that pre-diabetes participants had initial A1C < 6.5 and diabetes participants had 6.5 A1C and above. It is important to note that several participants were recently diagnosed while others had diabetes for as many as 15 years or more. Several participants had higher A1C levels when they were first diagnosed with diabetes, months prior to participating in this study. Those participants who had success lowering their A1C prior to the study reported that they did so mostly through change of diet. Initial A1C levels used were the participants' most recent A1C levels taken prior to the start of our study (usually within 2-6 wks).

#### 34 people signed up for the study and paid 50% the cost of the 6 month program

24 participants - (70.6%) of the initial 34 participants completed 6 month type 2 diabetes fitness study program  
 A total of 9 pre-diabetes participants and 15 diabetes participants completed our 6 month study  
 \*3 participants (8.8%) of the initial 34 participants completed 3-4 months of type 2 diabetes fitness study program  
 \*7 participants (20.6%) of the initial 34 participants dropped out of the study for personal reasons

#### Of the 24 study participants who completed the 6 month program, 9 were pre-diabetes and 15 had diabetes

These 24 participants trained at 18 Fitness Together locations - some locations had more than one study participant:

#### PARTICIPANTS BY LOCATION:

9 Pre-diabetes	15 Diabetes
Auburndale	Andover
Chelmsford	Barrington, RI
Dedham	Belmont
Franklin	Cohasset
Natick	Dedham-2
Sudbury	Franklin-2
Westborough	Lincoln, RI
Westborough-2	Mansfield
Westborough-3	Medfield

#### STUDY PARTICIPANTS BY SEX AND TYPE

Sex	Pre-diabetes	Diabetes	Total
Male:	4	8	12
Female:	5	7	12
	9	15	24

AVERAGE AGE	Pre-diabetes	Diabetes	Average
Male:	47	55	49.5
Female:	52	56	54

#### SUMMARY:

*Fitness Together subsidized 50% the cost of this 6 month fitness program so study participants would be inclined to comply. Study participants paid 50% (up to \$2500) the cost of a 6 month program - an investment to motivate them to comply. 10 of the 34 initial participants quit early for various reasons: personal/family issues, other injuries, health issues, or lack of commitment.*

### FITNESS STUDY EXERCISE AND LIFESTYLE STATS

#### Notes:

Fitness Together sessions include 5 minute warm-ups plus 45 minute sessions = 50 minutes  
 Study participants trained an average of 3 sessions per week = 50 minutes X 3 = 150 total minutes at our locations  
 For people who need to lose weight, our program combines strength training with cardiovascular exercise to increase one's metabolism

Pre-diabetes Participants (Initial A1C < 6.5)	Pre-diabetes	Sessions Per Week	Cardio min/wk 30, 60, 90+min.	Kept Food Journal (% of all)		
				Yes (44%)	Partial (22%)	No (33%)
Complied with 3x/wk training (women 97%, men 100%)	4 Males	3	incomplete*	1	1	2
Cardio was not tracked - we could have done better	5 Females	2.9	incomplete*	3	1	1
Women did better than men tracking food	<b>9 total</b>	<b>aver. 3x/wk.</b>		<b>4</b>	<b>2</b>	<b>3</b>

Diabetes Participants (initial A1C 6.5 or greater)	Diabetes	Sessions Per Week	Cardio min/wk 30, 60, 90+min.	Kept Food Journal		
				Yes (40%)	Partial (13%)	No (47%)
Complied with 3x/wk training (women 100%, men 90%)	8 Males	2.7	4 (50% of men)	5	0	3
Cardio done outside of studio cannot be verified	7 Females	3	3 (43% of women)	1	2	4
Men did better than women tracking food	<b>15 total</b>	<b>aver. 2.9x/wk</b>		<b>6</b>	<b>3</b>	<b>7</b>

7 did some cardio  
 30+ min = 1F  
 60+ min = 1F, 2M  
 90+ min = 1M  
 120 min = 1F, 1M  
 none/no reply = 8

#### SUMMARY:

*Both groups of men and women were consistent in training an average of 3 times/week. Participants agreed to do additional cardio 3 times a week, yet it was not enforced in the studios. Less accountability meant less compliance. Keeping a food journal was challenging: just 42% were able to do this consistently; 17% did this for about half of the time; 40% tracked none. - Pre-diabetes women did a better job than men keeping a food journal. - Men with diabetes did a better job keeping a food journal than their female counterparts.*

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## Fitness Together

### AVERAGE MEASUREMENT STATS

	Pre-diabetes	Before	After	Aver loss lbs.	% Change in weight	% Change in Body Fat*	Change in inches Waist	Change in inches Hips	Starting waist to hip Ratio	Final waist to hip Ratio	% waist to hip Improvement
4 Males	236	235		-1	-0.5%	-13%	-1.7	-1.8	0.96	0.95	1%
5 Females	190	176.8		-13.2	-8.2%	-14.4%	-4.65	-3.4	0.98	0.93	5%

Start < 6.5 A1C	Starting A1C	Final A1C	Change in A1C	% A1C improve
4 Males	6.4	6.3	0.10	1.6%
5 Females	6.2	6	0.20	3.2%

#### SUMMARY:

Women had the greatest weight loss averaging -13.2 lbs, representing an average loss of 8% of their body weight

Men didn't lose much weight but lost body fat and inches

Both women and men did well losing 13-14% of their body fat

Women had the greatest success reducing inches in their waist and hips and their waist to hip ratios improved by 5%

	Diabetes	Before	After	Aver loss lbs.	% Change in weight	% Change in Body Fat*	Change in inches Waist	Change in inches Hips	Starting waist to hip Ratio	Final waist to hip Ratio	% waist to hip Improvement
8 Males	234	220.8		-13.2	-5.6%	-12%	-2.5	-1.07	1.04	1.02	2%
7 Females	215	206.4		-8.6	-3.9%	-7.9%	-2.29	-1.90	0.93	0.90	3%

Start 6.5+ A1C	Starting A1C	Final A1C	Change in A1C	% A1C improve
8 Males	7.75	6.65	1.10	14%
7 Females	7.47	6.27	1.20	16%

#### SUMMARY:

Men had the greatest weight loss averaging -13.2 lbs, representing an average loss of 5.6% of their body weight

Women did well losing an average -8.6 lb, representing an average loss of 3.9% of their body weight

Men had the greatest loss of body fat -12% and women did well losing 7.9% of their body fat

Both men and women had success reducing inches in their waist and hips and their waist to hip ratios improved by 2-3%

### SENSE OF WELL BEING SURVEY (SOWB)

Survey - taken before and after completion of Fitness Together's 6 month program

Participants were asked to rate each question 1-6 as follows:

1) Not a problem 2) Slight Problem 3) Moderate Problem 4) Somewhat Serious Problem 5) Serious Problem 6) Very Serious

A. Pre-diabetes Participants (Initial A1C < 6.5)	Most Challenging Problem	Aver. Score Initial Response	Aver. Score Final Response	Percent Improvement After 6 mos.	Most Improved After 6 Mos.
Participants were asked to rank each of the following statements					
1) "I'm not feeling confident in my day-to-day ability to manage diabetes"	2	2.50	1.33	47%	3
2) "I'm not feeling testing my blood sugars frequently enough"	(tie 3rd)	2.33	1.83	21%	5
3) "I'm failing with my diabetes routine"	1	2.67	1.17	56%	2
4) "Diabetes controls my life"	5	1.50	1.50	0%	6
5) "Feeling overwhelmed by the demands of living with diabetes"	4	1.83	1.17	36%	4
6) "Not feeling motivated to keep up my diabetes self-management"	(tie 3rd)	2.33	1.00	57%	1

Summary most improved: They now feel more motivated to manage their diabetes  
They feel they are now doing much better with their diabetes routine

B. Diabetes Participants (Initial A1C 6.5 or greater)	Most Challenging Problem	Aver. Score Initial Response	Aver. Score Final Response	Percent Improvement After 6 mos.	Most Improved After 6 Mos.
Participants were asked to rank each of the following statements					
1) "I'm not feeling confident in my day-to-day ability to manage diabetes"	(tie 3rd)	3.31	1.46	56%	1
2) "I'm not feeling testing my blood sugars frequently enough"	4	3.23	1.77	45%	5
3) "I'm failing with my diabetes routine"	(tie 3rd)	3.31	1.69	49%	3
4) "Diabetes controls my life"	2	3.38	2.08	39%	6
5) "Feeling overwhelmed by the demands of living with diabetes"	(tie 3rd)	3.31	1.62	51%	2
6) "Not feeling motivated to keep up my diabetes self-management"	1	3.54	1.85	48%	4

Summary most improved: They feel more confident in their ability to manage diabetes  
They now feel less overwhelmed by the demands of living with diabetes

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## Fitness Together

### BLOOD PRESSURE AND DIABETES MEDICATIONS (BEFORE AND AFTER)

#### A. Pre-diabetes Participants (Initial A1C < 6.5)

Studio	M or F	Age	Starting BP	Ending BP	Change in BP**	Starting Meds	Current Meds
Auburndale	F	54	122/84	120/78	-2%	1000 mg Metform.	500 mg Metform
Chelmsford	M	47	126/78	122/80	-3%	Metoprolol 25 mg, Diltiazem 240 mg, Avapro 150 mg	No change in meds
Dedham	M	50	140/78	110/60	-21%	Metformin 500 mg	No change in meds
Franklin	M	44	140/87	140/72	0%	Metformin 500 mg, Lisinopril 20/25 mg	No change in meds
Natick	F	57	n/a	n/a	n/a	No meds	No meds
Sudbury	M	48	n/a	n/a	n/a	No meds	No meds
Westborough-1	F	51	152/99	132/86	-13%	Metformin 1500 mg, Lisinopril 40 mg/Verapamil 540 mg	No change in meds
Westborough-2	F	46	157/96	147/92	-6%	Benicar 40 mg	Losartan 50 mg (equiv to 1/2 of the previous Benicar dose)
Westborough-3	F	53	132/89	124/86	-6%	Metformin 500 mg	No change in meds
						Results 9 of 9 participants	meds increased= 0 reduced = 2 (29%) no change = (55%) no meds from start = 2

#### Notes:

Not every studio checks blood pressure and those that do typically use a machine versus stethoscope  
When measuring change, we took the top number (systolic) and showed percent change

#### B. Diabetes Participants (initial A1C 6.5 or greater)

Studio	M or F	Age	Starting BP	Ending BP**	Change in BP**	Starting Meds	Current Meds
Andover	M	55	n/a	n/a	n/a	Metformin/Prandin	Metformin 400mg 2X, Prandin 50mg 1x
Barrington, RI	M	50	136/82	139/85	2%	1000 mg Metformin	No change
Belmont	F	61	153/77	144/70	-6%	Actos, Glyset, Metform,Byetta, Benicar (BP)	no change
Cohasset-2	M	64	157/82	162/77	3%	Lantus 100 units, Novalog 60 units	Lantus 35 units, Novalog 5 units
Dedham-2	F	55	125/80	100/60	-20%	Glabyride 2.5 mg, benicar 20 mg	Metformin 500 mg, benicar 20 mg
Franklin-2	F	56	134/81	127/85	-5%	Metformin 500 mg x 2	Metformin 750mg 2x
Lincoln, RI	M	63	114/68	126/78	-11%	Glyburide 3.75, Benicar 40 mg, Metformin	Glyburide 2.5, Benicar 20 mg, Metformin
Mansfield	M	47	n/a	n/a	n/a	Humalog/Lantus - sliding scale	sliding scale
Medfield	F	57	n/a	n/a	n/a	Victoza 1x per day	No current meds
Natick-2	F	50	n/a	n/a	n/a	Metformin & 2 blood pressure meds	No change
No. Andover	F	59	138/87	130/85	-6%	Humalog 30-40 mg, Lantus 35 mg, Metformin 1700 mg, lisinopril 5 mg	Humalog 25 mg, Lantus 35 mg, Metformin 1700 mg, lisinopril 5 mg
Norwell	M	56	140/122	141/82	-0.7%	Glipizide 20 mg	Glipizide 10 mg
Sudbury-2	F	57	n/a	n/a	n/a	None listed	None listed
Tyngsboro	M	51	126/82	120/82	-5%	Lantus 50 units, Humalog, Glucophage 1000 mg 2x/day, Diovan 160 mg	Lantus 40 units, Humalog, Glucophage 1000 mg 2x/day - take off diovan
Westford	M	57	111/67	120/80	8%	Metoprolol Tartnate 50 mg-2x/day, Simvastain 20 mg/day, Humalog 45 units	Metoprolol Tartnate 50 mg 2x, Simvastain 20 mg 1x, Humalog Lantus 45 units as needed
						Results 14 of 15 participants	meds increased= 1 (8%) reduced = 6 (40%) no change = 7 (47%) no meds from start = 1

#### Notes:

Not every studio checks blood pressure and those that do typically use a machine versus stethoscope  
When measuring change, we took the top number (systolic) and showed percent change

# Type 2 Diabetes Observational Study

## Fitness Together

### BEFORE & AFTER

*Bob F.*



*Carol P.*



*Jim F.*



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