Final Research Assessment Paper

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BACKGROUND & LITERATURE REVIEW

In order to fully understand if there is a correlation between two topics, one must research the two topics, as well as conduct surveys. In order to find a correlation between fitness and simple BMI, a survey has been conducted to look at the effects fitness has on simple BMI and body weight over a 6 month and 12 month period. It must be noted that a healthy BMI lies between 18.5-25.0 kg/m(2). There were 30 subjects in this study, 16 being males and the other 14 females. The height and starting weight of the subjects were recorded before the study began. During the study, the subjects' weight at 6 and 12 months and BMI at 6 and 12 months were recorded. It can be seen that for most subjects, fitness did impact the subjects' weight BMI throughout the duration of the study. Before concluding whether there is a direct correlation between fitness, BMI, and weight, we must research other studies in order to better help prove our research.

The first study that I researched examined the relationship between BMI and fitness levels among school children in Louisiana. 7,000 children participated in the study. The children were assessed by their BMI, aerobic capacity, trunk lifts, curl ups, push ups, and flexibility. The researchers were able to conclude that the students with the healthy BMIs had the highest physical fitness levels, and the students with the unhealthy BMIs had significantly worse physical fitness levels. This indicates a direct correlation between fitness and BMI.

The next study that I researched studied the correlation between BMI, physical fitness, and cardiovascular risk. This studied 3,127 hyper healthy Caucasian males in order to determine the relation to BMI and cardiovascular risk factors. The subjects were aged between 18-35, did not regularly consume alcohol, nonsmokers, and had at least three hours of physical activity a

week. The studied determined that the males with lower BMIs showed to have higher physical fitness levels, as well as low blood pressure and low serum lipids. The study then concluded that the ideal BMI to avoid cardiovascular risk factors is 25 kg/m(2). This still illustrates a direct correlation that BMI and fitness are dependent of each other.

The final study that I researched studied the relationship of weight loss, physical activity, fitness, and diet changes in response to a behavioral weight loss intervention for adults. The researchers had 177 participants between the ages of 30-50 years old. The participants had BMIs consisting of 30 kg/m(2) and over. The study lasted 18 months. The participants were divided into three different intervention groups at random. At the 6, 12, and 18 month markers the physical activity, fitness, BMI, and diet were assessed. The researchers found that there was significant increased physical activity, improved fitness, weight loss, and lowered caloric intake over the duration of the study for all three groups. This study best shows the correlation between fitness and BMI over a given time.

Overall, it can very clearly be seen that there is a strong correlation between fitness, BMI, and time. Not only can it be seen in the data collected by myself, but it can also be noted in each study provided above. It can further be noted that time is correlated with fitness and BMI by assessing the results from my study, as well as the third study presented. It can be said that the the lower an individual's BMI is, the higher level of fitness the person has. Furthermore, the individual is more likely to have their BMI lower and have a greater weight loss over a longer period of time, such as 6-12 months.

METHOD

In this experiment, the main component that we chose to emphasize and focus on was how fitness affected BMI over a 6 and 12 month period. In order for this experiment to be successful, the subjects were required to partake in a 12 month fitness program. This is a process that plays a large role in the experiment. It is necessary for all subjects to comply, in order to completely determine the effects of exercise on BMIs. If the subjects did not follow the program, then the results would be skewed. Another large component of this study was the product. The health measure that was greatly studied and based around was the simple BMI and how it was affected over a 6 and 12 month period. We chose to emphasize these two components because we wanted to determine if there was a direct correlation between fitness levels and BMI.

In order to make this experiment successful, it was necessary that we have testing protocols in place. The protocols called for the subjects to come to our exercise lab to have their height recorded (in meters), and to have their starting weight recorded (in kilograms). From then, the researchers calculated and recorded each subjects' starting BMI. Once these key factors were recorded, each subject received a fitness program. The programs consisted of workouts for the subjects to perform each week, as well as guidelines for how much cardio the subjects should perform each week. The workouts within the program were created so that each week, the subjects should be able to progress and increase their physical fitness. The subjects were required to come to the lab to perform their exercises under the supervision of trainers. After 6 and 12 months of following the fitness programs, subjects were to re-weigh themselves and have their BMIs re-calculated to determine the possible effect that fitness may have on their simple BMIs.

RESULTS

Overall:	Mean	Standard Deviation	P-Value
Height	1.73	0.11	---
Starting Weight	90.92	27.78	---
Starting BMI	29.99	6.9	---
6 month Weight	89.35	25.97	0.8219
6 month BMI	29.48	6.26	0.7767
12 month Weight	87.04	23.87	0.5640
12 month BMI	28.74	5.55	0.4448

Female:	Mean	Standard Deviation	P-Value
Height	1.63	0.059	---
Starting Weight	67.59	11.16	---
Starting BMI	25.46	4.21	---
6 month Weight	66.98	11.48	0.8926
6 month BMI	25.23	3.92	0.8793
12 month Weight	64.78	10.53	0.6619
12 month BMI	24.94	3.57	0.7231

Male:	Mean	Standard Deviation	P-Value
Height	1.81	0.05	---
Starting Weight	111.3	20.32	---
Starting BMI	33.94	6.38	---

6 month Weight	108.9	17.72	0.7229
6 month BMI	33.2	5.54	0.7273
12 month Weight	105.3	15.63	0.3532
12 month BMI	32.08	4.80	0.3574

Health-Fitness/Simple BMI/Pre Post 6mo-12mo (H12)							
Subject	Gender	Height (meters)	Starting Weight (kgs)	BMI	Weight after 6 Months (kgs)	BMI	Weight after 12 Months (kgs)	BMI
1	F	1.7	78.5	27.2	78.5	27.2	77.1	26.7
2	F	1.7	90.7	31.4	89.9	31.1	86.3	29.9
3	F	1.5	49.9	22.2	49.8	22.1	48.9	21.7
4	F	1.6	69.9	27.3	67.2	26.3	67.1	26.2
5	F	1.6	55.3	21.6	55.3	21.6	54.2	21.2
6	F	1.7	69.4	24	68.9	23.8	67.9	23.5
7	F	1.6	67.1	26.2	67	26.2	67	26.2
8	F	1.6	61.7	24.1	61.3	23.9	61.2	23.9
9	F	1.7	58.1	20.1	58	20.1	58.1	20.1
10	F	1.6	67.1	26.2	66.9	26.1	66.5	26
11	F	1.6	65.3	25.5	65.3	25.5	64.8	25.3
12	F	1.6	64.9	25.4	64.2	25.1	63	24.6
13	F	1.7	57.6	19.9	58	20.1	60.1	20.8
14	F	1.6	90.7	35.4	87.4	34.1	84.4	33
15	M	1.8	129.3	39.9	128.2	39.6	125.2	38.6
16	M	1.9	113.4	31.4	113	31.3	110.8	30.7
17	M	1.8	95.3	29.4	95.3	29.4	94.4	29.1
18	M	1.8	139.7	43.1	137.5	42.4	132	40.7
19	M	1.8	81.2	25.1	82.5	25.5	80.3	24.8
20	M	1.8	120.7	37.3	119.7	36.9	115.7	35.7
21	M	1.9	100.7	27.9	100.6	27.9	99.9	27.7
22	M	1.8	117.5	36.3	112.1	34.6	106.6	32.9

23	M	1.9	150.1	41.6	139.9	38.8	130.1	36
24	M	1.8	125.2	38.6	119.8	37	115.1	35.5
25	M	1.8	113.8	35.1	108.1	33.4	103.2	31.9
26	M	1.8	90.3	27.9	90.3	27.9	89.9	27.7
27	M	1.7	129.3	44.7	119.7	41.4	109.4	37.9
28	M	1.8	95.2	29.4	95	29.3	94.5	29.2
29	M	1.8	91.2	28.1	92.8	28.6	90.3	27.9
30	M	1.8	88.4	27.3	88.2	27.2	87.1	26.9
Overall	Mean	1.73	90.92	29.99	89.35	29.48	87.04	28.74
	SD	0.11	27.78	6.9	25.97	6.26	23.87	5.55
	p value				0.8219	0.7667	0.5640	0.4448
Female	Mean	1.63	67.59	25.46	66.98	25.23	64.78	24.94
	SD	0.059	11.16	4.21	11.48	3.92	10.53	3.57
	p value				0.8926	0.8793	0.6619	0.7231
Male	Mean	1.81	111.3	33.94	108.9	33.2	105.3	32.08
	SD	0.05	20.32	6.38	17.72	5.54	15.63	4.80
	p value				0.7229	0.7273	0.3532	0.3574

Female Mean BMI

Starting, 6 Month, 12 Month BMI

Male Mean BMI

Starting, 6 Month, 12 Month
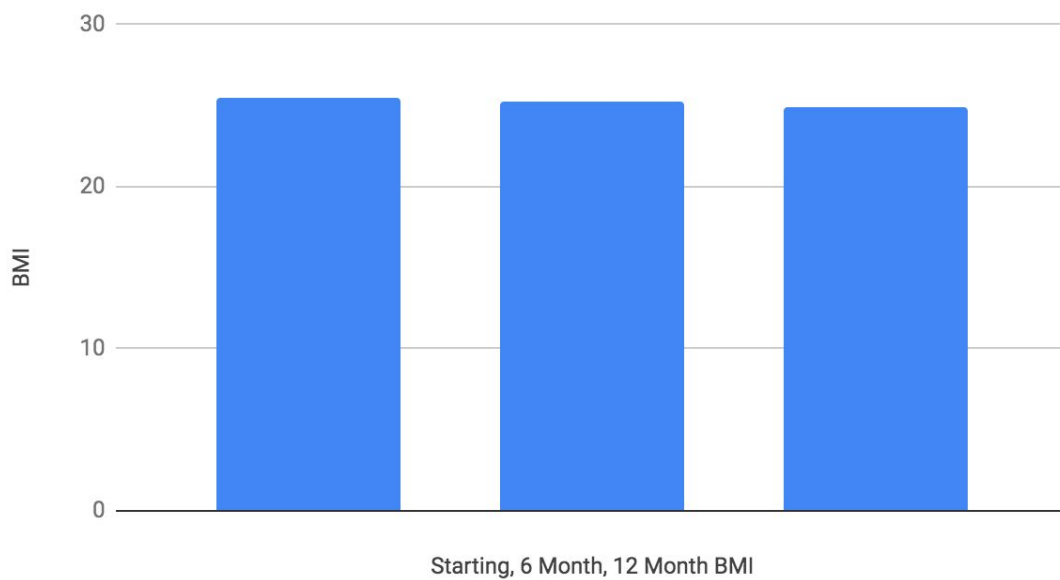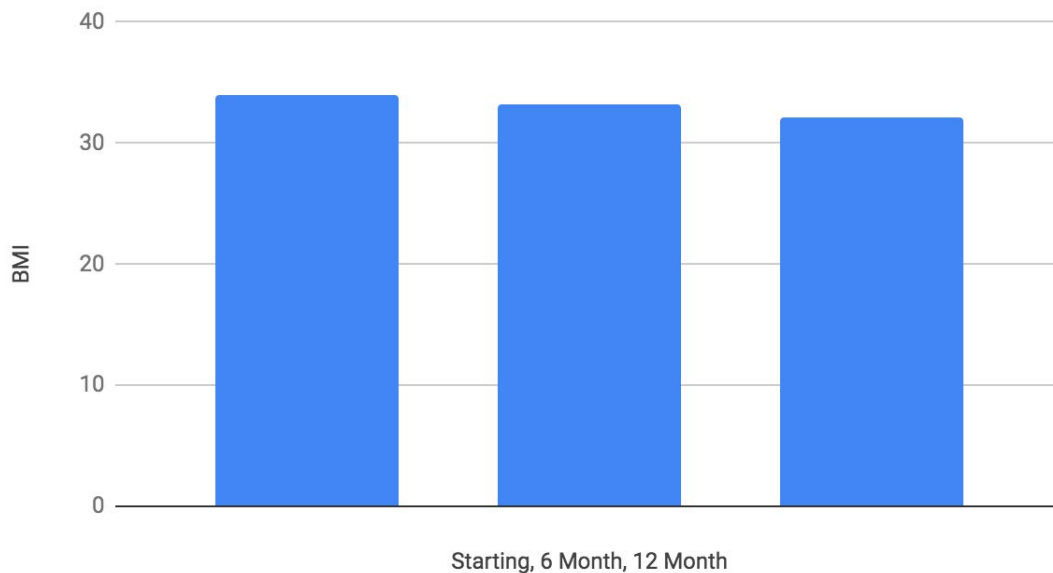
DISCUSSION

Overall, it can be noted that each subject experienced a slight weight loss, accompanied by a slight drop in BMI. When observing the mean data for the overall subjects, the subjects lost over a full point on the BMI scale. When analyzing the mean BMIs for the female subjects, it can be seen that the subjects lost less than a full point on the BMI scale. When analyzing the mean BMIs for the male subjects, it can be seen that they lost over one point on the BMI scale. It can also be noted in the charts above that there are slight drops in BMIs of each gender over the 6 and 12 month period. When observing the difference between the starting BMI and the BMI recorded after 6 months for all the subjects, it can be seen that there is not a large difference between BMIs. The largest difference noted between BMIs for all subjects is between the starting BMI and 12 month BMI. Therefore, we can conclude that there is a direct correlation between fitness and simple BMIs over a 6 and 12 month period.

This program was effective due to the fact that the subjects were given clear and concise directions about their fitness program, such as how often they needed to exercise, and what type of exercises they should be performing. The subjects were also trained by the personal trainers on staff at the facility to ensure that the subjects safely progressed over time to improve their overall fitness. By controlling their fitness performance each time the subject worked out, they were able to remain in control of the study. Moving forward within the program, I believe it is necessary to incorporate a diet portion of the experiment. This will then allow us to view the correlations between exercise, diet, and simple BMIs. Although in the study the subjects experienced lowered BMIs through increasing their fitness levels, it is not enough to only focus on fitness; a balanced diet is necessary to lower a simple BMI.

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