

Washington State University
MIS 420 – Business Intelligence
Online

Mauricio Featherman, Ph.D.

T-SQL #2

Name: Nam Jun Lee

Student Number: 11606459

Introduction

The project was requested by the administrator of the Pullman Fitness Center (PFC) and focuses on providing each training plan for each of the four average weight groups. Non-sports activities are filtered from the provided 'Featherman.Exercise' dataset and a list of recommendations for each weight category is compiled based on a schedule of two hours per day/six days a week, using a combination of activity categories and speeds. The goal is to provide a recommended activity plan for each of the four average weight groups to achieve the goal of consuming 5000 calories a week.

Average 130lb Group

Average caloric burn for 130lb of category and pace:

	Category	Easy	Steady	Vigorous	High Intensity
1	Activity	247.212121	433.837837	416.324324	645.312500
2	Rec Center	301.000000	265.800000	413.090909	413.000000
3	Sport	349.857142	420.375000	478.272727	692.470588

The table above shows that the Sport category burns more calories on average than other categories. In addition, there is no correlation between pace and calorie burn in the case of a Rec Center.

Activity Schedule:

	Avg. Activity	Hours	Days	Hours Per Week	Calories Burned Per Day	Calories Burned per Week
<i>Steady Activity</i>	434	1	MWF	3	434	1302
<i>Steady Sport</i>	420	1	MWF	3	420	1260
<i>Total Calories burned for MWF: 2562</i>						
<i>Easy Sport</i>	350	1	T/TH	2	350	700
<i>High Intensity Activity</i>	645	1	T/TH	2	645	1290
<i>Total Calories burned for T/TH: 1990</i>						
<i>Easy RecCenter</i>	301	2	SAT	2	301	602
<i>Total Calories burned for SAT: 602</i>						
<i>Total Calories burned for Week: 5154</i>						

List of Actions:

MWF:

Category	Pace	Activity-1hr	CalBurn	Category	Pace	Activity-1hr	CalBurn
Activity	Steady	Ice skating, < 9 mph	325	Sport	Steady	Softball or baseball	295
Activity	Steady	Tai chi	236	Sport	Steady	Tennis, singles	472
Activity	Steady	Diving, springboard or platform	177	Sport	Steady	Playing tennis	413

T/TH:

Category	Pace	Activity-1hr	CalBurn	Category	Pace	Activity-1hr	CalBurn
Sport	Easy	Running, general	472	Activity	High Intensity	Cycling, >20 mph, racing	944
Sport	Easy	Track and field (shot, discus)	236	Activity	High Intensity	Horse racing, galloping	472
Sport	Easy	Playing soccer	413	Activity	High Intensity	Martial arts, tae kwan do	590

SAT:

Category	Pace	Activity-1hr	CalBurn
Rec Center	Easy	Teach physical education, exercise class	236
Rec Center	Easy	Teach physical education, exercise class	236
Rec Center	Easy	Aerobics, general	384

Activity Recommendation Plan: (hit the goal of 5000 calories burned per week)

	Activity	Hours	Days	Hours Per Week	Calories Burned Per Day	Calories Burned per Week
Steady Activity Steady Sport	Ice skating, < 9 mph	1	MWF	3	325	975
	Tennis, singles	1	MWF	3	472	1416
Total Calories burned for MWF: 2391						
Easy Sport	Playing soccer	1	T/TH	2	413	826
High Intensity Activity	Martial arts, TaekWanDo	1	T/TH	2	590	1180
Total Calories burned for T/TH: 2006						
Easy RecCenter	Aerobics, general	2	SAT	2	384	768
Total Calories burned for SAT: 768						
Total Calories burned for Week: 5165						

Average 155lb Group

Average caloric burn for 155lb of category and pace:

	Category	Easy	Steady	Vigorous	High Intensity
1	Activity	294.575757	517.351351	496.378378	769.750000
2	Rec Center	358.600000	316.600000	492.363636	492.666666
3	Sport	417.142857	501.250000	570.424242	825.882352

The table above shows that Sport category consumes more calories on average than other categories. Also, in the case of the Sport category, calorie burn increases as the pace increases. Relatively, the Rec Center category burns the least calories than the other categories.

Activity Schedule:

Activity Schedule:							
	Avg. Activity	Hours	Days	Hours Per Week	Calories Burned Per Day	Calories Burned per Week	
Easy RecCenter Steady Sport	359	1	MWF	3	359	1077	
	501	1	MWF	3	501	1503	
					Total Calories burned for MWF: 2580		
Easy Sport Vigorous Sport	417	1	T/TH	2	417	834	
	570	1	T/TH	2	570	1140	
					Total Calories burned for T/TH: 1974		
Easy Activity	295	2	SAT	2	295	590	
							Total Calories burned for SAT: 590
						Total Calories burned for Week: 5144	

List of Actions:

MWF:

Category	Pace	Activity-1hr	CalBurn
Rec Center	Easy	Teach physical education, exercise class	281
Rec Center	Easy	Teach physical education, exercise class	281
Rec Center	Easy	Aerobics, low impact	352

Category	Pace	Activity-1hr	CalBurn
Sport	Steady	Softball or baseball	352
Sport	Steady	Playing tennis	493
Sport	Steady	Tennis, singles	563

T/TH:

Category	Pace	Activity-1hr	CalBurn	Category	Pace	Activity-1hr	CalBurn
Sport	Easy	Playing soccer	493	Sport	Vigorous	Swimming breaststroke	704
Sport	Easy	Running, general	563	Sport	Vigorous	Water polo	704
Sport	Easy	Race walking	457	Sport	Vigorous	Swimming sidestroke	563

SAT:

Category	Pace	Activity-1hr	CalBurn
Activity	Easy	Ballroom dancing, slow	211
Activity	Easy	Horesback riding, saddling horse	246
Activity	Easy	Walking using crutches	352

Activity Recommendation Plan: (hit the goal of **5000 calories** burned per week)

	Activity	Hours	Days	Hours Per Week	Calories Burned Per Day	Calories Burned per Week
<i>Easy RecCenter</i>	Aerobics, low impact	1	MWF	3	352	1056
<i>Steady Sport</i>	Playing tennis	1	MWF	3	493	1479
<i>Total Calories burned for MWF: 2535</i>						
<i>Easy Sport</i>	Race walking	1	T/TH	2	457	914
<i>Vigorous Sport</i>	Swimming sidestroke	1	T/TH	2	563	1126
<i>Total Calories burned for T/TH: 2040</i>						
<i>Easy Activity</i>	Walking crutches	2	SAT	2	352	704
<i>Total Calories burned for SAT: 704</i>						
<i>Total Calories burned for Week: 5279</i>						

Average 180lb Group

Average caloric burn for 180lb of category and pace:

	Category	Easy	Steady	Vigorous	High Intensity
1	Activity	342.212121	600.756756	576.459459	893.875000
2	Rec Center	416.800000	367.600000	572.090909	572.000000
3	Sport	484.571428	582.250000	662.393939	959.117647

The table above shows that sports categories burn on average more calories than other categories, and calorie burn increases as the pace increases. In addition, in the case of a Rec Center, calorie burn is lower than in other categories except that pace is easy.

Activity Schedule:

	Avg. Activity	Hours	Days	Hours Per Week	Calories Burned Per Day	Calories Burned per Week
<i>Easy RecCenter</i>	417	1	MWF	3	417	1251
<i>Easy Activity</i>	342	1	MWF	3	342	1026
<i>Total Calories burned for MWF: 2277</i>						
<i>Easy Sport</i>	485	1	T/TH	2	485	970
<i>Steady Sport</i>	582	1	T/TH	2	582	1164
<i>Total Calories burned for T/TH: 2134</i>						
<i>Steady Activity</i>	601	2	SAT	2	601	1202
<i>Total Calories burned for SAT: 1202</i>						
<i>Total Calories burned for Week: 5613</i>						

List of Actions:

MWF:

Category	Pace	Activity-1hr	CalBum	Category	Pace	Activity-1hr	CalBum
Rec Center	Easy	Teach physical education, exercise class	327	Activity	Easy	Stationary cycling, very light	245
Rec Center	Easy	Aerobics, general	531	Activity	Easy	Walking using crutches	409
Rec Center	Easy	Aerobics, low impact	409	Activity	Easy	Golf, walking and pulling clubs	351

T/TH:

Category	Pace	Activity-1hr	CalBum	Category	Pace	Activity-1hr	CalBum
Sport	Easy	Race walking	531	Sport	Steady	Tennis, singles	654
Sport	Easy	Running, general	654	Sport	Steady	Table tennis, ping pong	327
Sport	Easy	Playing soccer	572	Sport	Steady	Squash	981

SAT:

Category	Pace	Activity-1hr	CalBum
Activity	Steady	Jai alai	981
Activity	Steady	Skateboarding	409
Activity	Steady	Ice skating, rapidly	735

Activity Recommendation Plan: (hit the goal of **5000 calories** burned per week)

	Activity	Hours	Days	Hours Per Week	Calories Burned Per Day	Calories Burned per Week
Easy RecCenter Easy Activity	Aerobics, low impact	1	MWF	3	409	1227
	Golf, Walk&Pull	1	MWF	3	351	1053
Total Calories burned for MWF: 2280						
Easy Sport	Race walking	1	T/TH	2	531	1062
Steady Sport	Tennis, singles	1	T/TH	2	654	1308
Total Calories burned for T/TH: 2370						
Steady Activity	Skateboarding	2	SAT	2	409	818
Total Calories burned for SAT: 818						
Total Calories burned for Week: 5468						

Average 205lb Group

Average caloric burn for 205lb of category and pace:

	Category	Easy	Steady	Vigorous	High Intensity
1	Activity	389.636363	684.108108	656.567567	1018.062500
2	Rec Center	474.400000	418.800000	651.363636	651.333333
3	Sport	551.714285	663.000000	754.575757	1092.235294

The table above shows that Sport category burns more calories on average than other categories and calorie burn increases as the pace increases. Also, relatively, the Rec Center category burns the least calories than the other categories.

Activity Schedule:

	Avg. Activity	Hours	Days	Hours Per Week	Calories Burned Per Day	Calories Burned per Week
Easy RecCenter	474	1	MWF	3	474	1422
Easy Activity	390	1	MWF	3	390	1170
Total Calories burned for MWF: 2592						
Steady Activity	684	1	T/TH	2	684	1368

Steady Sport

663	1	T/TH	2	663	1326
<i>Total Calories burned for T/TH: 2694</i>					
551	2	SAT	2	551	1102
<i>Total Calories burned for SAT: 1102</i>					
<i>Total Calories burned for Week: 6388</i>					

Easy Sport

List of Actions:

MWF:

Category	Pace	Activity-1hr	CalBurn	Category	Pace	Activity-1hr	CalBurn
Rec Center	Easy	Aerobics, low impact	465	Activity	Easy	Golf, walking and pulling clubs	400
Rec Center	Easy	Instructing aerobic class	558	Activity	Easy	Walking 2.5 mph	279
Rec Center	Easy	Teach physical education, exercise class	372	Activity	Easy	Sailing, competition	465

T/TH:

Category	Pace	Activity-1hr	CalBurn	Category	Pace	Activity-1hr	CalBurn
Activity	Steady	Orienteering	838	Sport	Steady	Tennis, singles	745
Activity	Steady	Skin diving, moderate	1163	Sport	Steady	Softball, pitching	558
Activity	Steady	Wallyball	651	Sport	Steady	Table tennis, ping pong	372

SAT:

Category	Pace	Activity-1hr	CalBurn
Sport	Easy	Football, touch, flag, general	745
Sport	Easy	Race walking	605
Sport	Easy	Track and field (shot, discus)	372

Activity Recommendation Plan: (hit the goal of 5000 calories burned per week)

	Activity	Hours	Days	Hours Per Week	Calories Burned Per Day	Calories Burned per Week
Easy RecCenter Easy Activity	Aerobics, low impact	1	MWF	3	465	1395
	Walking 2.5 mph	1	MWF	3	279	837
	<i>Total Calories burned for MWF: 2232</i>					
Steady Activity Steady Sport	Wallyball	1	T/TH	2	651	1302
	Softball, pitching	1	T/TH	2	558	1116
	<i>Total Calories burned for T/TH: 2418</i>					
Easy Sport	Track & Field (shot, discus)	2	SAT	2	372	744
<i>Total Calories burned for SAT: 744</i>						
<i>Total Calories burned for Week: 5394</i>						

Conclusion

As a result of analyzing the average caloric burn for each average weight group combination of category and the pace, it can be confirmed that the Sport category generally burns more calories than the Activities and the Rec Center categories. In addition, it was found that the higher the average weight, the more calories burned even with the same physical activity. And unlike what I thought, a faster pace didn't increase calorie burn.

Appendix

USE [Featherman_Analytics];

130lb Group

```
-- PIVOT statements to analyze the avg. 130lb caloric burn for each combination of category and pace
SELECT * FROM
(SELECT [Category],[CaloricBurn-130lber] as [130lb],[Pace]
FROM [featherman].[Exercise]
WHERE [Exercise?] = 1) AS Base130lbTable
PIVOT
(AVG([130lb]) FOR [Pace] IN ([Easy], [Steady], [Vigorous], [High Intensity])) AS Pivottable
-- Steady Activity
SELECT TOP 3 [Category],[Pace],[Activity-1hr],[CaloricBurn-130lber] as [CalBurn]
FROM [featherman].[Exercise]
WHERE [Exercise?] = 1 AND ([Category] = 'Activity' AND [Pace] = 'Steady') ORDER BY newid()
-- High Intensity Activity
SELECT TOP 3 [Category],[Pace],[Activity-1hr],[CaloricBurn-130lber] as [CalBurn]
FROM [featherman].[Exercise]
WHERE [Exercise?] = 1 AND ([Category] = 'Activity' AND [Pace] = 'High Intensity') ORDER BY newid()
-- Easy Sport
SELECT TOP 3 [Category],[Pace],[Activity-1hr],[CaloricBurn-130lber] as [CalBurn]
FROM [featherman].[Exercise]
WHERE [Exercise?] = 1 AND ([Category] = 'Sport' AND [Pace] = 'Easy') ORDER BY newid()
-- Steady Sport
SELECT TOP 3 [Category],[Pace],[Activity-1hr],[CaloricBurn-130lber] as [CalBurn]
FROM [featherman].[Exercise]
WHERE [Exercise?] = 1 AND ([Category] = 'Sport' AND [Pace] = 'Steady') ORDER BY newid()
-- Easy Rec Center
SELECT TOP 3 [Category],[Pace],[Activity-1hr],[CaloricBurn-130lber] as [CalBurn]
FROM [featherman].[Exercise]
WHERE [Exercise?] = 1 AND ([Category] = 'Rec Center' AND [Pace] = 'Easy') ORDER BY newid()
```

155lb Group

```
--PIVOT statements to analyze the avg. 155lb caloric burn for each combination of category and pace
SELECT * FROM
(SELECT [Category],[CaloricBurn-155lber] as [155lb],[Pace]
FROM [featherman].[Exercise]
WHERE [Exercise?] = 1) AS Base155lbTable
PIVOT
(AVG([155lb]) FOR [Pace] IN ([Easy], [Steady], [Vigorous], [High Intensity])) AS Pivottable
-- Easy Rec Center
SELECT TOP 3 [Category],[Pace],[Activity-1hr],[CaloricBurn-155lber] as [CalBurn]
FROM [featherman].[Exercise]
WHERE [Exercise?] = 1 AND ([Category] = 'Rec Center' AND [Pace] = 'Easy') ORDER BY newid()
-- Steady Sport
SELECT TOP 3 [Category],[Pace],[Activity-1hr],[CaloricBurn-155lber] as [CalBurn]
FROM [featherman].[Exercise]
WHERE [Exercise?] = 1 AND ([Category] = 'Sport' AND [Pace] = 'Steady') ORDER BY newid()
-- Easy Sport
SELECT TOP 3 [Category],[Pace],[Activity-1hr],[CaloricBurn-155lber] as [CalBurn]
FROM [featherman].[Exercise]
WHERE [Exercise?] = 1 AND ([Category] = 'Sport' AND [Pace] = 'Easy') ORDER BY newid()
-- Vigorous Sport
SELECT TOP 3 [Category],[Pace],[Activity-1hr],[CaloricBurn-155lber] as [CalBurn]
FROM [featherman].[Exercise]
WHERE [Exercise?] = 1 AND ([Category] = 'Sport' AND [Pace] = 'Vigorous') ORDER BY newid()
-- Easy Activity
SELECT TOP 3 [Category],[Pace],[Activity-1hr],[CaloricBurn-155lber] as [CalBurn]
FROM [featherman].[Exercise]
```

WHERE [Exercise?] = 1 AND ([Category] = 'Activity' AND [Pace] = 'Easy') ORDER BY newid()

180lb Group

-- PIVOT statements to analyze the avg. 180lb caloric burn for each combination of category and pace

SELECT * FROM

(SELECT [Category],[CaloricBurn-180lber] as [180lb],[Pace]

FROM [featherman].[Exercise]

WHERE [Exercise?] = 1) AS Base180lbTable

PIVOT

(AVG([180lb]) FOR [Pace] IN ([Easy], [Steady], [Vigorous], [High Intensity])) AS Pivottable

-- Easy Rec Center

SELECT TOP 3 [Category],[Pace],[Activity-1hr],[CaloricBurn-180lber] as [CalBurn]

FROM [featherman].[Exercise]

WHERE [Exercise?] = 1 AND ([Category] = 'Rec Center' AND [Pace] = 'Easy') ORDER BY newid()

-- Steady Sport

SELECT TOP 3 [Category],[Pace],[Activity-1hr],[CaloricBurn-180lber] as [CalBurn]

FROM [featherman].[Exercise]

WHERE [Exercise?] = 1 AND ([Category] = 'Activity' AND [Pace] = 'Easy') ORDER BY newid()

-- Easy Sport

SELECT TOP 3 [Category],[Pace],[Activity-1hr],[CaloricBurn-180lber] as [CalBurn]

FROM [featherman].[Exercise]

WHERE [Exercise?] = 1 AND ([Category] = 'Sport' AND [Pace] = 'Easy') ORDER BY newid()

-- Steady Activity

SELECT TOP 3 [Category],[Pace],[Activity-1hr],[CaloricBurn-180lber] as [CalBurn]

FROM [featherman].[Exercise]

WHERE [Exercise?] = 1 AND ([Category] = 'Sport' AND [Pace] = 'Steady') ORDER BY newid()

-- Easy Activity

SELECT TOP 3 [Category],[Pace],[Activity-1hr],[CaloricBurn-180lber] as [CalBurn]

FROM [featherman].[Exercise]

WHERE [Exercise?] = 1 AND ([Category] = 'Activity' AND [Pace] = 'Steady') ORDER BY newid()

205lb Group

-- PIVOT statements to analyze the avg. 205lb caloric burn for each combination of category and pace

SELECT * FROM

(SELECT [Category],[CaloricBurn-205lber] as [205lb],[Pace]

FROM [featherman].[Exercise]

WHERE [Exercise?] = 1) AS Base205lbTable

PIVOT

(AVG([205lb])

FOR [Pace] IN ([Easy], [Steady], [Vigorous], [High Intensity])) AS Pivottable

-- Easy Rec Center

SELECT TOP 3 [Category],[Pace],[Activity-1hr],[CaloricBurn-205lber] as [CalBurn]

FROM [featherman].[Exercise]

WHERE [Exercise?] = 1 AND ([Category] = 'Rec Center' AND [Pace] = 'Easy') ORDER BY newid()

-- Steady Sport

SELECT TOP 3 [Category],[Pace],[Activity-1hr],[CaloricBurn-205lber] as [CalBurn]

FROM [featherman].[Exercise]

WHERE [Exercise?] = 1 AND ([Category] = 'Activity' AND [Pace] = 'Easy') ORDER BY newid()

-- Easy Sport

SELECT TOP 3 [Category],[Pace],[Activity-1hr],[CaloricBurn-205lber] as [CalBurn]

FROM [featherman].[Exercise]

WHERE [Exercise?] = 1 AND ([Category] = 'Activity' AND [Pace] = 'Steady') ORDER BY newid()

-- Steady Activity

SELECT TOP 3 [Category],[Pace],[Activity-1hr],[CaloricBurn-205lber] as [CalBurn]

FROM [featherman].[Exercise]

WHERE [Exercise?] = 1 AND ([Category] = 'Sport' AND [Pace] = 'Steady') ORDER BY newid()

-- Easy Activity

SELECT TOP 3 [Category],[Pace],[Activity-1hr],[CaloricBurn-205lber] as [CalBurn]

FROM [featherman].[Exercise]

WHERE [Exercise?] = 1 AND ([Category] = 'Sport' AND [Pace] = 'Easy') ORDER BY newid()