

CHAPTER IV

RESULTS

1. Descriptive Analysis

There are 180 administrative staff workers at the Faculty of Engineering, Chulalongkorn University. Therefore 180 questionnaires were distributed by the administration. After three weeks only 77 questionnaires were submitted, of which 3 were missing a majority of the responses and were not used. Hence, there was a 42.77% overall response rate and a 41.11% useable response rate. The responses from these 74 questionnaires were used in data analysis.

Table 4.1: Percentage Distribution of Respondent by Socio-demographic Characteristics N=74

Socio-demographics	Grouping	Number	Percent
Age	20-29 years	20	27.0%
	30-39 years	15	20.3%
	40-49 years	24	32.4%
	50-59 years	14	18.9%
	Missing	1	1.4%
Mean=38.9 yrs	SD=10.4	Min=20	Max=59
Gender	Male	28	37.8%
	Female	45	60.8%
	Missing	1	1.4%
Education	M3(grades 7-9)	2	2.7%
	M6(grades 10-12)	1	1.4%
	Tech college	17	23.0%
	Undergraduate	48	64.9%
	Graduate+	6	8.1%
	Missing	0	0%
Income	5001- 10,000 TB	5	6.8%
	10,001-15,000 TB	19	25.7%
	15,001-20,000 TB	11	14.9%
	>20,000 TB	39	52.7%
	Missing	0	0%

Table 4.1 shows that the average age of the respondents was approximately 39 years old. The youngest respondent was 20 and the oldest respondent was 59. Female respondents were more common than males comprising 60.8% of all respondents. The majority of respondents have achieved an undergraduate degree, 64.9% and an additional 8.1% have achieved graduate level or higher. Lastly, the Table shows that most respondents have a monthly household income of over 20,000 Thai Baht, 52.7%.

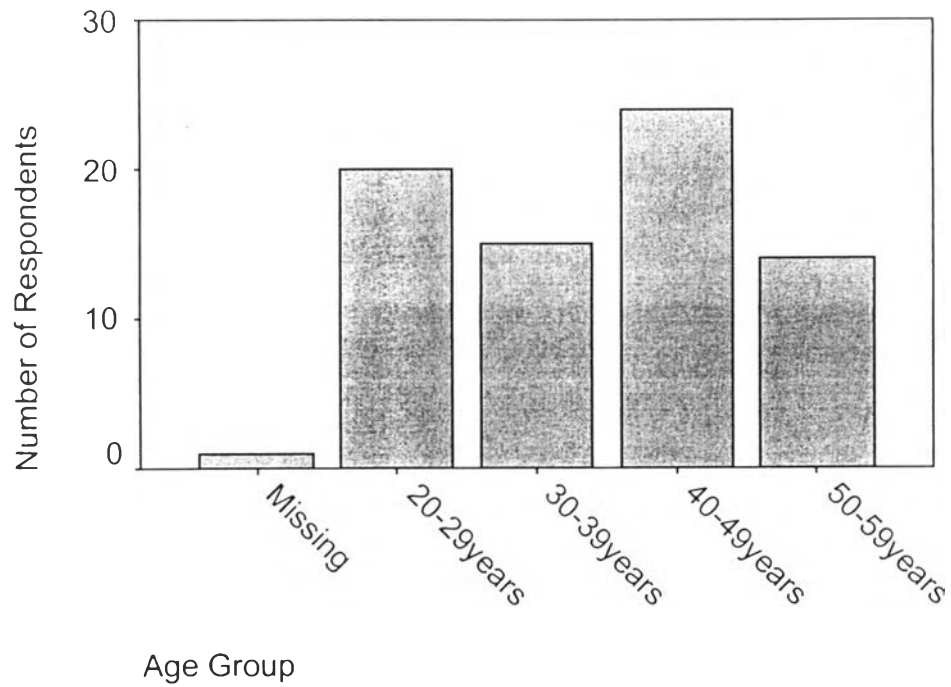


Figure 4.1: Bar Graph showing Respondent Age Distribution

Figure 4.1 shows that the majority of respondents (32.4%) fall between the ages of 40-49 years old.

Table 4.2: Percentage Distribution of Respondents by Exercise Characteristics

Exercise Characteristics	Grouping	Number		Percent
Physical limitation for exercise	Yes	20	N=74	27.0%
	No	50		67.6%
	Missing	4		5.4%
Number of exercise days per week	0	20	N=74	27.0%
	1-2	28		37.8%
	3-5	20		27.1%
	6-7	4		5.4%
	Missing	2		2.7%
Average duration of exercise	1-29 min	31	N=54	57.4%
	30-45 min	13		24.1%
	46+ min	10		18.5%
Reason for exercising	Physical health	39	N=54	72.2%
	Mental health	2		3.7%
	Appearance	4		7.4%
	Recreation	3		5.6%
	Other	4		7.4%
	Missing	2		3.7%
Type of exercise (Respondents can choose more than one)	Aerobics class	18	N=54	24.3%
	Running	17		23.0%
	Bicycling	8		10.8%
	Martial Arts	0		0%
	Weightlifting	1		1.4%
	Brisk Walking	21		28.4%
	Other	16		21.6%
Exercise intensity	Light/moderate	20	N=54	37.0%
	Moderate	19		35.2%
	Moderate/hard	12		22.2%
	Hard/extreme hard	1		1.9%
	Missing	2		3.7%
Exercise alone?	Yes	27	N=54	50.0%
	No	25		46.3%
	Missing	2		3.7%
Exercise location	Home	31	N=54	57.4%
	Gym/Club	4		7.4%
	Other	19		35.2%
Exercise history	<1 month	7	N=54	13.0%
	1 month- 1 year	22		40.7%
	>1 year	21		38.9%
	Missing	4		7.4%

>100%

Table 4.2 shows that 27.0% of respondents believe they have some kind of physical limitation that affects their ability to exercise. Also, 20 respondents or 27.0% don't participate in exercise, while a majority of exercisers participate in exercise between 1 and 2 days per week, 37.8%. A majority of exercisers (57.4%) participate in exercise for less than 30 minutes per session. The most common reason for respondents to participate in exercise is for improved physical health (52.7%), while the least common reason is for improved mental health (2.7%). The most popular type of exercise among respondents is brisk walking (28.4%), while the least popular is martial arts. The category "other" was composed of responses including football, yoga, badminton, tennis, ping-pong, and swimming. Most exercisers exercise at an intensity level of light/moderate (37.0%) or moderate (35.2%). Half (50.0%) of exercisers exercise alone. Most exercisers exercise at home (41.9%), while only 4 exercisers (5.4%) exercise at a gym or club. A large number of respondents say they exercise at a stadium (10 respondents, 18.5%) or at work (5 respondents, 9.3%). Lastly, 22 exercisers (40.7%) have been exercising for between 1 month and 1 year, while only 9.5% of exercisers have been participating in exercise for less than 1 month.

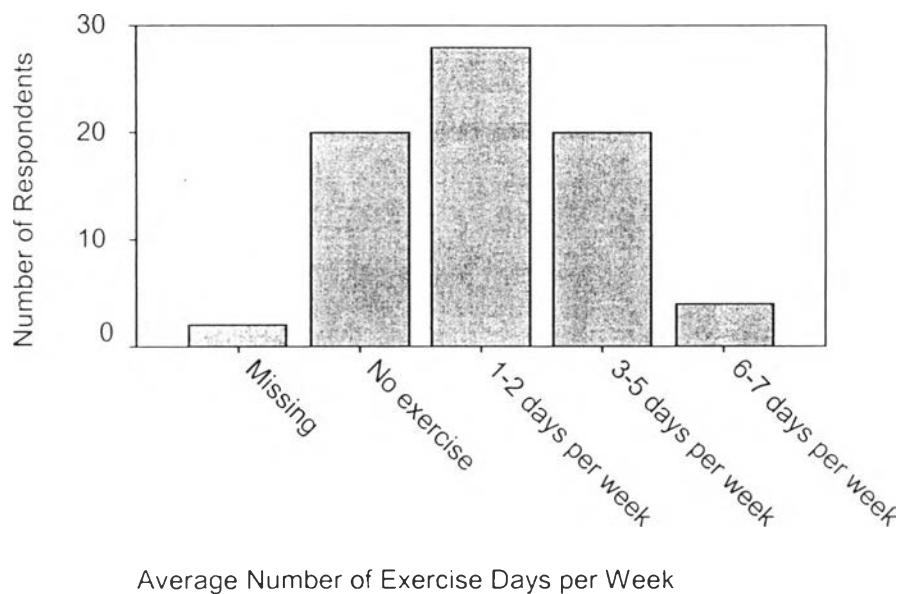


Figure 4.2: Bar Graph showing Average Exercise Frequency

Figure 4.2 shows that a majority of respondents exercise between 1-2 days per week, 37.8%.

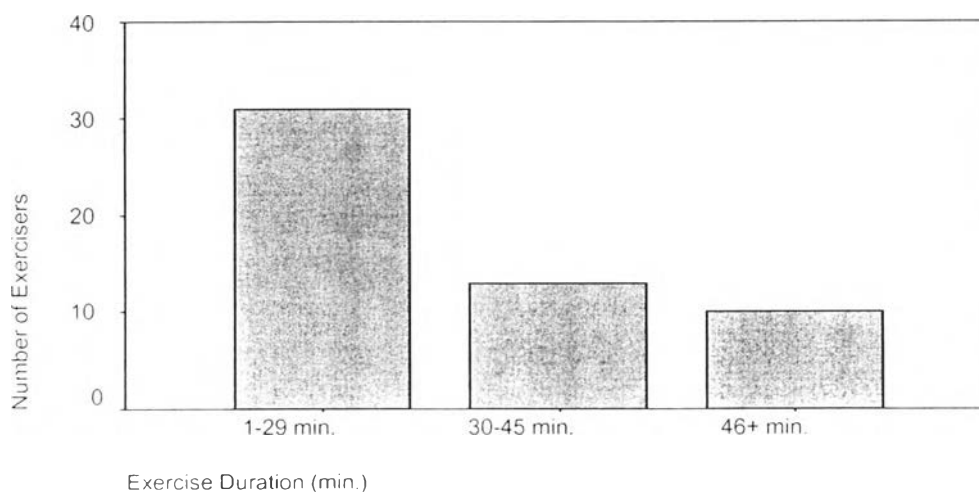


Figure 4.3: Bar Graph showing Average Exercise Duration

Figure 4.3 shows that a majority of exercisers exercise less than the ACSM recommended 30 minutes per session, 57.4%.

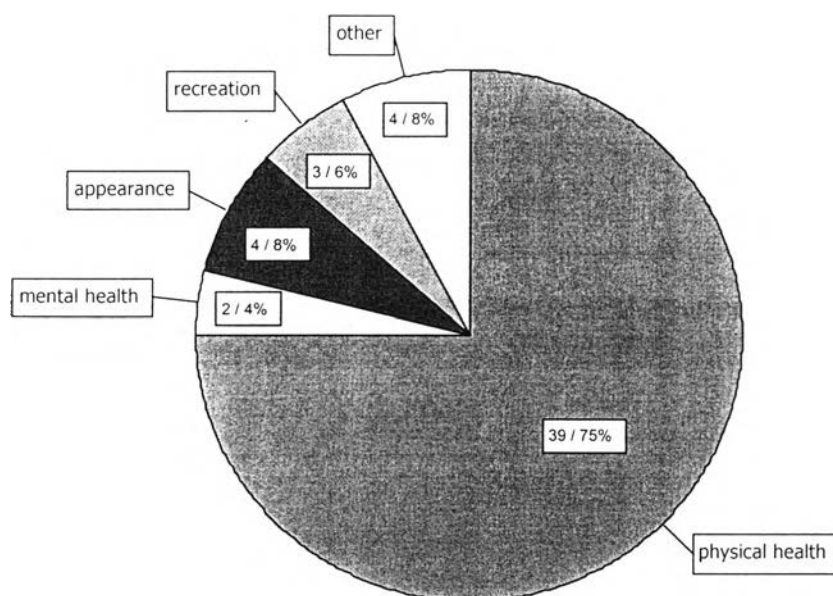


Figure 4.4: Pie Chart showing Respondents' Main Reasons for Exercising

Figure 4.4 shows that improvement of physical health is the overwhelming reason why most respondents participate in exercise.

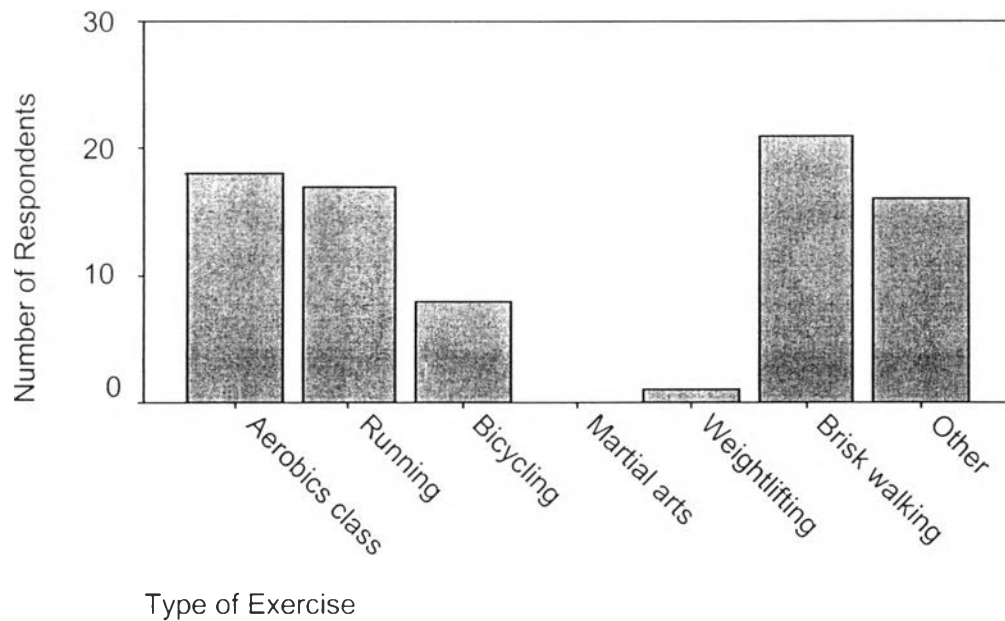


Figure 4.5: Bar Graph showing Exercise Type by Number of Exercisers

Figure 4.5 shows brisk walking as the most common form of exercise among respondents (21).

Table 4.3: Number and Percentage of Exercisers according to ACSM guidelines N=74

	Grouping	Number	Percentage
Exerciser (3+ times per week; 30+ min.)	Yes	8	10.8%
	No	66	89.2%

Table 4.3 shows that although 52 respondents claim to exercise regularly, only 8 of those meet international standards for regular exercise according to the American College of Sports Medicine (ACSM 2004). These guidelines suggest a minimum of 3 days of exercise per week at a minimum duration of 30 minutes per session.

Table 4.4: Mean, Median, Standard Deviation, Minimum, and Maximum of Global Self-Esteem and Physical Self-Esteem. N=74

Global SE, Physical SE	Mean	Median	Standard Deviation	Minimum	Maximum
Global Self-Esteem	25.9	25.0	4.2	19.0	36.0
Total Physical Self-Esteem	31.8	31.5	6.7	17.0	48.0
Competency Self-Esteem	7.5	8.0	2.1	3.0	12.0
Appearance Self-Esteem	8.0	8.0	2.3	4.0	12.0
Strength Self-Esteem	8.0	8.0	2.0	3.0	12.0
Endurance Self-Esteem	8.3	8.0	2.3	3.0	12.0

Table 4.4 shows a mean global self-esteem score of 25.9 (out of a possible range of 10-40) and a physical self-esteem score of 31.8 (out of a possible range of 12-48) among all respondents. Overall, respondents have the lowest self-esteem in physical competency at a mean of 7.5 and the highest self-esteem in physical endurance at a mean of 8.3

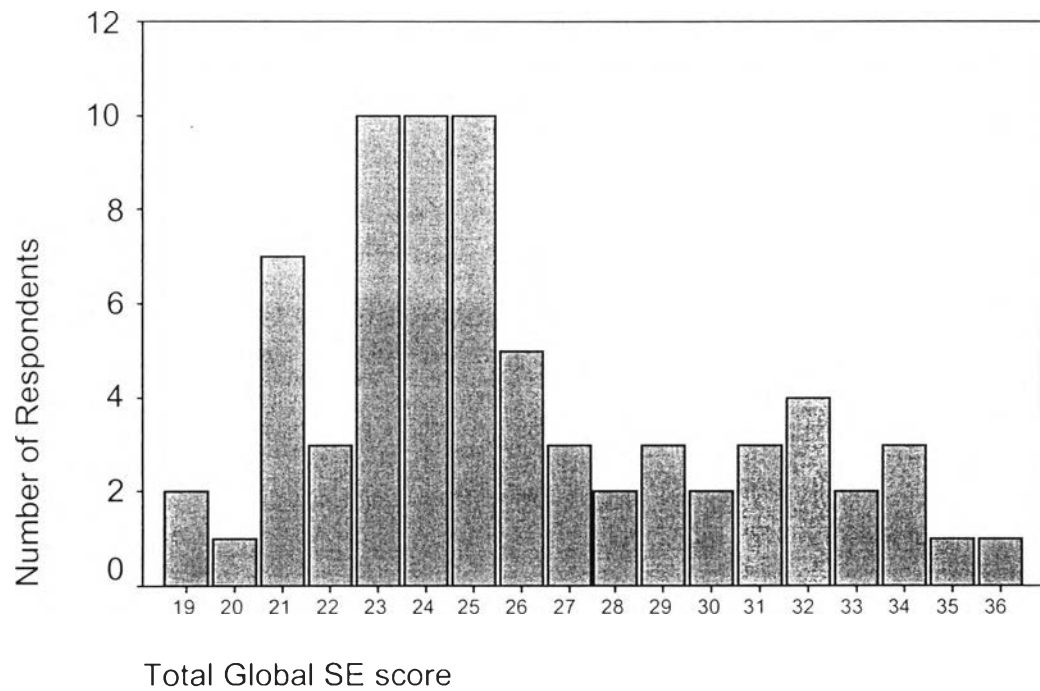


Figure 4.6: Bar Graph showing Distribution of Global Self-Esteem Scores

Figure 4.6 shows that 23.0-25.0 are the most frequently occurring scores for global self-esteem out of a possible range of 10-40.

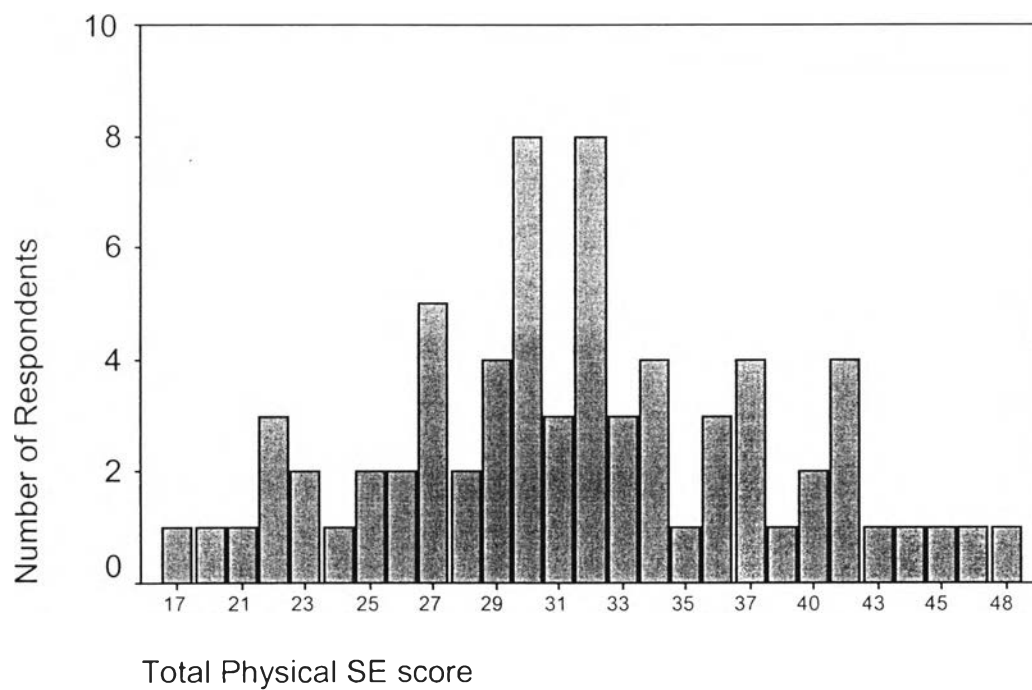


Figure 4.7: Bar Graph showing Distribution of Physical Self-Esteem Scores

Figure 4.7 shows that 30.0 and 32.0 are the most frequently occurring scores for physical self-esteem out of a possible range of 12-48.

Table 4.5: Percentage Distribution of Respondents by Importance of

Physical Characteristics		N=74	
Exercise Characteristic	Grouping	Number	Percent
Importance of Competency	Missing	3	4.1%
	Not at All	1	1.4%
	Very little	14	18.9%
	Somewhat	41	55.4%
	Very Important	15	20.3%
Mean= 2.96	SD= .686		
Importance of Appearance	Missing	2	2.7%
	Not at All	0	0%
	Very little	10	13.5%
	Somewhat	39	52.7%
	Very Important	23	31.1%
Mean= 3.18	SD= .657		
Importance of Strength	Missing	2	2.7%
	Not at All	0	0%
	Very little	8	10.8%
	Somewhat	35	47.3%
	Very Important	29	39.2%
Mean= 3.29	SD= .659		
Importance of Endurance	Missing	2	2.7%
	Not at All	0	0%
	Very little	9	12.2%
	Somewhat	38	51.4%
	Very Important	25	33.8%
Mean= 3.22	SD= .655		

Table 4.5 shows that the most common response for importance of each of the four physical characteristics is “somewhat important”. However, importance of physical competency has the lowest mean of the four at 2.96 and strength has the highest, 3.29.

2. Inferential Analysis (Bivariate)

2.1 Determinants

Age, gender, education level, household income, physical limitation, and physical characteristic importance were tested in association with several exercise characteristics, as well as self-esteem scores to identify any significant relationships.

Age

One-way ANOVA test was used to analyze the relationships between age group and exercise characteristics, importance of physical characteristics, and physical and global self-esteem scores. Due to a small number of respondents some variables had insufficient cases for analysis. These included exercise type, reason for exercise, exercise intensity, exercise alone status, exercise location, exercise history, and ACSM-defined exerciser. Analysis showed no significant relationships between age and any other tested variable.

Gender

Independent t-Test and Chi square tests were used to analyze the relationships between gender and exercise characteristics, importance of physical characteristics, and physical and global self-esteem scores. Due to a small number of respondents some variables had insufficient cases for analysis. These included reason for exercise, exercise intensity, exercise location, and exercise history. Significant relationships were observed between

gender and aerobics ($p = .003$), gender and running ($p = .002$), and gender and strength self-esteem score ($p = .040$).

Table 4.6: Gender and Aerobics Class Participation

Aerobics Class		Male	Female	Total	Pearson Chi Square Value	p value
No	count	21	14	35	9.00	.003
	% within aerobics	60.0%	40.0%	100.0%		
	% within gender	87.5%	48.3%	66.0%		
Yes	count	3	15	18		
	% within aerobics	16.7%	83.3%	100.0%		
	% within gender	12.5%	51.7%	34.0%		
Total	count	24	29	53		
	% within aerobics	45.3%	54.7%	100.0%		
	% within gender	100.0%	100.0%	100.0%		

Table 4.6 shows that more females participate in aerobics class than males $p = .003$.

Table 4.7: Gender and Running

Running		Male	Female	Total	Pearson Chi Square Value	p value
No	count	11	25	36	9.83	.002
	% within running	30.6%	69.4%	100.0%		
	% within gender	45.8%	86.2%	67.9%		
Yes	count	13	4	17		
	% within running	76.5%	23.5%	100.0%		
	% within gender	54.2%	13.8%	32.1%		
Total	count	24	29	53		
	% within running	45.3%	54.7%	100.0%		
	% within gender	100.0%	100.0%	100.0%		

Table 4.7 shows more males are involved in running than females $p = .002$.

Table 4.8: Gender and Strength Self-Esteem Score

		N (%)	Mean	Std. Deviation	Std. Error Mean	t value	p value	Mean difference
Gender								
Strength SE Score	Male	27(37%)	8.59	1.67	.321	2.09	.040	.979
	Female	44(63%)	7.61	2.05	.309			

Table 4.8 shows that males have higher strength self-esteem scores than females $p = .040$ within a 95% Confidence Interval of 4.52E-02 and 1.91.

Education

Education level was analyzed with exercise characteristics, importance of physical characteristics, and physical and global self-esteem. Due to a dearth of cases in some of the education categories, it was necessary to group the no education, primary education, M-3, M-6, and technical college respondents into a category entitled "non-university graduate." Respondents in the undergraduate and graduate+ were placed into a category entitled "university graduate." By condensing seven categories into two, analysis was able to proceed with a sufficient number of cases per category. The division seemed the most logical based on academic load, as well as the best possible solution to get enough cases into each new category for analysis. However, even after re-grouping, some variables still had insufficient cases for analysis. These included reason for exercise, exercise intensity, exercise location, and exercise history. Analysis of the variables revealed only one significant relationship between education and strength self-esteem score ($p = .050$).

Table 4.9: Education Level and Strength Self-Esteem Score

Education level		N (%)	Mean	Std. Deviation	Std. Error Mean	t value	p value	Mean difference
Str. SE Score	non-university	18(24.7)	8.78	1.63	.384	1.99	.050	1.04
	university+	54(74.0)	7.74	1.99	.271			

Table 4.9 shows non-university graduates have higher strength self-esteem scores than university graduates $p=.050$ within a 95% Confidence Interval of 2.42E-05 and 2.07.

Income

Household income was analyzed with exercise characteristics, importance of physical characteristics, and physical and global self-esteem score using Independent T-Test and Chi square. Due to a dearth of cases in some categories the respondents who chose "< 5,000", "5,001-10,000", "10,001-15,000", and "15,001-20,000" Baht per month were categorized as "less than or =20,000b" and those in the ">20,000" Baht category remained as ">20,000b." These two new categories were chosen in an attempt to obtain two groups with relatively equal number of cases. However, even after re-grouping some variables still had insufficient cases for analysis. These included reason for exercise, exercise intensity, exercise location, exercise history, and ACSM-defined exerciser. Analysis revealed only one significant relationship between income and competency self-esteem score ($p= .031$).

Table 4.10: Household Income and Competency Self-Esteem Score

Household Income		N (%)	Mean	Std. Deviation	Std. Error Mean	t value	p value	Mean difference
Comp. SE Score	<20,000	34(46.6)	8.06	1.65	.283	2.21	.031	1.06
	>=20,000	38(52.1)	7.00	2.38	.387			

Table 4.10 shows respondents with a household income under 20,000 Baht a month have higher competency self-esteem scores than those that have a household income of equal to or greater than 20,000 Baht per month $p = .031$ within a 95% Confidence Interval of .102 and 2.02.

Physical Limitation

The status of a respondent in having or not having a physical limitation that would prevent exercise was analyzed with exercise characteristics, importance of physical characteristics, and physical and global self-esteem using Independent t-Test and Chi-square test. Due to a small number of respondents some variables had insufficient cases for analysis. These included reason for exercise, exercise intensity, exercise location, exercise history, and ACSM-defined exerciser. Analysis showed no significant relationships between physical limitation and other tested variables.

Importance of Physical Characteristics

Using Pearson Bivariate correlation, the relationships between total physical characteristic importance and exercise frequency and duration were analyzed. This was done assuming that importance of physical characteristics may impact a person's motivation to participate in exercise. Neither relationship, however, revealed a statistically significant correlation ($p=.246$ and $p=.968$ respectively).

2.2 Total Physical Self-Esteem Score

Several analysis tests were used to examine the relationships between selected exercise characteristics and physical self-esteem score. Analysis revealed only one significant relationship between physical self-esteem score and exercise intensity ($p= .020$).

Table 4.11: Physical Self-Esteem Score and Exercise Intensity

	Sum of Squares	Df	Mean Square	f value	p value
Between Groups	394.0	3	131.3		
Within Groups	1626.5	45	36.1	3.634	.020
Total	2020.5	48			

Table 4.11 shows that the relationship between exercise intensity and physical self-esteem score is significant at $p= .020$.

2.3 Physical Self-esteem Component Scores

Physical self-esteem component scores were analyzed in relation to exercise characteristics using Pearson's bivariate correlation, one-way ANOVA, and independent t-test. Analysis revealed three significant relationships between exercise frequency and appearance self-esteem score ($p=.042$), exercise intensity and competency self-esteem score ($p=.006$), and exercise alone status and competency self-esteem score ($p=.002$).

Table 4.12: Exercise Frequency and Appearance Self-Esteem Score

	N	Mean	Std. Deviation	Pearson Correlation Value	p value
Number of Exercise days/week	72	2.07	1.95		
Appearance self-esteem score	72	8.01	2.29	.243	.042

Table 4.12 shows a significant correlation between exercise frequency and appearance self-esteem score $p= .042$. The positive correlation shows that as exercise frequency increases so does appearance self-esteem score.

Table 4.13: Exercise Intensity and Competency Self-Esteem Score

	Sum of Squares	Df	Mean Square	f value	p value
Between Groups	51.7	3	17.2		
Within Groups	170.6	46	3.7	4.64	.006
Total	222.4	49			

Table 4.13 shows a significant relationship between exercise intensity and competency self-esteem score $p = .006$.

Table 4.14: Exercise Alone and Competency Self-Esteem Score

	Exercise Alone Status	N	Mean	Std. Deviation	Std. Error Mean	t value	p value	Mean difference
Comp. SE Score	Not Alone	24	8.54	2.00	.408	3.28	.002	1.85
	Alone	26	6.69	1.98	.387			

Table 4.14 shows that those who exercise with others have higher competency self-esteem scores than those that exercise alone $p = .002$ within a 95% Confidence Interval of .718 and 2.98.

2.4 Global Self-esteem score

Relationships between exercise characteristics and global self-esteem score were examined using Pearson's bivariate correlation, one-way ANOVA, and independent t-test. Insufficient cases prevented analysis in relation to reason for exercise and exercise location. No significant relationships were revealed between tested exercise characteristics and global self-esteem score.

2.5 Physical self-esteem/Importance/Global self-esteem

Possible correlations between the importance placed on a physical characteristic and one's own self-esteem in relation to that characteristic were tested using Pearson Bivariate correlation. Total physical self-esteem score and total global self-esteem score were also analyzed using the same test.

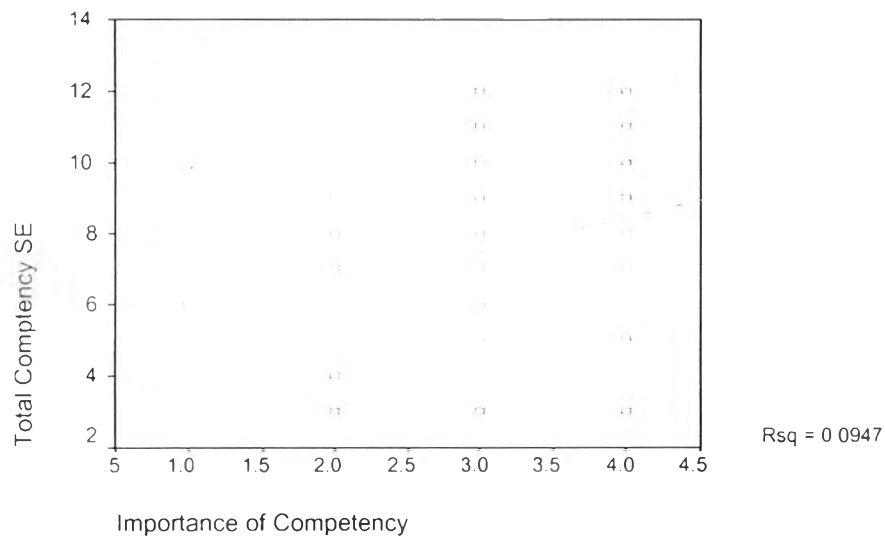


Figure 4.8: Scatter Graph showing Importance of Competency by Total Competency Self-Esteem Score

Figure 4.8 shows the correlation between importance of competency and total competency self-esteem score, $p=.010$, Pearson value= $.308$ at a 95% confidence interval.

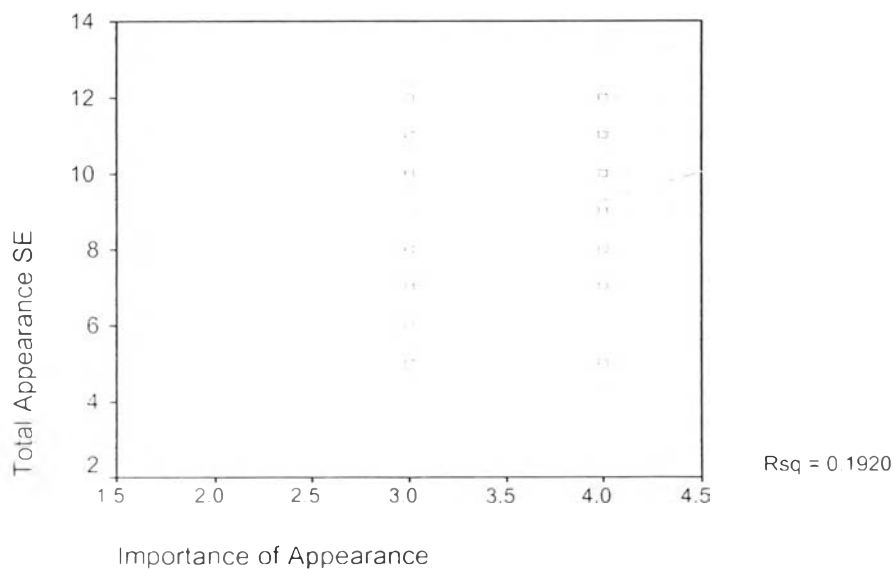


Figure 4.9: Scatter Graph showing Importance of Appearance by Total Appearance Self-Esteem Score

Figure 4.9 shows the correlation between importance of appearance and total appearance self-esteem score, $p=.000$, Pearson value=.438 at a 95% confidence interval.

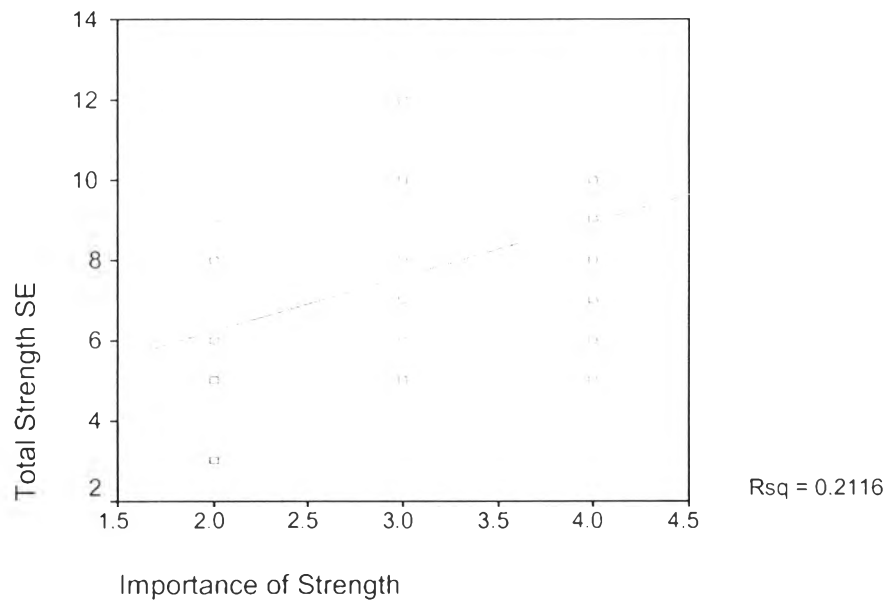


Figure 4.10: Scatter Graph showing Importance of Strength by Total Strength Self-Esteem Score

Figure 4.10 shows the correlation between importance of strength and total strength self-esteem score, $p=.000$, Pearson value=.460 at a 95% confidence interval.

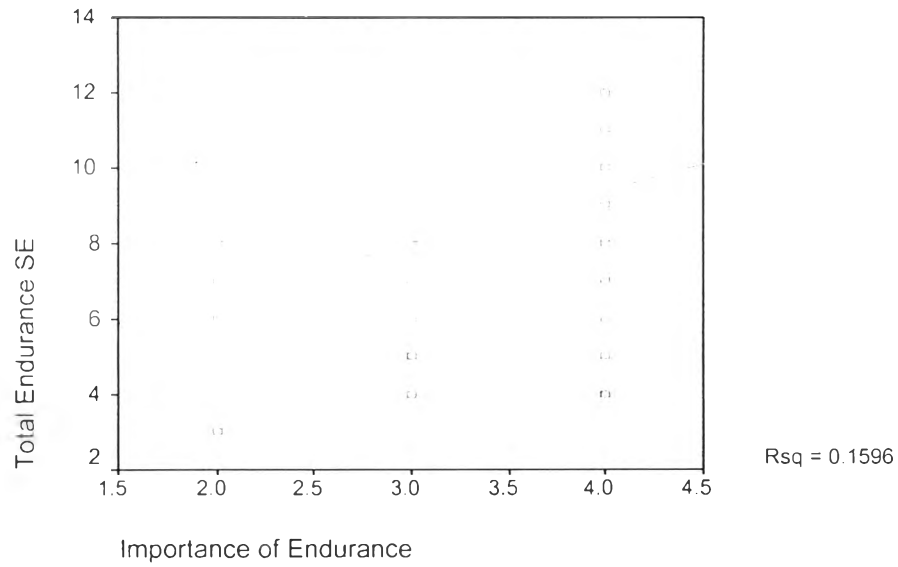


Figure 4.11: Scatter Graph showing Importance of Endurance by Total Endurance Self-Esteem Score

Figure 4.11 shows the correlation between importance of endurance and total endurance self-esteem score, $p=.001$, Pearson value=.399 at a 95% confidence interval.

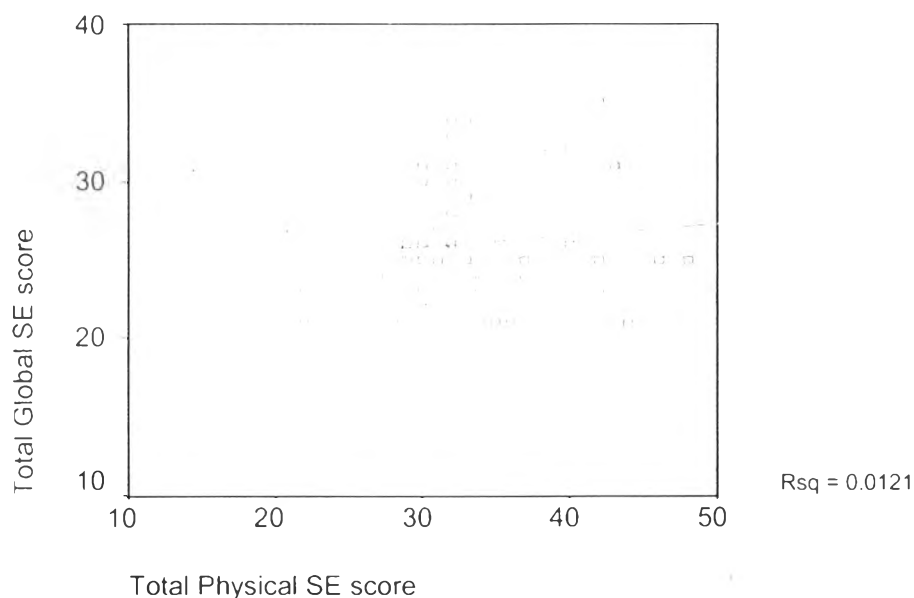


Figure 4.12: Scatter Graph showing Total Physical Self-Esteem Score by Total Global Self-Esteem Score

Figure 4.12 shows total physical self-esteem score and total global self-esteem score. Pearson bi-variate correlation revealed no statistically significant relationship, $p = .368$, Pearson value = .110.

3. Inferential Analysis (Multivariate)

Lastly, a linear regression was run using global self-esteem score as the dependent variable and total importance of physical self (by adding all importance scores for each component) and total physical self-esteem score as the independent variables. The result revealed no statistically significant relationship between the three, $p = .636$, $f = .456$.