The Effects of Yoga Participation on Self Perception and Well Being in Males and Females

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Author Note

This research report summarizes a semester-length student assignment in a *Research Methods* course. The report depicts a purely hypothetical investigation by the author that was not actually conducted. The instructor for the course, William Breland, Ph.D, has simulated the data without regard for any particular student's hypothesis. Therefore, the results should not be thought to characterize a true test of the theoretical relationships expressed by the author. Furthermore, the 3x2 factorial design that is found in the report is a constraint that has been imposed on the author by the instructor – the design is not necessarily one that the student would propose of her/his own volition.

Abstract:

This study addresses the effects of three levels of yoga participation on randomly selected males and females. Participants were selected based on results of survey measures and prescreened to eliminate those at extreme ends of general mental health questionnaires and prior yoga involvement measures. Selected participants were randomly assigned to: the control group, practicing yoga three times a week, or practicing yoga four times a week with biweekly philosophic discussions. The Body Awareness Questionnaire and the Subjective Well Being Scale are employed in 10 week intervals to measure self perception and well being. Main effects were found for yoga participation on self perception and well being but not for gender. Significant interactions between yoga participation and gender, as well as both constructs on self perception and well being were also found.

The Effects of Yoga Participation on Self Perception and Well Being in Males and Females

The therapeutic effects of yoga treatment have a broad range of applications and implications. Interventions performed on participants of different backgrounds have shown substantial positive effects and influences. Yoga affects individuals on a case by case basis, the effects of practice vary with the needs of different individuals, from those seeking quality of life as they age to those who are severely mentally and emotionally disturbed. For example, studies comparing older individuals engaging in yoga and socialization exercises suggest similar benefits in overall mental functioning and well being in physical tasks (Wang, 2009). Research has even broadened internationally to show positive results for survivors of catastrophic natural disasters. After surviving the 2004 South East Asia tsunami, participants diagnosed with PTSD and depression had conditions so severe that they were incapable to re inhabit there old homes near the ocean. After 6 weeks of yogic breathing interventions, participants showed vast decreases in there symptoms and by the end of treatment some were able to return to there homes (Descilo et al., 2010)

Yoga therapy involves being aware of ones physical and mental state simultaneously. The practice engages poses with proper breathing techniques throughout the practice. These techniques aim to focus the yogi to encourage absorbing each posture one step at a time. As described by Weintraub, Mamtani, and Micozzi (2008) the word “yoga” originates from a Sanskrit word *yug* meaning to join. More formally, the definition furthers into describing the practice of joining the lower human nature to the higher for allowed facilitation of self awareness and attainment of a state of enlightenment. The mind body technique involves the combination

of: breath control, physical and meditation to promote increased physical, social and spiritual well being.

Yoga intervention has also shown to be beneficial in helping females with body image dissatisfactions and eating disorders. Yoga adds to the common cognitive behavioral therapy approaches by increasing attention to body awareness which is efficacious in improving mood and psychological functioning in those suffering from detrimental body disorders. (Dale et al., 2009) The increased self awareness correlates to mindfulness and consciousness in a range of contexts. For example, yoga has shown to significantly increase overall mindfulness in: attention to the present moment, accepting and open attitudes toward experiences, and insightful understanding. All these variables factor into increased awareness and positive feelings possibly correlating successful yoga therapy as a preventive measure for negative mental and emotional mood states. (Shelov, Suchday, Friedberg. 2009)

The purpose of this study is to assess the impacts of yoga therapy on dependent variables of self perception and well being. Quasi experimental gender groups of males and females are randomly assigned to one of three levels of the independent variable of yoga participation. Consecutively: the control group receives a placebo condition, group two practices yoga three times a week, and group three practices yoga four times a week as well as attending biweekly yogic philosophical discussions. Statistically significant main effects are expected for the independent variable of yoga participation and the quasi experimental variable of gender. Within the independent variables, significant main effects are hypothesized for yoga four times a week with biweekly philosophic discussions, followed by yoga three times a week and lastly the least significant results for the control group. These results are hypothesized to be found in that order

for dependent variables of self perception and well being. Within males, greater interactions and significantly greater results are expected for yoga participation on self perception compared to females. Subsequently, for females, greater interactions are expected on well being compared to males. While adding to the body of knowledge about yoga interventions, this study addresses the differences between men and women in various exercise groups. This relevance may provide information about exercise routines and practices that may be more beneficial for different genders.

Controlling for covariates is necessary to account for varying differences that may affect results in the participants. Stress can affect yoga participation results for both quasi experimental subjects (males and females). Those under greater amounts of stress may face bigger obstacles in levels two and three of the independent variable of yoga participation. Diet and nutrition also can influence results seen in yoga participation. For both genders, those with better diets may be more inclined to have better results in self perception and well being than those whose diets are not as nutritionally beneficial. Lastly, overall different physical fitness levels can influence the independent variable of yoga participation on all three levels for both quasi experimental gender groups. Controlling for these covariates equivocates varying groups and minimizes external influences that make affect reliability and validity.

Methods

Participants

Forty men and women sampled were staff, or student (undergraduate or graduate) from the University of Southern California and UCLA campuses. These participants were contacted by

mass emails forwarded through advisors from various majors included to reduce bias from certain groups (African American Studies, Math, Psychology, Biology, Engineering, Cinematic Arts, East Asian Studies, Fashion Design, Zoology, Political Science and International Relations). Sampled participants varied in ages, there was no discrimination between older and younger participants in order to better account for external validity of broadening results to the surrounding area rather than just the college campus. 27 of participants were female, age 20-35 years old (mean age=24.3 +/- 3.7 years), 13 were male age 21-33 years old (mean age= 23.2 +/- 2.8 years). Subjects were mainly European Caucasian (80%) and of South East Asian decent (20%). Methods of selecting participants included specific results on measured pretest scores: low on prior yoga knowledge/involvement and high on measures of physical activity participation or motivation towards physical activity

Materials

Surveys designed through Qualtrics were used to assess interest in the yogic philosophical discipline. All information collected through online surveys randomized questions for each participant. They were primarily composed of questions with multiple choice responses anchored by a neutral response. Willingness to participate in yoga/prior knowledge of yoga was assessed through a specific pool of questions personally created to be given in combination with the Physical Activity Readiness Questionnaire and Profile of Mood States Questionnaire. Reliability and validity of my pool of questions will be accounted for by pilot groups consisting of various yoga instructors and professionals who have completed necessary teacher training and are knowledgeable in the discipline. These measures served as prescreening tools designed to

recruit a fairly cohesive and equivalent group of subjects who had limited prior knowledge and experience within yoga and motivated readiness to participate in physical fitness.

To assess the dependent variable of self-perception, the Body Awareness Questionnaire will be implemented in a series of three intervals: before exposing participants to experimental tasks, 10 weeks after this point in the middle of the experiment, and then after another 10 weeks at the end of the experiment. The same time course will be used for addressing the second dependent variable of well-being through The Subjective Well Being Scale. Both variables are expected to show a positive distribution after being manipulated by the independent variable of yoga participation.

Generalized mental health tests including: The Beck Depression Survey and the General Ability Measure for Adults (GAMA) are performed after determining which participants adhere to the criteria of low prior yoga involvement knowledge and high physical activity motivation to further select and ensure participants are equal in there mental health functioning and capabilities. These series of questionnaires will give a broader understanding of each individual and responses to goals set forth by the hypothesis to falsify or correctly attribute dependent variables of self-perception and well-being to independent variables of gender and yoga participation.

Procedure

Eligible participants are randomly assigned to groups through SPSS: the control group (G1) of limited weekly ambiguous physical activity, group two (G2) of yoga practice three times a week, or group three (G3) of yoga practice three times a week and biweekly discussions/ lectures on the philosophical structure surrounding the practice of yoga. A placebo type condition

was carried out in the control group who are given directions to meet twice a week at different locations to perform various non-strenuous physical activities. Activities vary from spending half an hour picking up trash on a beach to half an hour of tai chi. The overall goal of the control group is to put them through activities that are not strenuous or mentally taxing, aimed at resembling all the physical activity that people do on a daily basis but are unconscious of classifying as physical activity (i.e. parking your car and walking to classroom/work) no aspects of controlling external noise or influences will be made (i.e. performing exercises in a quite environment). Group two will be instructed to meet with a certified yoga instructor three times a week for hour and a half classes. Participants will be explained that the main goal of the practice is to be true to your own body and to stretch at your own pace. Classes will be led by an instructor with assistants or other instructors present during the classes to help observe and align participants into the right postures to better ensure that everyone receives the same amount of attention from an expert. Group three will be instructed to meet four times a week like the second group and under the same instructor format. This group (G3) will also be instructed to attend biweekly discussions to learn about the disciplines history, vocabulary and philosophical components. These sessions will be led by yoga instructors with specialized knowledge. They will also include various lectures from different yoga instructors with knowledge in different areas. Highly recognized yogic icons will also be brought in to speak and give lectures. Participants are encouraged to approach this as an active learning experience. There will be no formal tests or expectation to memorize information, rather it is intended as a learning experience that will hopefully increase curiosity about the discipline and make the experience

more rewarding. Correlational studies will be performed on participants from beginning to end through MANCOVA measures.

Results

A 3 X 2 multivariate analysis of covariance (MANCOVA) was conducted to determine the effect of three levels of yoga participation (group one: the control group which only received bi weekly physical activities made to simulate unconscious physical activity such as walking to an office. Group two: yoga participation three times a week for an hour and a half, and Group three: yoga participation four times a week for an hour and a half as well as philosophical discussions twice a week) and gender (male and female) on two dependent variables**,** self perception and well being. Significant differences were found among yoga participation levels on the two dependent measures, Wilks λ =.856, F(4,580)=11.69, p<.001. Significant differences were also found for the interaction of yoga participation levels with gender on both dependent measures, Wilks λ =.872, F(4,580)=10.29, p<.001 . Tables 2 and 3 presents the means and standard deviations of the dependent variables for the six, yoga participation-level by gender groups.

Analyses of covariance (ANCOVA) for each dependent variable were conducted as follow-up tests to the MANCOVA and specific group comparisons were executed using the Bonferroni method for adjusting alpha to control for Type I errors in multiple comparisons. The ANCOVA regarding yoga participation level effects on self perception was significant, $F(2,291) =4.20$, $p=.016$. The ANCOVA regarding yoga participation level effects on well being was significant, $F(2,291)=19.71$, $p<.001$. The ANCOVA regarding the yoga participation by gender effects on self perception was significant, $F(2,291)=8.07$, $p<.001$. And finally, the ANCOVA

regarding the yoga participation by gender interaction effects on well being was significant, $F(2,291)=12.71$, $p<.001$. There were no significant main effects of gender in evidence in regards to either self perception or well being ($p > .05$). Table 1 presents the MANCOVA and ANCOVA results.

Post hoc analyses to determine the effects of the interaction were conducted by examining the Bonferroni adjusted confidence intervals. Table 4 presents the different groups with the obtained 95% confidence intervals around their means.

With respect to self perception: Whereas there were no differences in self perception scores exhibited by females whether taking part in control group one, group two yoga three times a week, or group three yoga four times a week and philosophical discussion of yoga participation**,** males obtained significantly higher levels of self perception than females when engaging in yoga practice three times a week in terms of the amount of yoga participation as compared to when partaking in either group one the control or group three yoga four times a week with twice a week philosophical discussions (95%CI from 3.81 to 5.15 for yoga three times a week vs. 95%CI from 1.71 to 3.06 for yoga four times a week as well as philosophical discussions and 95%CI from 2.05 to 3.39 for the control group). Figure 1 provides a graphical representation of the interaction, and Table 2 presents the means and standard deviations of self perception scores for the six, yoga participation**-**level by gender, groups.

With respect to well being: Whereas there were no differences in well being scores exhibited by females whether taking part in the control group, yoga three times a week, or yoga four times a week and twice a week philosophical discussions of yoga participation**,** males obtained significantly higher levels of well being when engaging in control group as compared to

either yoga participation group: yoga three times a week or yoga four times a week with twice a week philosophical discussions (95%CI from 2.08 to 3.84 for control group vs. 95%CI from -0.50 to 1.26 for yoga three times a week and 95%CI from -2.78 to -1.01 for yoga four times a week and philosophical discussions). Yoga three times a week also had significantly higher scores on well being relative to yoga participation four times a week and philosophical discussions twice a week, forming a linear relationship among the three levels. Figure 2 provides a graphical representation of the interaction, and Table 3 presents the means and standard deviations of well being scores for the six, yoga participation -level by gender, groups.

Discussion

The goal of this study was to examine the effects of yoga participation on self perception and well being. Participants were randomly assigned to one of three levels: the control group, yoga three times a week, and yoga four times a week along with a simultaneous yogic philosophical discussion twice a week. MANCOVA results indicated a significant main effect of yoga participation, as expected. MANCOVA results also indicated a non significant main effect of the quasi experimental variable of gender, and a significant interaction between yoga participation and gender. ANCOVA results indicated significant main effects of yoga participation on self perception and well being, as well as significant interactions between yoga participation and gender on self perception and well being.

Main effects for the dependent variable of self perception showed that yoga participation three times a week is not significantly greater than yoga participation four times a week with biweekly philosophic discussions. Yoga four times a week with biweekly philosophic discussions also showed greater statistical significant compared to the control group. Within males, yoga

participation three times a week was significantly greater than the control group, also yoga participation four times a week with biweekly philosophical discussions was significantly greater than yoga practice three times a week. Contrary to what was hypothesized, yoga participation four times a week was not significantly greater than the control group. None of the yoga treatments within self perception were statistically significant for the quasi experimental variable: females.

For the dependent variable of well being, main effects followed greater values of yoga three times a week than the control group. Yoga four times a week with biweekly philosophic discussions was surprisingly not significantly greater than yoga three times a week, although yoga four times a week with biweekly philosophic discussions did show statistical significance over the control group. Within males: yoga participation three times a week was significantly greater than the control group and yoga four times a week with biweekly philosophical discussions was greater than yoga three times a week. Yoga four times a week with biweekly philosophic discussions was also significantly greater than the control group. No levels of yoga treatment showed any effect on females.

Inconsistencies in results were found for the dependent variable of self perception with yoga twice a week showing results that were not greater than the control group as well as within males, yoga participation four times a week was not significantly greater than the control group. Various reasons may account for these discrepancies, previous studies have explored the effect of self efficacy and exercise. The expectations within efficacy can be described as the individuals beliefs in his or her capabilities to perform necessary actions to assuage situational demands theorized to influence activities performed by individuals. For example, the effort expended on

such activities and the degree of persistence displayed in failure situations and subsequent aversive stimuli. (McAuley, Kerry, David & Kurt, 1994) Perceived self efficacy plays a vital role in self management because it affects actions as well as cognitive, motivational, decisional, and affective determinants. Efficacy beliefs influence self regulative standards in terms of whether people think in an enabling or debilitating manner, how much effort is placed in endeavors as well as decisional points set forth in life paths. (Bandura, Caprara, Barbaranelli, Gerbino, Pastorelli, 2003) Self perception scores for greater amounts of yoga may have been affected by self efficacy and made the experience less enjoyable if participants were not able to mentally disengage themselves of whether they were succeeding or failing rather than just practicing yoga and getting in touch with there mind and body. Since the role played by efficacy cognition's in maintaining exercise participation is greater than circumstantial and situational variables, these results might be attributed to low efficacy. Primarily considering that efficacy predicts exercise adherence and participation, those suffering from lower efficacy may have been impacted more greatly from the increased intensity in yoga sessions from groups two and three.

Surprising results were also found for the second dependent variable of well being on yoga participation four times a week with biweekly philosophic discussions not showing significant results compared to yoga three times a week. Interaction results were consistent with what was hypothesized, but these main effect discrepancies can be explained with literature explaining the aversive effects of too much physical fitness on health and well being. Studies addressing participants who either under-exercise or overexercise typically conclude that those participants fail to achieve there desired goals. Also, participants who tend to overestimate there heart rate after exercising tend to underperform or deviate from what there intended goals were.

(Craig, Ewart, Kerry, Stewart, Ronald et al, 1986) This might influence results about less yoga being more beneficial than more yoga. The greater amount of yoga may have pushed the boundaries for normal heart rate range for some participants influencing how they felt and well being. Practicing yoga three times a week might be more beneficial and less anatomically taxing than practicing yoga four times a week with biweekly philosophic discussion, the later could be too cognitively and physically taxing reflected in results.

Limitations of this study were as follows: the biggest difficulties were making sure participants came to there yoga sessions and had a similar availability during the week as well as be willing/able to come multiple times during a week for twelve consecutive weeks. Subject schedules frequently changed and therapy sessions had to be somewhat flexible. Differences during when subjects participated in yoga varied and instructors reported lower energy levels when participants practiced yoga in the evening and then after a day, in the morning. Strengths of this study were found in its content, participants were not hesitant to engage in practicing yoga multiple times during the week. This study is important because of its strong external validity. Participants were selected under conditions that could be generalized to the American population at large, primarily with little physical activity incorporation. The study also has the possibility to overlap to other international populations. Participants didn't have to have any prior expertise and could still have a relatively easy time adjusting to yoga. Although there were discrepancies for well being participants showed increased self perception and overall seemed to find it to be an enjoyable experience.

This study provides the basis for future studies about yoga participation and gender differences. Different levels of yoga participation could be given to men and women to assess

whether there may be some influences that could affect statistical significance with females. Other studies manipulating the levels of yoga or just the temporal sequence of rather than yoga participation and philosophic discussion have one preceding the other and examining. Findings could also influence studies with a different population, possibly a more experienced yoga sample to determine whether self perception and well being differences can be seen in subjects who have more expertise with the material.

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Tables

Table 1.

Summary statistics of the Multivariate Analysis of Covariance (MANCOVA) and Analysis of Covariance (ANCOVA) for the effects of yoga participation on self perception and well being

	MANCOVA				ANCOVA			
Variable	Wilks λ	F	df	p	MSe	F	df	p
Multivariate								
Yoga Participation	.856	11.69	4, 580	<.001				
Gender	.997		2,290	<.70				
Yoga Participation x Gender	.872	.376 10.29	4,580	<.001				
Self Perception								
Yoga Participation					5.84	4.20	2, 291	.02
Gender					5.84	.50	1, 291	.48
Yoga Participation x Gender					5.84	8.07	2,291	<.001
Well Being								
Yoga Participation					10.06	19.7	2,291	.00
Gender					10.06	.16	1,291	.69
Yoga Participation x Gender					10.06	12.71	2,291	.00

Table 2.

Summary means and standard deviations for Self Perception across Yoga Participation and Gender conditions.

Gender vs. Yoga Participation Totals	Gender at Yoga Participation Totals		Means	Standard Deviations
Male Total			3.19	2.95
Female Total			3.39	2.11
YP-Group 1 Total			3.29	2.23
	Male at YP-Group 1		2.72	1.77
	Female at YP-Group 1		3.86	2.49
YP-Group 2 Total			3.79	2.61
	Male at YP-Group 2		4.48	3.10
	Female at YP-Group 2		3.10	1.78
YP-Group 3 Total			2.80	2.75
	Male at YP-Group 3		2.38	3.33
	Female at YP-Group 3		3.22	1.97

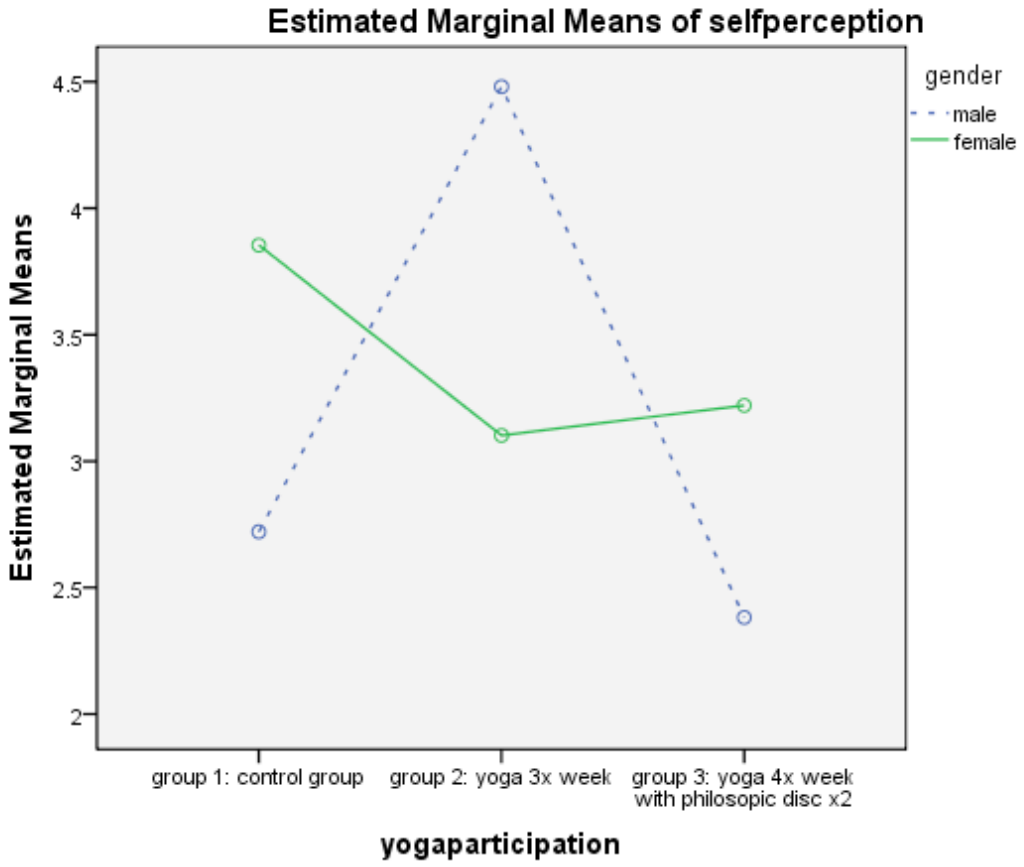
Table 3.

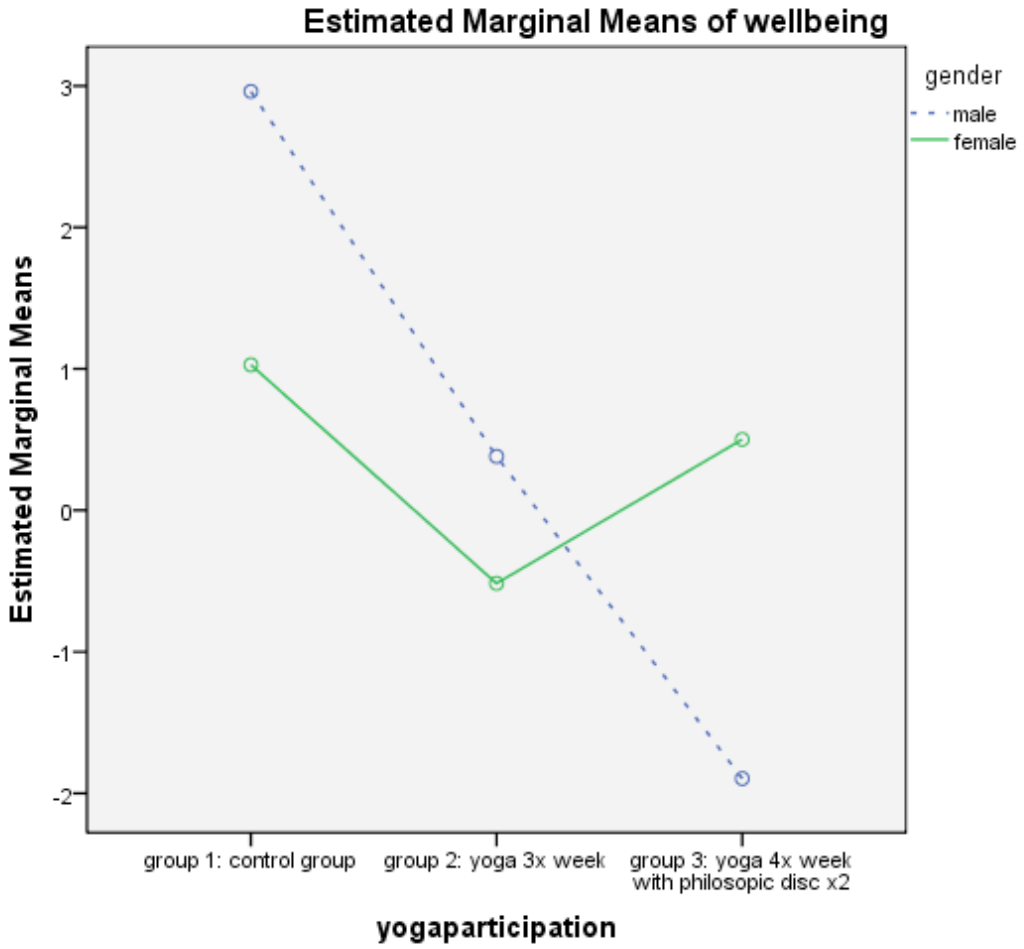
Summary means and standard deviations for Well Being across Yoga Participation and Gender conditions.

Gender vs. Yoga Participation Totals	Gender at Yoga Participation Totals		Means	Standard Deviations
Male Total			.48	3.34
Female Total			.34	3.72
YP-Group 1 Total			2.00	3.33
	Male at YP-Group 1		2.96	2.19
	Female at YP-Group 1		1.04	3.97
YP-Group 2 Total			-.07	3.20
	Male at YP-Group 2		.38	3.33
	Female at YP-Group 2		-.52	3.03
YP-Group 3 Total			-.70	3.51
	Male at YP-Group 3		-1.90	2.44
	Female at YP-Group 3		.50	4.00

Table 4: *Confidence intervals the six Yoga Participation and Gender groups, based on their interaction*

		95% Confidence Interval	
		Lower Bound	Upper Bound
Self Perception			
Male at YP-Group 1		2.05	3.39
Female at YP-Group 1		3.18	4.53
Male at YP-Group 2		3.81	5.15
Female at YP-Group 2		2.43	3.78
Male at YP-Group 3		1.71	3.06
Female at YP-Group 3		2.55	3.89
Well Being			
Male at YP-Group 1		2.08	3.84
Female at YP-Group 1		0.145	1.91
Male at YP-Group 2		-0.50	1.26
Female at YP-Group 2		-1.4	0.37
Male at YP-Group 3		-2.78	-1.01
Female at YP-Group 3		-0.38	1.38


Estimated Marginal Means of selfperception
gender
male
female
Estimated Marginal Means
4.5
4
3.5
3
2.5
2
group 1: control group
group 2: yoga 3x week
group 3: yoga 4x week with philosopic disc x2
yogaparticipation



Appendix

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GET
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nutrition priorphysical
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  /INTERCEPT=INCLUDE
  /PLOT=PROFILE(yogaparticipation*gender)
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priorphysical=MEAN)
  /EMMEANS=TABLES(yogaparticipation) WITH(stress=MEAN nutrition=MEAN
priorphysical=MEAN) COMPARE ADJ(BONFERRONI)
  /EMMEANS=TABLES(gender) WITH(stress=MEAN nutrition=MEAN priorphysical=MEAN)
COMPARE ADJ(BONFERRONI)
  /EMMEANS=TABLES(yogaparticipation*gender) WITH(stress=MEAN nutrition=MEAN
priorphysical=MEAN)
  /PRINT=DESCRIPTIVE OPOWER
  /CRITERIA=ALPHA(.05)
  /DESIGN=stress nutrition priorphysical yogaparticipation gender
yogaparticipation*gender.
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General Linear Model

Notes		
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Comments		
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Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the model.

Syntax	GLM selfperception wellbeing BY yogaparticipation gender WITH stress nutrition priorphysical /METHOD=SSTYPE(3) /INTERCEPT=INCLUDE /PLOT=PROFILE (yogaparticipation*gender) /EMMEANS=TABLES (OVERALL) WITH(stress=MEAN nutrition=MEAN priorphysical=MEAN) /EMMEANS=TABLES (yogaparticipation) WITH (stress=MEAN nutrition=MEAN priorphysical=MEAN) COMPARE ADJ(BONFERRONI) /EMMEANS=TABLES(gender) WITH(stress=MEAN nutrition=MEAN priorphysical=MEAN) COMPARE ADJ(BONFERRONI) /EMMEANS=TABLES (yogaparticipation*gender) WITH (stress=MEAN nutrition=MEAN priorphysical=MEAN) /PRINT=DESCRIPTIVE OPOWER /CRITERIA=ALPHA(.05) /DESIGN=stress nutrition priorphysical yogaparticipation gender yogaparticipation*gender.	
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	Elapsed Time	00:00:02.027

[DataSet1] C:\Users\monicas.ICS\Downloads\Simulated data Lab 10_Fall 2010.sav

Between-Subjects Factors			
	Value Label	N	
yogaparticipation	1	group 1: control group	100
	2	group 2: yoga 3x week	100
	3	group 3: yoga 4x week with philosopic disc x2	100
gender	1	male	150
	2	female	150

Descriptive Statistics						
		yogaparticipation	gender	Mean	Std. Deviation	N
selfperception	group 1: control group	dimension2	male	2.72	1.773	50
			female	3.86	2.491	50
			Total	3.29	2.226	100
	group 2: yoga 3x week	dimension2	male	4.48	3.099	50
			female	3.10	1.776	50
			Total	3.79	2.606	100
	group 3: yoga 4x week with philosopic disc x2	dimension2	male	2.38	3.330	50
			female	3.22	1.970	50
			Total	2.80	2.754	100
	Total	dimension2	male	3.19	2.948	150
			female	3.39	2.113	150
			Total	3.29	2.562	300
wellbeing	group 1: control group	dimension2	male	2.96	2.185	50
			female	1.04	3.969	50
			Total	2.00	3.330	100
	group 2: yoga 3x week	dimension2	male	0.38	3.325	50
			female	-0.52	3.025	50

			Total	-0.07	3.195	100
	group 3: yoga 4x week with philosopic disc x2	dimension2	male	-1.90	2.443	50
			female	0.50	3.996	50
			Total	-0.70	3.509	100
	Total	dimension2	male	0.48	3.337	150
			female	0.34	3.723	150
			Total	0.41	3.530	300

Multivariate Tests[d]

Effect	Value	F	Hypothesis df	Error df	
Intercept	Pillai's Trace	0.015	2.153[a]	2.000	290.000
	Wilks' Lambda	0.985	2.153[a]	2.000	290.000
	Hotelling's Trace	0.015	2.153[a]	2.000	290.000
	Roy's Largest Root	0.015	2.153[a]	2.000	290.000
stress	Pillai's Trace	0.028	4.124[a]	2.000	290.000
	Wilks' Lambda	0.972	4.124[a]	2.000	290.000
	Hotelling's Trace	0.028	4.124[a]	2.000	290.000
	Roy's Largest Root	0.028	4.124[a]	2.000	290.000
nutrition	Pillai's Trace	0.037	5.561[a]	2.000	290.000
	Wilks' Lambda	0.963	5.561[a]	2.000	290.000
	Hotelling's Trace	0.038	5.561[a]	2.000	290.000
	Roy's Largest Root	0.038	5.561[a]	2.000	290.000
priorphysical	Pillai's Trace	0.036	5.346[a]	2.000	290.000
	Wilks' Lambda	0.964	5.346[a]	2.000	290.000
	Hotelling's Trace	0.037	5.346[a]	2.000	290.000
	Roy's Largest Root	0.037	5.346[a]	2.000	290.000
yogaparticipation	Pillai's Trace	0.147	11.533	4.000	582.000
	Wilks' Lambda	0.856	11.688[a]	4.000	580.000
	Hotelling's Trace	0.164	11.841	4.000	578.000
	Roy's Largest Root	0.136	19.766[c]	2.000	291.000
gender	Pillai's Trace	0.003	.376[a]	2.000	290.000

	Wilks' Lambda	0.997	.376[a]	2.000	290.000
	Hotelling's Trace	0.003	.376[a]	2.000	290.000
	Roy's Largest Root	0.003	.376[a]	2.000	290.000
yogaparticipation * gender	Pillai's Trace	0.132	10.302	4.000	582.000
	Wilks' Lambda	0.872	10.285[a]	4.000	580.000
	Hotelling's Trace	0.142	10.267	4.000	578.000
	Roy's Largest Root	0.087	12.707[c]	2.000	291.000
a. Exact statistic					
c. The statistic is an upper bound on F that yields a lower bound on the significance level.					
d. Design: Intercept + stress + nutrition + priorphysical + yogaparticipation + gender + yogaparticipation * gender					

Multivariate Tests[d]				
Effect	Sig.	Noncent. Parameter	Observed Power[b]	
Intercept	Pillai's Trace	0.118	4.306	0.439
	Wilks' Lambda	0.118	4.306	0.439
	Hotelling's Trace	0.118	4.306	0.439
	Roy's Largest Root	0.118	4.306	0.439
stress	Pillai's Trace	0.017	8.249	0.727
	Wilks' Lambda	0.017	8.249	0.727
	Hotelling's Trace	0.017	8.249	0.727
	Roy's Largest Root	0.017	8.249	0.727
nutrition	Pillai's Trace	0.004	11.122	0.853
	Wilks' Lambda	0.004	11.122	0.853
	Hotelling's Trace	0.004	11.122	0.853
	Roy's Largest Root	0.004	11.122	0.853
priorphysical	Pillai's Trace	0.005	10.692	0.838
	Wilks' Lambda	0.005	10.692	0.838

	Hotelling's Trace	0.005	10.692	0.838
	Roy's Largest Root	0.005	10.692	0.838
yogaparticipation	Pillai's Trace	0.000	46.131	1.000
	Wilks' Lambda	0.000	46.751	1.000
	Hotelling's Trace	0.000	47.366	1.000
	Roy's Largest Root	0.000	39.533	1.000
gender	Pillai's Trace	0.687	0.753	0.110
	Wilks' Lambda	0.687	0.753	0.110
	Hotelling's Trace	0.687	0.753	0.110
	Roy's Largest Root	0.687	0.753	0.110
yogaparticipation * gender	Pillai's Trace	0.000	41.209	1.000
	Wilks' Lambda	0.000	41.139	1.000
	Hotelling's Trace	0.000	41.068	1.000
	Roy's Largest Root	0.000	25.414	0.997
b. Computed using alpha = .05				
d. Design: Intercept + stress + nutrition + priorphysical + yogaparticipation + gender + yogaparticipation * gender				

Tests of Between-Subjects Effects						
Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	
Corrected Model	dimension1	selfperception	264.038[a]	8	33.005	5.652
		wellbeing	798.906[c]	8	99.863	9.926
Intercept	dimension1	selfperception	3.921	1	3.921	0.672
		wellbeing	40.620	1	40.620	4.038

stress	dimension1	selfperception	17.906	1	17.906	3.067
		wellbeing	40.372	1	40.372	4.013
nutrition	dimension1	selfperception	59.161	1	59.161	10.132
		wellbeing	21.649	1	21.649	2.152
priorphysical	dimension1	selfperception	21.823	1	21.823	3.737
		wellbeing	84.465	1	84.465	8.396
yogaparticipation	dimension1	selfperception	49.010	2	24.505	4.197
		wellbeing	396.589	2	198.294	19.710
gender	dimension1	selfperception	2.936	1	2.936	0.503
		wellbeing	1.562	1	1.562	0.155
yogaparticipation * gender	dimension1	selfperception	94.285	2	47.142	8.074
		wellbeing	255.678	2	127.839	12.707
Error	dimension1	selfperception	1699.148	291	5.839	
		wellbeing	2927.664	291	10.061	
Total	dimension1	selfperception	5217.000	300		
		wellbeing	3777.000	300		
Corrected Total	dimension1	selfperception	1963.187	299		
		wellbeing	3726.570	299		
a. R Squared = .134 (Adjusted R Squared = .111)						
c. R Squared = .214 (Adjusted R Squared = .193)						

Tests of Between-Subjects Effects					
Source	Dependent Variable	Sig.	Noncent. Parameter	Observed Power[b]	

Corrected Model	dimension1	selfperception	0.000	45.220	1.000
		wellbeing	0.000	79.409	1.000
Intercept	dimension1	selfperception	0.413	0.672	0.129
		wellbeing	0.045	4.038	0.517
stress	dimension1	selfperception	0.081	3.067	0.415
		wellbeing	0.046	4.013	0.515
nutrition	dimension1	selfperception	0.002	10.132	0.887
		wellbeing	0.143	2.152	0.310
priorphysical	dimension1	selfperception	0.054	3.737	0.487
		wellbeing	0.004	8.396	0.823
yogaparticipation	dimension1	selfperception	0.016	8.394	0.735
		wellbeing	0.000	39.420	1.000
gender	dimension1	selfperception	0.479	0.503	0.109
		wellbeing	0.694	0.155	0.068
yogaparticipation * gender	dimension1	selfperception	0.000	16.147	0.956
		wellbeing	0.000	25.414	0.997
Error	dimension1	selfperception			
		wellbeing			
Total	dimension1	selfperception			
		wellbeing			
Corrected Total	dimension1	selfperception			
		wellbeing			
b. Computed using alpha = .05					

Estimated Marginal Means

1. Grand Mean					
Dependent Variable	Mean	Std. Error	95% Confidence Interval		
			Lower Bound	Upper Bound	
dimension0	selfperception	3.293[a]	0.140	3.019	3.568
	wellbeing	.410[a]	0.183	0.050	0.770
a. Covariates appearing in the model are evaluated at the following values: stress = .199999, nutrition = 2.204001, priorphysical = 4.65.					

2. yogaparticipation

Estimates						
Dependent Variable	yogaparticipation	Mean	Std. Error	95% Confidence Interval		
				Lower Bound	Upper Bound	
dimension0	selfperception	group 1: control group	3.287[a]	0.242	2.812	3.763
		group 2: yoga 3x week	3.791[a]	0.242	3.316	4.267
		group 3: yoga 4x week with philosopic disc x2	2.801[a]	0.242	2.326	3.277
	wellbeing	group 1: control group	1.995[a]	0.317	1.371	2.619

		group 2: yoga 3x week	-.067[a]	0.317	-0.692	0.557
		group 3: yoga 4x week with philosopic disc x2	-.697[a]	0.317	-1.322	-0.073
a. Covariates appearing in the model are evaluated at the following values: stress = .199999, nutrition = 2.204001, priorphysical = 4.65.						

Pairwise Comparisons					
Dependent Variable	(I) yogaparticipation	(J) yogaparticipation	Mean Difference (I-J)	Std. Error	
dimension0	selfperception	group 1: control group	group 2: yoga 3x week	-0.504	0.342
			group 3: yoga 4x week with philosopic disc x2	0.486	0.342
		group 2: yoga 3x week	group 1: control group	0.504	0.342
			group 3: yoga 4x week with philosopic disc x2	.990*	0.342
		group 3: yoga 4x week with philosopic disc x2	group 1: control group	-0.486	0.342
			group 2: yoga 3x week	-.990*	0.342
	wellbeing	group 1: control group	group 2: yoga 3x week	2.062*	0.449
			group 3: yoga 4x week with philosopic disc x2	2.692*	0.449
		group 2: yoga 3x week	group 1: control group	-2.062*	0.449

			group 3: yoga 4x week with philosopic disc x2	0.630	0.449
		group 3: yoga 4x week with philosopic disc x2	group 1: control group	-2.692*	0.449
			group 2: yoga 3x week	-0.630	0.449
Based on estimated marginal means					
*. The mean difference is significant at the .05 level.					

Pairwise Comparisons					
Dependent Variable	(I) yogaparticipation	(J) yogaparticipation	Sig.[a]	95% Confidence Interval for Difference[a]	
				Lower Bound	
dimension0	selfperception	group 1: control group	group 2: yoga 3x week	0.424	-1.327
			group 3: yoga 4x week with philosopic disc x2	0.468	-0.337
		group 2: yoga 3x week	group 1: control group	0.424	-0.319
			group 3: yoga 4x week with philosopic disc x2	0.012	0.167
		group 3: yoga 4x week with philosopic disc x2	group 1: control group	0.468	-1.309
			group 2: yoga 3x week	0.012	-1.813

	wellbeing	group 1: control group	group 2: yoga 3x week	0.000	0.982
			group 3: yoga 4x week with philosopic disc x2	0.000	1.612
		group 2: yoga 3x week	group 1: control group	0.000	-3.142
			group 3: yoga 4x week with philosopic disc x2	0.484	-0.450
		group 3: yoga 4x week with philosopic disc x2	group 1: control group	0.000	-3.772
			group 2: yoga 3x week	0.484	-1.710
Based on estimated marginal means					
a. Adjustment for multiple comparisons: Bonferroni.					

Pairwise Comparisons				
Dependent Variable	(I) yogaparticipation	(J) yogaparticipation	95% Confidence Interval for Difference[a]	
			Upper Bound	
dimension0	selfperception	group 1: control group	group 2: yoga 3x week	0.319
			group 3: yoga 4x week with philosopic disc x2	1.309
		group 2: yoga 3x week	group 1: control group	1.327
			group 3: yoga 4x week with philosopic disc x2	1.813

		group 3: yoga 4x week with philosopic disc x2	group 1: control group	0.337
			group 2: yoga 3x week	-0.167
	wellbeing	group 1: control group	group 2: yoga 3x week	3.142
			group 3: yoga 4x week with philosopic disc x2	3.772
		group 2: yoga 3x week	group 1: control group	-0.982
			group 3: yoga 4x week with philosopic disc x2	1.710
		group 3: yoga 4x week with philosopic disc x2	group 1: control group	-1.612
			group 2: yoga 3x week	0.450
Based on estimated marginal means				
a. Adjustment for multiple comparisons: Bonferroni.				

Multivariate Tests

	Value	F	Hypothesis df	Error df	Sig.
Pillai's trace	0.147	11.533	4.000	582.000	0.000
Wilks' lambda	0.856	11.688[b]	4.000	580.000	0.000
Hotelling's trace	0.164	11.841	4.000	578.000	0.000
Roy's largest root	0.136	19.766[c]	2.000	291.000	0.000
Each F tests the multivariate effect of yogaparticipation. These tests are based on the linearly independent pairwise comparisons among the estimated marginal means.					
b. Exact statistic					

c. The statistic is an upper bound on F that yields a lower bound on the significance level.					

Multivariate Tests		
	Noncent. Parameter	Observed Power[a]
Pillai's trace	46.131	1.000
Wilks' lambda	46.751	1.000
Hotelling's trace	47.366	1.000
Roy's largest root	39.533	1.000
Each F tests the multivariate effect of yogaparticipation. These tests are based on the linearly independent pairwise comparisons among the estimated marginal means.		
a. Computed using alpha = .05		

Univariate Tests						
Dependent Variable	Sum of Squares	df	Mean Square	F	Sig.	
selfperception	Contrast	49.010	2	24.505	4.197	0.016
	Error	1699.148	291	5.839		
wellbeing	Contrast	396.589	2	198.294	19.710	0.000
	Error	2927.664	291	10.061		
The F tests the effect of yogaparticipation. This test is based on the linearly independent pairwise comparisons among the estimated marginal means.						

Univariate Tests			

Dependent Variable	Noncent. Parameter	Observed Power[a]	
selfperception	Contrast	8.394	0.735
	Error		
wellbeing	Contrast	39.420	1.000
	Error		
The F tests the effect of yogaparticipation. This test is based on the linearly independent pairwise comparisons among the estimated marginal means.			
a. Computed using alpha = .05			

3. gender

	Estimates						
	Dependent Variable	gender	Mean	Std. Error	95% Confidence Interval		
					Lower Bound	Upper Bound	
dimension0	selfperception	dimension1	male	3.194[a]	0.197	2.806	3.583
			female	3.392[a]	0.197	3.004	3.781
	wellbeing	dimension1	male	.482[a]	0.259	-0.028	0.992
			female	.338[a]	0.259	-0.172	0.848
	a. Covariates appearing in the model are evaluated at the following values: stress = .199999, nutrition = 2.204001, priorphysical = 4.65.						

Pairwise Comparisons								

Dependent Variable	(I) gender	(J) gender	Mean Difference (I-J)	Std. Error	Sig.[a]			
dimension0	selfperception	dimension1	male	dimension2	female	-0.198	0.279	0.479
			female	dimension2	male	0.198	0.279	0.479
	wellbeing	dimension1	male	dimension2	female	0.144	0.366	0.694
			female	dimension2	male	-0.144	0.366	0.694
Based on estimated marginal means								
a. Adjustment for multiple comparisons: Bonferroni.								

Pairwise Comparisons							
Dependent Variable	(I) gender	(J) gender	95% Confidence Interval for Difference[a]				
			Lower Bound	Upper Bound			
dimension0	selfperception	dimension1	male	dimension2	female	-0.747	0.351
			female	dimension2	male	-0.351	0.747

	wellbeing	dimension1	male	dimension2	female	-0.577	0.865
			female	dimension2	male	-0.865	0.577
Based on estimated marginal means							
a. Adjustment for multiple comparisons: Bonferroni.							

Multivariate Tests

	Value	F	Hypothesis df	Error df	Sig.
Pillai's trace	0.003	.376[a]	2.000	290.000	0.687
Wilks' lambda	0.997	.376[a]	2.000	290.000	0.687
Hotelling's trace	0.003	.376[a]	2.000	290.000	0.687
Roy's largest root	0.003	.376[a]	2.000	290.000	0.687
Each F tests the multivariate effect of gender. These tests are based on the linearly independent pairwise comparisons among the estimated marginal means.					
a. Exact statistic					

Multivariate Tests

	Noncent. Parameter	Observed Power[b]
Pillai's trace	0.753	0.110
Wilks' lambda	0.753	0.110
Hotelling's trace	0.753	0.110
Roy's largest root	0.753	0.110
Each F tests the multivariate effect of gender. These tests are based on the linearly independent pairwise comparisons among the estimated marginal means.		

b. Computed using alpha = .05		

Univariate Tests

Dependent Variable	Sum of Squares	df	Mean Square	F	Sig.	
selfperception	Contrast	2.936	1	2.936	0.503	0.479
	Error	1699.148	291	5.839		
wellbeing	Contrast	1.562	1	1.562	0.155	0.694
	Error	2927.664	291	10.061		

The F tests the effect of gender. This test is based on the linearly independent pairwise comparisons among the estimated marginal means.

Univariate Tests

Dependent Variable	Noncent. Parameter	Observed Power[a]	
selfperception	Contrast	0.503	0.109
	Error		
wellbeing	Contrast	0.155	0.068
	Error		

The F tests the effect of gender. This test is based on the linearly independent pairwise comparisons among the estimated marginal means.

a. Computed using alpha = .05

4. yogaparticipation * gender

	Dependent Variable	yogaparticipation	gender	Mean	Std. Error	
dimension0	selfperception	group 1: control group	dimension2	male	2.721[a]	0.342
				female	3.854[a]	0.342

		group 2: yoga 3x week	dimension2	male	4.481[a]	0.342
				female	3.102[a]	0.342
		group 3: yoga 4x week with philosopic disc x2	dimension2	male	2.382[a]	0.342
				female	3.221[a]	0.342
	wellbeing	group 1: control group	dimension2	male	2.961[a]	0.449
				female	1.028[a]	0.449
		group 2: yoga 3x week	dimension2	male	.381[a]	0.449
				female	-.516[a]	0.449
		group 3: yoga 4x week with philosopic disc x2	dimension2	male	-1.896[a]	0.449
				female	.501[a]	0.449
	a. Covariates appearing in the model are evaluated at the following values: stress = . 199999, nutrition = 2.204001, priorphysical = 4.65.					

	4. yogaparticipation * gender					
	Dependent Variable	yogaparticipation	gender	95% Confidence Interval		
				Lower Bound	Upper Bound	
dimension0	selfperception	group 1: control group	dimension2	male	2.048	3.393
				female	3.182	4.527
		group 2: yoga 3x week	dimension2	male	3.808	5.153
				female	2.429	3.775
		group 3: yoga 4x week with philosopic disc x2	dimension2	male	1.709	3.055
				female	2.548	3.893
	wellbeing	group 1: control group	dimension2	male	2.078	3.844
				female	0.145	1.911
		group 2: yoga	dimension2	male	-0.502	1.264

		3x week		female	-1.399	0.367
		group 3: yoga 4x week with philosopic disc x2	dimension2	male	-2.779	-1.013
				female	-0.382	1.384