Examination of Multidimensional Wellness Pre-, During, and Post- COVID-19 Epidemic

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Abstract

The purpose of this study was to examine wellness from a multidimensional perspective from pre-, during-, and "post" COVID-19 time frames with undergraduate students across multiple universities nationwide. Over 2300 participants are included in this study. Results indicate little difference in wellness scores across these time frames with very small effect sizes. This is in contrast to current published research indicating decreases in wellness during the COVID-19 timeframe.

BACKGROUND

Emerging adulthood is a known developmental period ranging from the late teens through the mid-twenties that involves an explorative process of one's own identity where individuals perceive themselves in a state of mutability between adolescence, post-adolescence, young adulthood and the transition to adulthood (Arnett, 2015). For many American emerging adults, matriculation into college is likely the next educational transition. While this next phase presents opportunities for continued learning, personal and social experiences for the college-goer emerging adult, it has also been associated with increases in academic-based stress and psychosocial distress such as difficulty with socialization to college life, time management, family demands, financial concerns, diminished feelings of overall well-being and pressures related to making decisions for one's own health and lifestyle behaviors. This increased experience of stress creates a risk of developing depression, anxiety, and substance abuse disorders as well as a lack of persistence through college (Dusselier et al., 2005; Rozmus et al., 2005; Friedlander et al., 2007; Gores, 2008; American College Health Association, 2015; Liu, C. H., et al., 2019; American Psychological Association, 2020). Overall, poor mental wellness has been shown to negatively affect academic performance for college students (Tennant et al., 2007; Freire et al., 2016).

On March 11, 2020, the Centers for Disease Control and Prevention (CDC) announced that the World Health Organization declared a global pandemic due to the Coronavirus (COVID-19) (CDC, 2023). This created many additional stressors for thousands of college students as institutions in the United States hurriedly closed their campuses in an effort to mitigate the spread of COVID-19. In turn, students were mandated to move back home as on-campus closures ensued and online-only instruction became required (National Conference of State Legislatures, 2021). These academic and living disruptions including technical connectivity challenges during the time of COVID-19 demonstrated significant negative physical, psychological, and academic impacts for this population of students (American Psychological Association, 2020; Gonzales et al., 2020; Lee et al., 2021; Yang et al., 2021).

According to The Healthy Minds Network's (HMN) "The Impact of COVID-19 on College Student Well-Being" report (data collected from late March 2020 through May 2020), 60% of college students perceived they were at risk of contracting COVID-19 themselves as well as showed trending hypervigilance toward their own personal health and safety as well as that of loved ones not knowing when the pandemic would end. Moreover, 60% indicated that mental health resources were problematic relating to accessibility issues, 40% reported observing online or in-person race-based discrimination, and a large portion of respondents stated that their academic achievement, or lack thereof, was negatively impacted by their less than favorable mental health state (HMN, 2020).

Barbayannis et al. (2022) also found a strong correlation between academic stress and mental health for college students during the time of COVID-19. Students reported feeling fearful of contracting COVID-19 and showed high levels of apprehension and frustration related to

academic instructional delivery and expectations, increased levels of loneliness, depressive symptoms and sleep troubles, and a generalized loss of motivation (Tasso et al., 2021). It was also demonstrated that college students, independent of living on or off campus, faced pandemic-based maladjustments, fear of missing out on social engagements, lack of academic success, and high internalized psychological distress (Chirikov et al., 2020; Sauer et al., 2022; Bisconer et al., 2023). Interestingly, findings have also suggested that despite the increases in the prevalence of depression for college-aged students during COVID-19, higher levels of resiliency and decreases in substance use, risky sexual behavior, physical inactivity, and food insecurity were seen (HMN, 2020; Lanza et al., 2022). In addition, students recounted experiencing a high level of support from their colleges and universities, specifically, from their professors during the pandemic (HMN, 2020).

One such method of faculty support to students in the realm of mental health comes through curriculum-based wellness courses. These college-level courses introduce students to the basic concepts of health and dimensions of wellness through the exploration of a variety of personal health topics. While research demonstrates these courses increase student knowledge and awareness, no study to date has identified whether or not such a course has offset the negative impact of COVID-19 on college student's mental health. Therefore, the purpose of this study is to examine wellness from a multidimensional perspective from pre-, during-, and "post" COVID-19 time frames with undergraduate students across multiple universities nationwide.

The purpose of this study is to examine wellness levels pre-, during, "semi-post", and current COVID-19 epidemic time period. The research questions for this study are:

> What are the levels of wellness from pre-, during, "semi-post", and current COVID-19 epidemic time for different cohorts of undergraduate students?
>
> How large are the differences between pre-, during, "semi-post", and current COVID-19 epidemic periods among the different cohorts of undergraduate students?

METHODS

Design and Participants

This study used a cohort survey design with an online data collection system. The participants in this study were undergraduate students from a variety of colleges and universities nationwide (Table 1). There were 3823 participants total; sample sizes in Table 1 vary due to non-response to the items. For this proposal, we did not impute any data. The majority of respondents identified as female (63%), non-Hispanic (86%) and white (75%). Most participants were enrolled in schools that were smaller than 15,000 students (96.5%), from the Midwest (72%), and Private 4-Year Colleges or Universities (85%). Finally, forty-eight percent of the participants had grade point averages (GPAs) in the range of 3.51 to 4.00. Students completed the survey as part of their required "Wellness for a Lifetime" course.

Measure

The instrument used was the Multi-Dimensional Wellness Inventory (MDWI) (Mayol et al., 2017). The 45-question self-perception wellness survey consisted of five questions per dimension that were summed to create nine single wellness constructs: physical exercise (PE), physical nutrition (PN), mental (M), social (S), spiritual (SP), intellectual (I), environmental (E), occupational (O) and financial (F). A 1-4 Likert-type scale was used to measure each question (1=does not describe me at all, 2=tends to not be me, 3=tends to be me, and 4=absolutely describes me). Summed construct scores could range between five and 20 (see Table 1 for example items). For this study, participants completed the full survey; however, only positively worded items from each domain were used to calculate the main composites allowing scores to range from four to 16 for each domain.

Analysis

Both descriptive and inferential statistics (i.e., a One-Way ANOVA) were used along with effect size estimates to answer the research questions. Due to narrative space limitations, we present the descriptive information and ANOVAs for the proposal. We also follow statistical conventions based on the March 19, 2019, statement in *The American Statistician* journal regarding the use of *p*-values and phrases such as "statistical significance" (Wasserstein et. al, 2019).

Groupings

The semesters were combined into four groups: 2017-Fall 2019 students were the pre-COVID-19 pandemic group (Cohort 1, *pre*); Spring 2020-Fall 2020 students were those taking the course during the COVID-19 lockdown period when many schools closed and moved to online instruction (Cohort 2, *during*); the Spring 2021-Fall 2021 group included students who took the course during the late COVID-19 pandemic with schools re-opening and resuming face-to-face instruction (Cohort *3, semi-post*); and the Spring 2022-Fall 2022 group identified as the "everything is back to normal" group but with COVID-19 still present (Cohort 4, *current*).

RESULTS

Table 2 presents the descriptive statistics of students' post-course wellness dimension scores broken down by group. Examining the descriptive statistics, it appears that wellness dimension scores were highest in Cohort 2 for all wellness dimensions except for exercise (where Cohort 1 had the highest score). Students in Cohort 4 scored the lowest on all wellness dimensions when compared to the scores of other cohorts. Overall, the groups appear to be normally distributed when examining histograms.

A one-way between-subjects analysis of variance (ANOVA) was performed on multidimensional wellness survey scores for each dimension (i.e., PE, PN, M, S, SP, I, E, O, and F) as a function of the cohort grouping. The assumption of homogeneity of variance was violated for all dimension scores (see Table 3). However, due to the very large sample size ($n = 3281$ to 3327), the one-way ANOVA test is robust to violations of normality. All other assumptions were met.

Differences in post-course wellness dimension scores among the different student cohorts indicated some differences. A full ANOVA table is presented in Table 4. Despite the differences in wellness dimension scores between the different cohorts, overall effect sizes were small (denoted by η^2) indicating that very little variance in post-course wellness dimension scores can be explained by the time period in relation to the COVID-19 pandemic.

To find the pattern of differences in post-course wellness dimension scores among the different student cohorts, traditional post-hoc pairwise comparisons were performed using the Scheffé and Dunnett T3 adjustments. Again, differences were observed between cohorts on many of the wellness dimension scores (see Table 5). However, with effect sizes being small, these differences may not be meaningful.

DISCUSSION

Examining wellness dimension scores across the time frames, we expected to see meaningful decreases in some of the domain scores, such as mental and social wellness based on research and other literature during the height of COVID-19 with schools shutting down, sending students home, and moving to virtual classrooms. Specifically, the mental wellness scores for the four time periods were all within less than one-half of a point on a sixteen-point scale leading to very small effect sizes <0.20 (Cohen's d between two groups). Additionally, the scores do not drop during that time period and recover. The average score over the four different groups moves up and down. Finally, ANOVAs do indicate that differences between groups are less than the traditional .05, but this is completely driven by the large sample size (the ANOVA eta-squared effect sizes are less than 0.01 for all of the wellness scores except Intellectual and Environmental which were less than 0.02).

The current findings are in contrast to extant literature that suggests college students' overall physical and psychological well-being was negatively impacted due to the constraints and distress caused by the COVID-19 pandemic (Gonzales et al., 2020; Lee et al., 2021; Tasso et al., 2021; Yang et al., 2021). Additionally, a systematic review performed at the time of the pandemic demonstrated an increased prevalence of negative affect including anxiety, mood changes, and motivation loss in the general population (Luo et al., 2020). Specifically, previous studies examining college students' social and mental wellness during COVID-19 showed increased psychosocial distress that included depressive symptoms, loneliness, and anxiousness related to missing out on social activities (Chirikov et al., 2020; Tasso et al., 2021; Sauer et al., 2022; Bisconer et al., 2023).

Yet, the current study's findings indicated no meaningful differences between groupings as wellness scores remained relatively stable regardless of time frame. Previous studies have shown that levels of resilience in college students rose and other emerging adult population-based risk factors decreased during the pandemic despite the existing pervasiveness of mental health disorders and substance use (Substance Abuse Mental Health Services Administration, 2019; HMN, 2020, Lanza et al., 2022). Rackoff et al. (2022) found that college students who used

online, self-help forms of resilience and coping-based strategies during COVID-19 showed lower stress scores as well as depressive symptoms over time versus being referred for traditional mental health intervention. Our study may point in the direction of our student participants using this self-help strategy for dealing with stressors to lighten the load created in part by the pandemic. In addition, the HMN's "The Impact of COVID-19 on College Student Well-Being" report (2020) demonstrated that students stated feeling supported by their institutions and instructors at the time of the pandemic which may have aided in the stability of our study's wellness scores over time.

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Table 1

Demographic Information

Age		Frequency	Percent
Valid	18-20	2520	75.5
	21-23	647	19.4
	24-26	74	2.2
	>27	95	2.8
	Total	3336	100.0
Gender	Male	1166	35.2
	Female	2088	63.1
	Prefer to not answer	57	1.7
	Total	3311	100.0
Ethnicity	Hispanic or Latino	286	8.6
	Not Hispanic or Latino	2871	86.4
	Prefer to not answer	164	4.9
	Total	3321	100.0
Race	American Indian or Alaska Native	41	1.2
	Asian	170	5.1
	Black or African America	394	11.9
	Native Hawaiian or Other Pacific Islander	8	0.2
	White	2481	74.8
	Prefer to not answer	224	6.8
	Total	3318	100.0
Major	Health Professions/Sports Sciences	1140	33.9
	Engineering/Architectural Design	161	4.8
	Natural/Physical Sciences/Mathematics	279	8.3
	Psychology/Social Sciences	523	15.5
	Education	232	6.9

	Fine Arts/Applied Arts	171	5.1
	History/Political Sciences	105	3.1
	Business/Communications	581	17.3
	English/Literature	30	0.9
	Foreign Languages	11	0.3
	Religion/Philosophy/Ethics	22	0.7
	Recreation/Tourism/Hospitality	7	0.2
	Prefer to not answer	103	3.1
	Total	3365	100.0
Type	Public 4-year	468	13.8
	Public 2-year	18	0.5
	Private 4-year	2861	84.6
	For Profit 4-year	33	1.0
	Total	3380	100.0
Size	Small (<5000 students)	1530	45.1
	Medium (5000-15,000 students)	1742	51.4
	Large (>15,000 students)	119	3.5
	Total	3391	100.0
Region	Northeast	212	6.3
	South	323	9.5
	Midwest	2454	72.4
	West	400	11.8
	Total	3389	100.0
Athlete	Yes	746	22.0
	No	2577	76.1
	Prefer to not answer	63	1.9
	Total	3386	100.0
GPA	0.00-0.50	9	0.3
	0.51-1.00	7	0.2
	1.01-1.50	7	0.2
	1.51-2.00	48	1.4
	2.01-2.50	147	4.3

	2.51-3.00	447	13.2
	3.01-3.50	983	29.0
	3.51-4.00	1638	48.3
	Total	3286	
First Generation	Yes	719	21.4
	No	2574	76.5
	Prefer to not answer	70	2.1
	Total	3363	100.0
Parent's Salary	$0-$25,000	252	7.5
	$25,001-$50,000	463	13.7
	$50,001-$75,000	562	16.6
	$75,001-$100,000	625	18.5
	$100,001-$125,000	405	12.0
	$125,001-$150,000	261	7.7
	$150,001-$175,000	136	4.0
	$175,001-$200,000	95	2.8
	$200,001+	176	5.2
	Prefer to not answer	404	12.0
	Total	3379	100.0

Table 2

Descriptive statistics of students' post-course wellness scores by cohort.

Cohort	Group Size	Mean Post-Course Wellness Score by Dimension	Standard Deviation
Cohort 1 (Pre)			
Social	1443	13.94	2.199
Mental	1432	13.64	2.280
Intellectual	1437	14.01	2.147
Spiritual	1440	12.73	2.066
Nutrition	1442	12.99	2.554
Environmental	1440	13.37	2.300
Occupational	1445	13.43	2.315
Exercise	1448	12.20	2.733
Cohort 2 (During)			
Social	692	14.38	2.013
Mental	681	13.96	2.193
Intellectual	690	14.41	1.921
Spiritual	688	12.85	1.953
Nutrition	699	13.38	2.546
Environmental	695	14.05	2.129
Occupational	691	13.68	2.301
Exercise	687	11.87	2.404
Cohort 3 (Semi-Post)			
Social	447	14.10	1.995
Mental	447	13.73	2.167
Intellectual	442	14.13	2.049
Spiritual	446	12.71	1.984
Nutrition	448	13.02	2.568
Environmental	450	13.61	2.221
Occupational	447	13.53	2.230
Exercise	449	11.84	2.506
Cohort 4 (Current)			
Social	735	13.91	1.774
Mental	721	13.60	2.009
Intellectual	717	13.68	2.213
Spiritual	730	12.51	1.766
Nutrition	738	12.78	2.215
Environmental	724	13.21	2.118
Occupational	708	13.14	2.098

Exercise	728	11.54	2.777

Table 3
Test of homogeneity of variance of post-course wellness scores for each dimension of scale.

Wellness Scale Dimension	Levene Statistic (based on mean)	*df1*	*df2*	*p*
Social	10.967	3	3313	<.001
Mental	3.373	3	3277	.018
Intellectual	4.597	3	3282	.003
Spiritual	2.722	3	3300	.043
Nutrition	9.050	3	3323	<.001
Environmental	4.542	3	3305	.004
Occupational	3.611	3	3287	.013
Exercise	8.483	3	3308	<.001

Table 4
ANOVA table of post-course wellness scores among cohort with effect sizes.

		Sum of Squares	df	Mean Square	F	*p*	η^2
Social	Between Groups	104.620	3	34.873	8.338	<.001	.007
	Within Groups	13855.662	3313	4.182			
	Total	13960.282	3316				
Mental	Between Groups	59.056	3	19.685	4.106	.006	.004
	Within Groups	15709.639	3277	4.794			
	Total	15768.695	3280				
Intellectual	Between Groups	196.959	3	65.653	14.838	<.001	.013
	Within Groups	14522.209	3282	4.425			
	Total	14719.169	3285				
Spiritual	Between Groups	41.684	3	13.895	3.586	.013	.003
	Within Groups	12785.597	3300	3.874			

	Total	12827.281	3303				
Nutrition	Between Groups	135.210	3	45.070	7.310	<.001	.007
	Within Groups	20488.723	3323	6.166			
	Total	20623.934	3326				
Environmental	Between Groups	299.568	3	99.856	20.350	<.001	.018
	Within Groups	16217.302	3305	4.907			
	Total	16516.869	3308				
Occupational	Between Groups	105.284	3	35.095	6.900	<.001	.006
	Within Groups	16718.152	3287	5.086			
	Total	16823.435	3290				
Exercise	Between Groups	222.111	3	74.037	10.560	<.001	.009
	Within Groups	23191.951	3308	7.011			
	Total	23414.062	3311				

Table 5
Post-hoc analyses (Pre, During, Semi-Post, Current)

Multiple Comparisons

Dependent Variable		(I) Cohort	(J) Cohort	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Social	Scheffe		2	-.432	.095	<.001	-.70	-.17
		1	3	-.157	.111	.571	-.47	.15
			4	.031	.093	.990	-.23	.29
		2	1	.432	.095	<.001	.17	.70

			3	.275	.124	.179	-.07	.62
			4	.463	.108	<.001	.16	.77
			1	.157	.111	.571	-.15	.47
		3	2	-.275	.124	.179	-.62	.07
			4	.188	.123	.504	-.16	.53
			1	-.031	.093	.990	-.29	.23
		4	2	-.463	.108	<.001	-.77	-.16
			3	-.188	.123	.504	-.53	.16
	Dunnett T3		2	-.432	.096	<.001	-.68	-.18
		1	3	-.157	.111	.640	-.45	.14
			4	.031	.087	1.000	-.20	.26
			1	.432	.096	<.001	.18	.68
		2	3	.275	.121	.134	-.05	.60
			4	.463	.101	<.001	.20	.73
			1	.157	.111	.640	-.14	.45
		3	2	-.275	.121	.134	-.60	.05
			4	.188	.115	.476	-.12	.49
			1	-.031	.087	1.000	-.26	.20
		4	2	-.463	.101	<.001	-.73	-.20
			3	-.188	.115	.476	-.49	.12
Mental	Scheffe		2	-.320	.102	.020	-.60	-.03
		1	3	-.088	.119	.907	-.42	.24
			4	.044	.100	.979	-.24	.32
			1	.320	.102	.020	.03	.60
		2	3	.232	.133	.388	-.14	.60

			4	.364	.117	.022	.04	.69
			1	.088	.119	.907	-.24	.42
		3	2	-.232	.133	.388	-.60	.14
			4	.132	.132	.800	-.24	.50
			1	-.044	.100	.979	-.32	.24
		4	2	-.364	.117	.022	-.69	-.04
			3	-.132	.132	.800	-.50	.24
	Dunnett T3		2	-.320	.103	.012	-.59	-.05
		1	3	-.088	.119	.975	-.40	.23
			4	.044	.096	.998	-.21	.30
			1	.320	.103	.012	.05	.59
		2	3	.232	.133	.396	-.12	.58
			4	.364	.113	.007	.07	.66
			1	.088	.119	.975	-.23	.40
		3	2	-.232	.133	.396	-.58	.12
			4	.132	.127	.880	-.20	.47
			1	-.044	.096	.998	-.30	.21
		4	2	-.364	.113	.007	-.66	-.07
			3	-.132	.127	.880	-.47	.20
IntellectualP	Scheffe		2	-.403	.097	<.001	-.68	-.13
		1	3	-.118	.114	.787	-.44	.20
			4	.336*	.096	.007	.07	.61
			1	.403	.097	<.001	.13	.68
		2	3	.286	.128	.175	-.07	.64
			4	.739	.112	<.001	.43	1.05

		3	1	.118	.114	.787	-.20	.44
			2	-.286	.128	.175	-.64	.07
			4	.454	.127	.005	.10	.81
		4	1	-.336	.096	.007	-.61	-.07
			2	-.739	.112	<.001	-1.05	-.43
			3	-.454	.127	.005	-.81	-.10
	Dunnett T3	1	2	-.403	.093	<.001	-.65	-.16
			3	-.118	.113	.878	-.42	.18
			4	.336	.100	.005	.07	.60
		2	1	.403	.093	<.001	.16	.65
			3	.286	.122	.110	-.04	.61
			4	.739	.110	.000	.45	1.03
		3	1	.118	.113	.878	-.18	.42
			2	-.286	.122	.110	-.61	.04
			4	.454	.128	.002	.12	.79
		4	1	-.336	.100	.005	-.60	-.07
			2	-.739	.110	.000	-1.03	-.45
			3	-.454	.128	.002	-.79	-.12
Spiritual	Scheffe	1	2	-.116	.091	.655	-.37	.14
			3	.018	.107	.999	-.28	.32
			4	.218	.089	.116	-.03	.47
		2	1	.116	.091	.655	-.14	.37
			3	.134	.120	.738	-.20	.47
			4	.334	.105	.017	.04	.63
		3	1	-.018	.107	.999	-.32	.28

			2	-.134	.120	.738	-.47	.20
			4	.199	.118	.417	-.13	.53
			1	-.218	.089	.116	-.47	.03
		4	2	-.334	.105	.017	-.63	-.04
			3	-.199	.118	.417	-.53	.13
	Dunnett T3		2	-.116	.092	.753	-.36	.13
		1	3	.018	.109	1.000	-.27	.30
			4	.218	.085	.062	-.01	.44
			1	.116	.092	.753	-.13	.36
		2	3	.134	.120	.839	-.18	.45
			4	.334	.099	.005	.07	.59
			1	-.018	.109	1.000	-.30	.27
		3	2	-.134	.120	.839	-.45	.18
			4	.199	.114	.401	-.10	.50
			1	-.218	.085	.062	-.44	.01
		4	2	-.334	.099	.005	-.59	-.07
			3	-.199	.114	.401	-.50	.10
Nutrition	Scheffe		2	-.395	.114	.008	-.71	-.07
		1	3	-.033	.134	.996	-.41	.34
			4	.207	.112	.335	-.11	.52
			1	.395	.114	.008	.07	.71
		2	3	.361	.150	.123	-.06	.78
			4	.602	.131	<.001	.24	.97
		3	1	.033	.134	.996	-.34	.41
			2	-.361	.150	.123	-.78	.06

			4	.240	.149	.455	-.18	.66
			1	-.207	.112	.335	-.52	.11
		4	2	-.602	.131	<.001	-.97	-.24
			3	-.240	.149	.455	-.66	.18
	Dunnett T3		2	-.395	.117	.005	-.70	-.09
		1	3	-.033	.139	1.000	-.40	.33
			4	.207	.106	.266	-.07	.49
			1	.395	.117	.005	.09	.70
		2	3	.361	.155	.114	-.05	.77
			4	.602	.126	<.001	.27	.93
			1	.033	.139	1.000	-.33	.40
		3	2	-.361	.155	.114	-.77	.05
			4	.240	.146	.469	-.14	.63
			1	-.207	.106	.266	-.49	.07
		4	2	-.602	.126	<.001	-.93	-.27
			3	-.240	.146	.469	-.63	.14
Environmental	Scheffe		2	-.675	.102	<.001	-.96	-.39
		1	3	-.232	.120	.287	-.57	.10
			4	.169	.101	.426	-.11	.45
			1	.675	.102	<.001	.39	.96
		2	3	.442	.134	.012	.07	.82
			4	.843	.118	<.001	.51	1.17
			1	.232	.120	.287	-.10	.57
		3	2	-.442	.134	.012	-.82	-.07
			4	.401	.133	.028	.03	.77

			1	-.169	.101	.426	-.45	.11
		4	2	-.843	.118	<.001	-1.17	-.51
			3	-.401	.133	.028	-.77	-.03
	Dunnett T3		2	-.675	.101	.000	-.94	-.41
		1	3	-.232	.121	.288	-.55	.09
			4	.169	.099	.432	-.09	.43
			1	.675	.101	.000	.41	.94
		2	3	.442	.132	.005	.09	.79
			4	.843	.113	.000	.55	1.14
			1	.232	.121	.288	-.09	.55
		3	2	-.442	.132	.005	-.79	-.09
			4	.401	.131	.014	.06	.75
			1	-.169	.099	.432	-.43	.09
		4	2	-.843	.113	.000	-1.14	-.55
			3	-.401	.131	.014	-.75	-.06
Occupational	Scheffe		2	-.249	.104	.128	-.54	.04
		1	3	-.103	.122	.870	-.44	.24
			4	.286	.103	.055	.00	.58
			1	.249	.104	.128	-.04	.54
		2	3	.146	.137	.769	-.24	.53
			4	.535	.121	<.001	.20	.87
			1	.103	.122	.870	-.24	.44
		3	2	-.146	.137	.769	-.53	.24
			4	.389	.136	.043	.01	.77
		4	1	-.286	.103	.055	-.58	.00

			2	-.535	.121	<.001	-.87	-.20
			3	-.389	.136	.043	-.77	-.01
	Dunnett T3	1	2	-.249	.107	.113	-.53	.03
			3	-.103	.122	.952	-.42	.22
			4	.286	.100	.025	.02	.55
		2	1	.249	.107	.113	-.03	.53
			3	.146	.137	.870	-.22	.51
			4	.535	.118	<.001	.22	.84
		3	1	.103	.122	.952	-.22	.42
			2	-.146	.137	.870	-.51	.22
			4	.389*	.132	.019	.04	.74
		4	1	-.286	.100	.025	-.55	-.02
			2	-.535	.118	<.001	-.84	-.22
			3	-.389	.132	.019	-.74	-.04
Exercise	Scheffe	1	2	.326	.123	.070	-.02	.67
			3	.364	.143	.090	-.04	.76
			4	.660	.120	<.001	.32	1.00
		2	1	-.326	.123	.070	-.67	.02
			3	.038	.161	.996	-.41	.49
			4	.334	.141	.133	-.06	.73
		3	1	-.364	.143	.090	-.76	.04
			2	-.038	.161	.996	-.49	.41
			4	.295	.159	.327	-.15	.74
		4	1	-.660	.120	<.001	-1.00	-.32
			2	-.334	.141	.133	-.73	.06

		3	-.295	.159	.327	-.74	.15
Dunnett T3	1	2	.326	.117	.031	.02	.63
		3	.364	.138	.051	.00	.73
		4	.660*	.126	<.001	.33	.99
	2	1	-.326	.117	.031	-.63	-.02
		3	.038	.150	1.000	-.36	.43
		4	.334	.138	.090	-.03	.70
	3	1	-.364	.138	.051	-.73	.00
		2	-.038	.150	1.000	-.43	.36
		4	.295	.157	.309	-.12	.71
	4	1	-.660	.126	<.001	-.99	-.33
		2	-.334	.138	.090	-.70	.03
		3	-.295	.157	.309	-.71	.12