



The Effects of Participation in Outdoor Adventure Recreation on Quality of Life in Older Adults

Deborah Sugerman, Ph.D.

Experiential Concepts

ACKNOWLEDGEMENTS

- Research project partially funded by a grant from the Florence V. Burden Foundation.
- Statistical analysis completed by Fran Chickering.

POPULATION STATISTICS

POPULATION	TOTAL	60 AND OLDER
	301,237,703	52,451,413
MALE	49.3%	43.7%
FEMALE	50.7%	56.3%
MEDIAN AGE	36.7	70.5

Population 60 Years and Over in the United States

Data Set: 2006-2008 American Community Survey 3-Year Estimates

Source: U.S. Census Bureau

QUALITY OF LIFE

HEALTH RELATED QOL (HRQOL)

- Encompasses domains of life directly affected by changes in health including symptom states, functional status, mental health, and social engagement .

NON HEALTH RELATED QOL

- Encompasses outside influences on domains of life including features of both the natural and the created environment and personal resources.

(Spilker and Revicki, 1999)

QUALITY OF LIFE RESEARCH

To determine the effects of disorders and chronic illnesses on a person's daily living functions:

- Asthma
- Spinal cord injuries
- Breast cancer
- Multiple sclerosis

To evaluate the impact of specific interventions on quality of life:

- Memory program with people with Alzheimer's
- Exercise with people with irritable bowel syndrome
- Psychotherapeutic interventions with people with bipolar disorder

QUALITY OF LIFE IN OLDER ADULTS

Katz (1963) and Lawton and Brody (1969)

- Chronic illness and disease negatively impacts functional ability and QOL in later life;
- Focus should be the development of clinical and environmental strategies to minimize the effects of illness/disease and maximize abilities and strengths to enhance QOL in older people.

IMPACTS ON QOL IN OLDER ADULTS

- Physical activity (PA)
 - Exercise, strength training, leisure activities
- Social support as it relates to PA
 - Instrumental and emotional support from friends
- Natural environment as it relates to PA
 - Quality of open space
- Self efficacy as it relates to PA
 - Provision of successful experiences, supportive feedback, and credible role models

CURRENT RESEARCH

- Goals –
 - To build on previous research on links between PA and QOL;
 - To broaden the concept of PA to include outdoor adventure recreation programming.

METHODS - PARTICIPANTS

EXPERIMENTAL GROUP

- Participants in a community based outdoor adventure recreation program for adults over 50.
- Program housed in a community health services program of a private, non-profit hospital.
- Hiking, kayaking, snowshoeing programs offered 1-2 times per month.
- Pre-test N = 53
- Post-test N = 35
- Return rate = 69%

CONTROL GROUP

- Participants in a community based non-physical leisure program for adults over 50.
- Program housed in a community health services program of a private, non-profit hospital.
- Knitting group offered weekly and men's group offered monthly.
- Pre-test N = 32
- Post-test N = 19
- Return rate = 59%

METHODS - INSTRUMENT

- SF-36v2[®] Quality of Life Survey (Ware & Sherbourne, 1992)
- Yields an 8-scale profile of functional health and well-being scores as well as psychometrically-based physical and mental health summary measures.
- Developed in 1988 as a generic outcome measure designed to examine a person's perceived health status.

DOMAINS OF SF-36v2[®]

- **Physical Functioning (PF)**
- **Role-Physical (RP)**
- **Bodily Pain (BP)**
- **General Health (GH)**
- **Vitality (VT)**
- **Social Functioning (SF)**
- **Role-Emotional (RE)**
- **Mental Health (MH)**
- **Physical Component Summary**
- **Mental Component Summary**

SF-36v2[®] RELIABILITY/VALIDITY

- Published reliability statistics have exceeded the minimum standard of 0.70 recommended for measures used in group comparisons (Tsai, Bayliss, & Ware, 1997)
- Reliability statistics for physical and mental summary scores usually exceed 0.90 (Ware et al., 1994)
- Studies to date have yielded content, concurrent, criterion, construct, and predictive validity (Ware et al., 1994)

RELIABILITY OF SF-36v2[®] IN CURRENT STUDY

<i>SF-36v2 Subscale</i>	Cronbach's α
Physical Functioning	0.92
Role Physical	0.91
Bodily Pain	0.81
General Health	0.72
Vitality	0.78
Social Functioning	0.75
Role Emotional	0.95
Mental Health	0.78

SCORING THE SF-36v2[®]

- All items, scales, and summary measures are scores ranging from 0 to 100 so that a higher score indicates a better health state.
- The resulting norm-based scores (NBS) have a mean of 50 with a standard deviation of 10.
- As a general rule, when considering group-level data, it is recommended that scores within 0.3 standard deviation or 3 NBS points, of the mean be considered within the “average” or “normal” range for the U.S. general population.
- SF-36v2 domain means were normed with the U.S. population in 1998.

METHODS – DATA COLLECTION

- IRB obtained through private, non-profit hospital.
- Pre- and Post-testing was completed approximately one year apart.
- Demographic information asked gender and age on last birthday.
- Data on number of times participated in outdoor recreation programming collected at Post-test for experimental group.

METHODS – DATA COLLECTION

Experimental group participants were asked the following questions at pre-test:

- Previous participation in outdoor adventure recreation activities
- Current involvement in exercise
- Satisfaction with current health
- Reasons for participating in the current program

METHODS – DATA COLLECTION

- After each program, all experimental group participants completed the Borg Rating of Perceived Exertion Scale (Borg & Linderholm, 1967).
- Measurement of physical activity intensity level.
- Provides an estimate of heart rate during physical activity.

METHODS – DATA ANALYSIS

- SPSS for Windows v17 was used to analyze the data.
- Analysis of covariance was used to control for differences in SF-36v2[®] scales due to gender and age.

RESULTS - RESPONDENTS

(N=54)

	PRE TEST	%	POST TEST	%	% RETURN RATE
<i>CONTROL</i>					
MALES	11	34.4	9	47.4	81.8
FEMALES	21	65.6	10	52.6	47.6
TOTAL	32	100.0	19	100.0	59.4
<i>EXPERIMENTAL</i>					
MALES	17	33.3	11	31.4	64.7
FEMALES	34	66.7	24	68.6	70.6
TOTAL	51	100.0	35	100.0	68.6

RESULTS - DEMOGRAPHICS

	CONTROL		EXPERIMENTAL		TOTAL	
	N	MEAN AGE	N	MEAN AGE	N	MEAN AGE
GENDER - MALE	9	70	11	65	20	69
GENDER – FEMALE	10	74	24	62	34	65
TOTAL	19	72	35	63	54	66

RESULTS – EXPERIMENTAL GROUP

When have you participated in outdoor adventure recreation activities (i.e. hiking, paddling, bicycling, skiing, snowshoeing, and/or camping)? Check all that apply. (N=35)

	FREQUENCY	PERCENT
As a child (0 – 10)	25	71%
As an adolescent (11-18)	28	80%
As a young adult (19-30)	32	91%
As an adult (31-55)	32	91%
As an older adult (56-80+)	28	80%
I have never participated	0	0%

RESULTS – EXPERIMENTAL GROUP

How often do you currently exercise? Check one. (N=35)

	FREQUENCY	PERCENT
Never	0	0%
Less than once a month	0	0%
More than once a month/less than once a week	2	6%
Once a week	2	6%
More than once a week	31	89%

RESULTS – EXPERIMENTAL GROUP

How satisfied are you with your current health? Check one. (N=35)

	FREQUENCY	PERCENT
Extremely unsatisfied	0	0%
Not very satisfied	0	0%
Average	12	34%
Very Satisfied	16	46%
Extremely satisfied	7	20%

RESULTS – EXPERIMENTAL GROUP

Why are you participating in this program? Check all that apply. (N=35)

	FREQUENCY	PERCENT
Exercise	29	83%
Involvement with nature	28	80%
Learning skills and/or information	30	86%
Socialization	26	74%
Other: improve photography, fun, enjoyment, fun and adventure	5	14%

RESULTS – BORG SCALE

BORG SCALE – 54 TRIPS RATED

6	Very, very light	4%
7		8%
8		4%
9	Very light	19%
10		6%
11	Fairly light	19%
12		19%
13	Somewhat hard	17%
14		
15	Hard	2%
16		
17	Very hard	2%
18		
19	Very, very hard	
20	Maximum exertion	

RESULTS – EXPERIMENTAL GROUP PARTICIPATION DURING YEAR

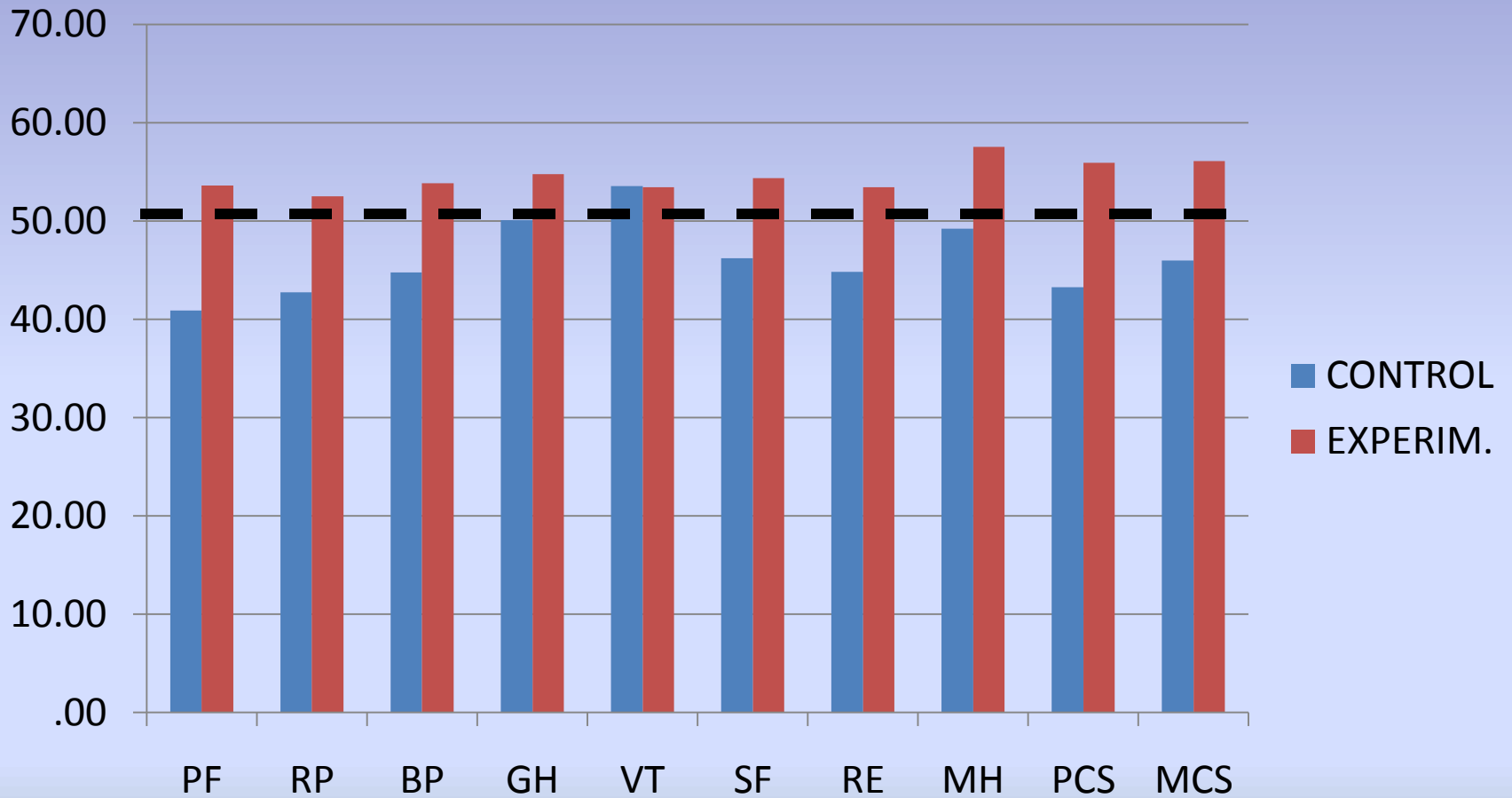
- Programs offered from 3/08 – 2/09: 15
- Average # of programs attended: 2.26
- Range: 1-9
- Outdoor activities done additionally during year:

NUMBER OF TRIPS	RESPONDENTS
0-5	9
6-10	5
11-20	5
21-30	3
31+	8

RESULTS – PRE TEST SCORES

SF36V2 DOMAINS	N	CONTROL MEAN	CONTROL SD	EXPERIM. MEAN	EXPERIM. SD
Physical Functioning	54	40.92	11.51	53.64	3.88
Role Physical	54	42.76	11.07	52.51	4.46
Bodily Pain	54	44.77	10.25	53.86	4.07
General Health	54	50.10	8.16	54.75	3.09
Vitality	54	53.57	9.39	53.42	4.58
Social Functioning	54	46.23	11.99	54.36	5.90
Role Emotional	54	44.83	9.54	53.44	4.72
Mental Health	54	49.25	9.96	57.53	5.78
Physical Component	54	43.26	10.10	55.91	3.10
Mental Health Comp.	54	45.97	9.26	56.12	5.13

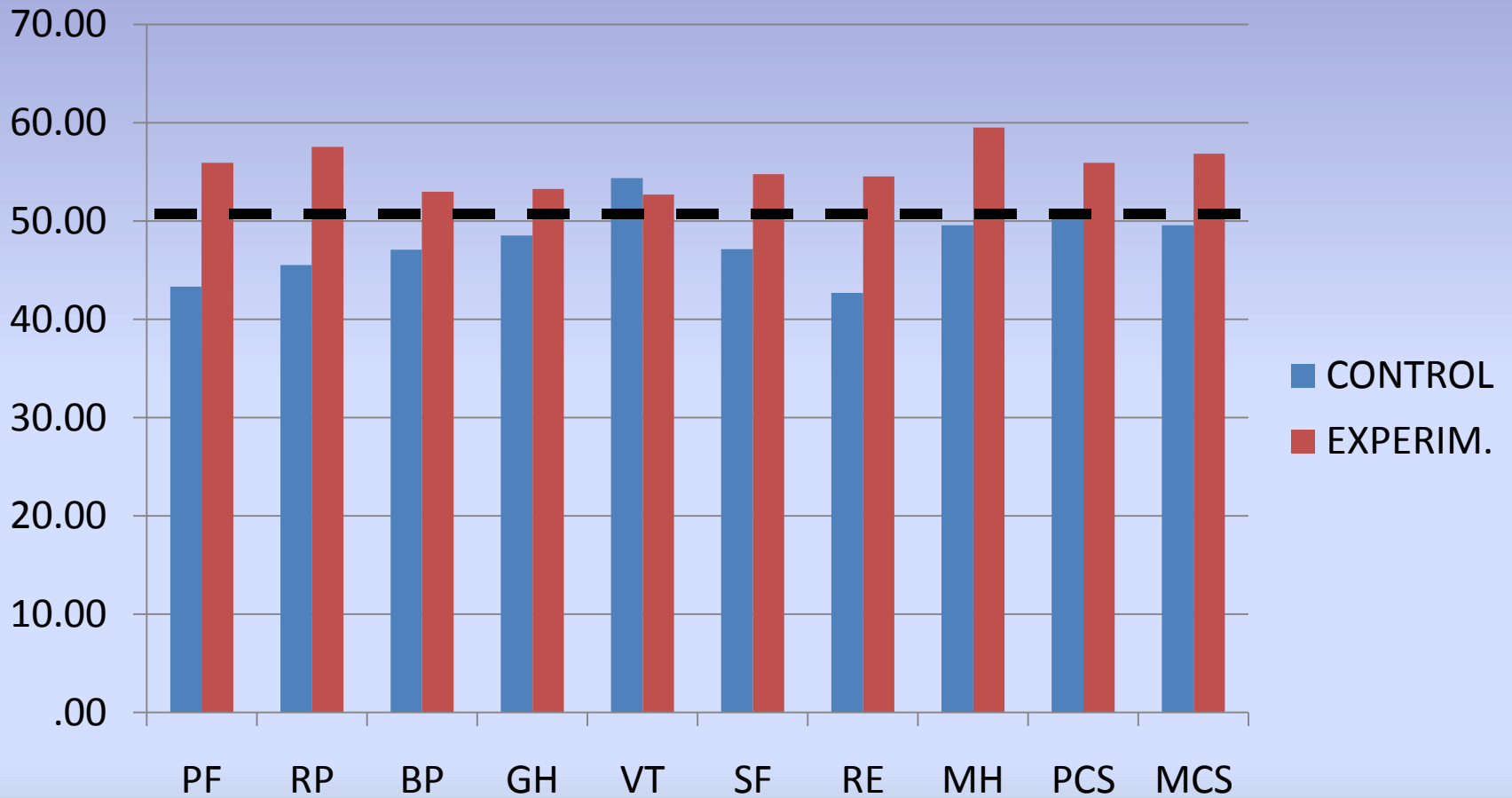
MEAN SCORES PRE TEST



RESULTS – POST TEST SCORES

SV36V2 DOMAINS	N	CONTROL MEAN	CONTROL SD	EXPERIM. MEAN	EXPERIM. SD
Physical Functioning	52	43.35	13.57	55.95	5.32
Role Physical	53	45.56	9.55	57.54	4.29
Bodily Pain	53	47.09	10.87	53.01	3.82
General Health	54	48.56	10.79	53.28	5.29
Vitality	54	54.39	9.86	52.70	4.24
Social Functioning	53	47.15	10.17	54.79	6.55
Role Emotional	53	42.71	15.67	54.44	4.33
Mental Health	54	49.56	10.96	59.49	5.87
Physical Component	52	50.71	8.39	55.91	3.85
Mental Health Component	52	49.59	12.42	56.87	4.68

MEAN SCORES POST TEST



SF-36v2[®] NORMED SCORES

(Ware et al., 2007)

SF36V2 DOMAINS	45-54	55-64	65-74	75+
Physical Functioning	48.67	46.24	43.54	37.15
Role Physical	49.58	47.79	44.98	40.26
Bodily Pain	48.17	47.79	47.32	44.96
General Health	49.28	49.05	48.44	46.20
Vitality	49.46	50.14	51.07	48.00
Social Functioning	49.66	49.43	49.85	46.21
Role Emotional	50.34	49.23	48.11	43.31
Mental Health	49.65	50.32	51.44	50.54
Physical Component	48.48	46.71	44.28	39.75
Mental Health Com.	50.22	50.93	52.38	50.48

SF-36v2[®] NORMED SCORES

SF36V2 DOMAINS	65-74	CONTROL MEAN PRE	CONTROL MEAN POST	EXPER. MEAN PRE	EXPER. MEAN POST
Physical Functioning	43.54	40.92	43.35	53.64	55.95
Role Physical	44.98	42.76	45.56	52.51	57.54
Bodily Pain	47.32	44.77	47.09	53.86	53.01
General Health	48.44	50.10	48.56	54.75	53.28
Vitality	51.07	53.57	54.39	53.42	52.70
Social Functioning	49.85	46.23	47.15	54.36	54.79
Role Emotional	48.11	44.83	42.71	53.44	54.44
Mental Health	51.44	49.25	49.56	57.53	59.49
Physical Comp.	44.28	43.26	50.71	55.91	55.91
Mental Health Comp.	52.38	45.97	49.59	56.12	56.87

ANOVAS: ANALYSES OF VARIANCE BY GROUP

SF36V2 DOMAINS	CONT. MEAN		EXPER. MEAN		PRE TEST		POST TEST	
	PRE	POST	PRE	POST	F	SIG.	F	SIG.
Physical Functioning	40.92	43.35	53.86	53.01	36.41	p≤.001	15.20	p≤.001
Role Physical	42.76	45.56	54.75	53.29	36.37	p≤.001	14.46	p≤.001
Bodily Pain	44.77	47.09	53.43	52.70	18.44	p≤.001	7.28	p≤.01
General Health	50.10	48.56	54.36	54.79	4.89	p≤.05	6.99	p≤.05
Vitality	53.57	54.39	57.53	59.50	3.69	ns	5.71	p≤.05
Social Functioning	46.23	47.15	55.91	55.91	20.63	p≤.001	20.56	p≤.001
Role Emotional	44.83	42.71	53.44	54.44	19.77	p≤.001	17.33	p≤.001
Mental Health	49.25	49.56	56.12	56.87	11.27	p≤.001	11.76	p≤.001
Physical Component	43.26	45.98	53.64	52.51	29.41	p≤.001	11.90	p≤.001
Mental Health Comp.	50.71	49.59	55.95	57.55	7.89	p≤.01	11.54	p≤.001

ASSOCIATION OF AGE WITH QOL SCORES

SF36V2 SUBSCALES	N	PEARSON CORRELATION		PEARSON CORRELATION	
		PRE	SIG	POST	SIG
Physical Functioning	54	-.475	p<_.001	-.445	p<_.001
Role Physical	52	-.468	p<_.001	-.399	p<_.01
Bodily Pain	54	-.449	p<_.001	-.480	p<_.001
General Health	52	-.343	p<_.01	-.265	ns
Vitality	54	-.388	p<_.01	-.394	p<_.01
Social Functioning	53	-.246	ns	-.307	p<_.05
Role Emotional	54	-.359	p<_.01	-.211	ns
Mental Health	53	-.369	p<_.01	-.396	p<_.01
Physical Component	54	-.252	ns	-.278	p<_.05
Mental Health Component	54	-.236	ns	-.265	ns

ANCOVAS: ANALYSES OF VARIANCE BY GROUP CONTROLLING FOR AGE & GENDER

SF36V2 SUBSCALES	CONT. MEAN		EXPER. MEAN		PRE TEST		POST TEST	
	PRE	POST	PRE	POST	F	SIG.	F	SIG.
Physical Functioning	42.01	44.66	53.26	52.32	19.60	p<.001	7.17	p<.01
Role Physical	43.63	47.48	54.28	52.30	19.12	p<.001	4.11	p<.05
Bodily Pain	45.25	47.68	53.17	52.40	10.23	p<.01		ns
General Health	51.82	50.49	53.43	53.74		ns		ns
Vitality	54.37	55.47	57.10	58.91		ns		ns
Social Functioning	46.81	46.38	55.60	56.31	11.23	p<.01	17.83	p<.001
Role Emotional	45.42	44.71	53.11	53.684	11.24	p<.01	8.35	p<.01
Mental Health	49.32	49.88	56.09	56.70	7.58	p<.01	6.73	p<.01
Physical Component	44.50	47.54	52.97	51.68	13.40	p<.001		ns
Mental Health Comp.	50.91	49.79	55.84	57.74	4.75	p<.05	7.14	p<.01

ANCOVAS: ANALYSES OF VARIANCE BY GROUP CONTROLLING FOR AGE

SF36V2 SUBSCALES	CONT. PRE		CONT. POST		EXP. PRE		EXP. POST	
	MEN	WOMEN	MEN	WOMEN	MEN	WOMEN	MEN	WOMEN
Physical Functioning	42.77	39.25	48.62	39.15	55.69	53.02	54.09	52.56
Role Physical	42.16	43.3	45.83	45.34	55.07	54.61	51.29	54.20
Bodily Pain	45.68	43.95	49.44	45.21	53.67	53.32	52.90	52.61
General Health	49.86	50.31	47.94	49.12	54.78	54.17	55.07	54.66
Vitality	53.83	53.34	58.35	50.84	59.19	56.77	59.47	59.51
Social Functioning	44.73	47.58	48.67	45.94	55.86	55.94	54.37	56.62
Role Emotional	47.24	42.66	47.62	38.78	55.17	52.64	55.88	53.77
Mental Health	51.65	47.1	50.32	48.88	57.94	55.29	56.66	56.96
Physical Component	43.09	43.41	47.84	44.48	54.03*	53.47*	52.50	52.52
Mental Health Component	52.14	49.42	52.52	47.24	57.47	55.26	57.41	57.60

F=3.25 $p < .05$ age=sig

SCORE CHANGE OVER TIME

SF36V2 SUBSCALES	CONTROL	EXPERIMENTAL	F VALUE	SIGNIFICANCE
Physical Functioning	-2.86	0.76	F=7.16	p _≤ .01
Role Physical	-2.90	1.47	F=5.19	p _≤ .05
Bodily Pain	-2.58	0.73		ns
General Health	1.54	-0.43		ns
Vitality	-0.82	-1.96		ns
Social Functioning	-1.52	0.00		ns
Role Emotional	1.72	-1.00		ns
Mental Health	-0.31	-0.74		ns
Physical Component	-2.78	1.07	F=5.46	p _≤ .05
Mental Health Comp.	0.70	-1.65		ns

DISCUSSION

- Goal 1: To build on previous research on links between PA and QOL
 - Current study supports previous research; positive association between physical activity and quality of life in older adults.
 - Experimental group mean scores at pre and post testing were higher than the norm and significantly higher than the control group.
 - No significant decrease over time in physical component of QOL in experimental group.

DISCUSSION

- Goal 2: To broaden the concept of PA to include outdoor adventure recreation programming.
 - Past studies have examined exercise, community walking, aquatics, and weight lifting programs.
 - The current results affirm the use of hiking, snowshoeing, and kayaking as appropriate in the general concept of physical activity for older adults.

STUDY LIMITATIONS

- Convenience samples
- Low numbers in both experimental and control groups
- Borg scale confusing
- Lack of information from control group
 - Previous physical experience at pre-test
 - Exertion rating scale of programming
 - Time involved in programming at post test

IMPLICATIONS FOR PROGRAMMING

- Confirmation of program model
- Replication

IMPLICATIONS FOR FUTURE RESEARCH

- Comparison of experimental group to control group that does no activity.
- Examination of the role of the following in outdoor adventure recreation programming as links to QOL:
 - Social support
 - Natural environment
 - Self efficacy

REFERENCES

- Borg, G. & Linderholm, H. (1967). Perceived exertion and pulse rate during graded exercise in various age groups. *Acta Medica Scandinavica*, 472, 194-206.
- Katz, S.; Ford, A.; Moskowitz, R. W.; Jackson, B. A.; and Jaffe, M. W. (1963). Studies of Illness in the Aged. The index of ADL: A Standardized Measure of Biological and Psychosocial Function. *Journal of the American Medical Association*, 185, 914–919.
- Lawton, M. P., and Brody, E. M. (1969) Assessment of Older People: Self-Maintaining and Instrumental Activities of Daily Living. *The Gerontologist* 9, 179–186.
- Spilker, B., and Revicki, D. A. (1999). “Taxonomy of Quality of Life.” In *Quality of life and Pharmacoeconomics in Clinical Trials*. Edited by B. Spilker. Philadelphia: Lippincott-Raven.
- Tsai C, Bayliss MS, Ware JE. (1997). *SF-36® Health Survey Annotated Bibliography: Second Edition* (1988-1996). Boston, MA: Health Assessment Lab, New England Medical Center.
- Ware J. & Sherbourne C. (1992). The MOS 36-item Short-Form health survey (SF-36): I. Conceptual framework and item selection *Medical Care* 30, 473-83.
- Ware J, Kosinski M, Keller S. (1994). *SF-36® Physical and Mental Health Summary Scales: A User's Manual*. Boston, MA: The Health Institute.

