

PHYSICAL ACTIVITY ASSESSMENT BY
TWENTY - FOUR HOUR RECALL RECORD FOR
WOMEN 20 - 69 YEARS: RELIABILITY OF
MEASUREMENT

Thesis for the Degree of M. A.
MICHIGAN STATE UNIVERSITY
GAIL BROWN

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ABSTRACT

PHYSICAL ACTIVITY ASSESSMENT BY TWENTY-FOUR HOUR RECALL RECORD FOR WOMEN 20-69 YEARS: RELIABILITY OF MEASUREMENT

By

Gail Brown

Research evidence is accumulating which leaves little doubt that habitual physical activity in one's daily life is an essential factor in helping to maintain and promote optimal levels of health and physical fitness. To determine how much and what kind of physical activity is essential, it is necessary to develop a valid and reliable tool to classify individuals into activity subgroups. Whether the differences between such activity groups are, in fact, great enough to be important and meaningful in understanding the role of physical activity in health will need to be determined. The important point is that the measurement of physical activity is sufficiently accurate to place the subject in an activity subgroup with reasonable certainty.

The primary purpose of this study was to validate the data obtained on a 24-hour recall record against information obtained in an interview questionnaire covering the entire

year. In this study, the reliability of the 24-hour recall record method will be described by its ability to classify subjects into similar descriptive activity groups by comparison with data obtained from yearly interview questionnaires.

Seventy-three Caucasian middle class women served as subjects. All subjects were volunteers. The subjects were divided into three age groups: 20-34; 35-49; and 50-69 years. Four 24-hour recall records were obtained from each subject during the summer of 1966. One recall record was obtained by interview. The other three recall records were kept by each subject as a personal diary covering three consecutive days. The days covered by the recall record included two week days and two weekend days. Each subject was interviewed using the yearly interview questionnaire. The information obtained from these recall records (24-hour and yearly) was the source of data for assessing physical activity energy expenditure. Caloric costs of different activities was determined based on information in the literature. The reliability of the 24-hour recall record was investigated using rank order correlation and the t test. Using these statistical techniques a comparison was made of energy expenditure as measured by both forms on the descriptive activity groups: leisure, occupation, homemaking and community.

In general, the data obtained from these two forms revealed similar trends; distribution of caloric expenditure

in the descriptive activity groups and energy groups for age and for the total population. No significant differences were found for classification of subjects into descriptive activity groups for homemaking/community and occupation. Leisure was the one descriptive activity group that showed significant differences. The results of the rank order correlations verified the above results. Homemaking/community and occupation had the highest rank order correlations and leisure the lowest. This difference is explainable by the fact that the weekly record was kept during the summertime when the subjects engaged in more physical activity. It would appear that the 24-hour recall record with additional questions pertaining to change in leisure activities over the year is a reliable procedure for classifying subjects into activity subgroups with reasonable accuracy.

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HOUR RECALL RECORD FOR WOMEN 20-69 YEARS:
RELIABILITY OF MEASUREMENT

By

Gail Brown

A THESIS

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Education, and Recreation

1969

DEDICATION

To my husband, Barry

My parents, Esther and Matthew Scholder

My brothers and sister, Billy, Paul, and Debbie

ACKNOWLEDGMENTS

I wish to sincerely thank my major professor, Dr. Janet Wessel, for her dedication, encouragement, and assistance cheerfully given during the three years I worked on this thesis. Special thanks are also extended to Anita Small, Fran Koenig, Snow White, and my husband, Barry, for all the excellent ideas and help they contributed to this project. My heartfelt thanks are especially extended to each volunteer who served as a subject and without whose cooperation this study would have been impossible.

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CHAPTER I

INTRODUCTION

Automation and high standards of living in the United States have resulted in a decrease of habitual physical activity for most adults and children. This has led some investigators and medical doctors to hypothesize that lack of frequent and regular activity in work, off work, and leisure pursuits contributes to the development of certain pathologic conditions and low levels of health-physical fitness. In order to test this assumption, it is necessary to have a valid and reliable tool for classifying a free-living population into activity subgroups.

Statement of the Problem

The primary purpose of this study was to validate the data obtained from a 24-hour recall record against information obtained from an interview questionnaire covering the entire year. In this study, the reliability of the 24-hour recall record method will be described by its ability to classify subjects into similar descriptive activity groups by comparison with data obtained from yearly interview questionnaires.

Limitations of the Study

1. The size of the sample was limited to seventy-three volunteer women from varying geographical areas.
2. All the conditions and problems involved in the administering of a questionnaire covering a year and in the keeping of a personal diary: to recall pertinent activities; to accurately estimate time spent in these activities; and the supplying of misleading information in an attempt to give answers the interviewer might want to hear.
3. The need to estimate caloric cost of individual activities not found in the research literature.

Definition of Terms

1. Short Form. This is a 24-hour recall record consisting of time spent in daily activities for a four-day period (two weekdays and two weekend days, including three consecutive days). The first recall record is obtained by the interviewer while the other three are completed personally by each subject and returned through the mail to the investigator.
2. Long Form. This is a yearly interview questionnaire or recall record. It is composed of questions organized according to different descriptive activity groups (leisure, occupation, homemaking, community). All unaccounted for time is classified as sedentary and given a caloric expenditure of 1.4 calories per minute.

3. Descriptive Activity Groups. These are activities classified according to the following indices: leisure, occupation, homemaking and community, sedentary, sleep.

4. Energy Activity Groups. These are activities classified according to energy expenditure: Light 1.1 to 4.4 calories per minute; Moderate 4.5 to 6.0 calories per minute; Active 6.1+ calories per minute; Sleep 1.0 calories per minute.

CHAPTER II

REVIEW OF PREVIOUS WORK COMPLETED

Most of the information found in the literature assessing activity patterns of women is related to time expenditures for homemaking activities. A survey of the literature revealed only three studies (Herrold, 1961; Lebeau, 1965; and Wessel, Montoye, and Mitchell, 1965) concerned with the development of a questionnaire for assessing the physical activity patterns of women.

The yearly interview questionnaire form used in the research studies conducted on women at the Human Energy Research Laboratory, Michigan State University, has undergone several revisions and assessments. The reproducibility of physical activity measures obtained through interview questionnaire has been determined. Correlation coefficients of 0.7 to 0.8 for sequential measurements with time lapse of three months and one year have been demonstrated. Such reproducibility of physical activity assessment has been considered satisfactory for classifying a population into physical activity subgroups. In addition, the ability of this questionnaire to classify subjects with sufficient accuracy over the described time lapses given

above was determined by the t test. No significant differences were found for the classification of subjects into energy activity groups.

No attempt has been made to date to compare data obtained from a 24-hour recall record with the yearly interview questionnaire form. If the shorter form can classify subjects with reasonable accuracy into physical activity subgroups, it would be advantageous to us in conducting research.

CHAPTER III

METHODS OF PROCEDURE

Subjects

Seventy-three volunteer Caucasian women from the states of Michigan, New York, and New Jersey comprised this sample (25 subjects in the 20-34 age span; 25 subjects in the 35-49 age span; and 23 subjects in the 50-69 age span). All subjects were in the middle and upper-middle class socio-economic categories as determined by their husband's occupation and their educational background. (See Form 1 in Appendix.)

Physical Activity Recall Records

The long form, yearly interview questionnaire, used in the present study was developed at the Human Energy Research Laboratory, Michigan State University (Wessel, 1966; Lebeau, 1965). This interview questionnaire consisted of a series of questions inquiring about the kind and frequency of participation in physical activity in one's vocation and avocation over the preceding year. The questions sought information on all activities requiring appreciable energy expenditures in leisure, homemaking, community, and occupation.

The short form, 24-hour recall record used in the study, with instructions for filling out, is presented in the Appendix (see Form 2). The work sheets used for computing descriptive activity groups (Form 3) and energy groups (Form 4) are presented in the Appendix. The recall record required each subject to keep a daily personal diary of time spent in all activities engaged in during three consecutive days (one week day and the weekend). The first week day was recorded during the interview. Thus, a total of four recall records were obtained.

Physical Activity Estimates

Each individual activity defined in the recall records was assigned a caloric cost using the values listed by Passmore and Durnin (1955). For activity tasks not listed by Passmore and Durnin, estimates were made. Energy expenditure tables were developed by classifying the individual activities into one of four descriptive activity groups; occupation, leisure, homemaking, and community, and assigning caloric values. The four descriptive activity groups are presented in Table 1.

The classification of the individual activities into descriptive activity categories with assigned caloric cost facilitated the subsequent analysis of calculating energy expenditure for each index used in this study. The caloric cost of individual activities under each descriptive category

TABLE 1.--Four Descriptive Activity Groups.

Occupation	Homemaking	Community	Leisure
1. Walk/ride a bike or drive to/from work	1. Regular care of home and family members.	1. Regular services performed.	1. Sports
2. Standing, sitting, walking, vigorous movements involved in work.	2. Seasonal care of the home.	2. Seasonal/Yearly activities.	2. Gardening
	3. Special occasions or situations.		3. Refinishing, Redecorating.

is presented in Table 2. For both forms, energy expenditure was determined to calculate the indices: Occupation, Homemaking/Community, Leisure, Sleep, Sedentary, Yearly. The caloric cost of a particular individual activity was multiplied by the time spent by the subject in that activity. This was repeated for all the activities. The products were summed and divided by the total time to arrive at an average for each descriptive category. When estimating the overall energy expenditure, the leisure, occupation, homemaking/community, sleep, and sedentary groups were combined and averaged.

In addition to the indices described, all individual activities were classified into one of three groups based on energy requirements: Light 1.1-4.4 cal./min.; Moderate 4.5-6.0 cal./min.; Active 6.1 plus cal./min.; Sleep 1.0 cal./min.

Procedural Steps

During the fall and winter of 1966-1967, the subjects were personally contacted. At this time the study was explained, background information was obtained, (see Form 1 in Appendix) and the interviewer recorded the subject's responses on the long form. Upon completion of the long form, the interviewer obtained information of time spent by the subject in different activities for a twenty-four hour period. At the end of the interview period, instructions

TABLE 2.--Caloric Expenditure for Individual Activities Derived Primarily from
Passmore and Durnin, 1955.

Individual Activities	$\frac{\text{WMR}}{\text{BMR}}$	
	(Work-to-basal ratio multiplied by time spent by each subject in that activity.)	
A. Homemaking- Weekly, Regular		
1. Marketing (shopping- food, furniture, clothes)		4.0
2. a. Walking		4.0
b. Bicycle		5.0
3. Meal Preparation		3.2
4. Meal Cleanup		3.2
5. Light Washing		3.2
6. Heavy Washing		4.5
7. a. Hand Ironing		3.2
b. Mangle Ironing		4.2
8. Dusting, Vacuuming, Sweeping, Making Beds		4.2
9. Straightening Rooms		4.2
10. Stripping and Remaking Beds		4.5
11. Wet Mopping and Sponging Floors and Cleaning the Bathroom		4.5
12. Driving a Car		2.0
B. Homemaking- Weekly, Special		
13. a. Child Bathing, Dressing, etc. (Babysitting)		3.0
b. Lifting or Carrying Child		
1. 1-19 lbs.		3.0
2. 20-44 lbs.		4.5
3. 45-64 lbs.		6.0

4. 65-84 lbs.	7.5
5. 85-100 lbs.	8.5
c. Playing With Child, Walking With Child	3.5
14. a. Lifting or Pushing Ill Person	
1. 0-19 lbs.	3.0
2. 20-44 lbs.	4.5
3. 45-64 lbs.	6.0
4. 65-84 lbs.	7.5
5. 85-100 lbs.	8.5
6. Over 100 lbs.	9.0
b. Waiting on Ill Person	4.2
c. Bathing and Dressing Ill Person	3.0
15. a. Ascending and Descending Stairs (full flight)	6.7
b. Ascending and Descending Stairs (partial flight)	3.3
16. Sleep	1.0

C. Homemaking- Yearly	
17. Heavy Cleaning	4.5
18. Work Around the Home	4.5
19. Temporary Care of Ill Person (Refer to No. 14)	5.8
20. Shoveling Snow	5.8

D. Homemaking- Miscellaneous (for use on Short Form rather than on Long Form)	
Cutting Hair	3.2
Packing Clothes	4.1
Hanging Curtains	3.1
Watering and Caring for Plants while Standing	3.1
Washing a Car	4.5
21. Community Activities (see appropriate categories)	
a. Church and other Meetings	1.4
b. Sewing	1.4
c. Sitting Privately	1.4
d. Hostess for Tea	2.0
e. Singing	2.0
f. Decorating- Interior	2.0

TABLE 2--Continued.

Individual Activities	WMR BMR	(Work-to-basal ratio multiplied by time spent by each subject in that activity.)
g. Style Show- Model	2.0	
h. Practice or Play Piano or Organ	2.0	
i. Standing Privately	2.5	
j. Choir Practice	2.5	
k. Committee Chairman	3.0	
l. Church Nursery	3.0	
m. Girl Scout Leader	3.0	
n. Soliciting- Walking, ex. March of Dimes	4.0	
E. Leisure- Yearly		
22. Gardening	4.5	
23. Refinishing or Redecorating	4.2	
24-28. Other Leisure Activities		
Power Boating*	3.0	
Shuffleboard*		
Croquet*		
Fishing from Boat, Bank, or Ice***		
Blind Hunting		
Bowling*		
Wood Cutting (power equipment)*		
Horseshoe Pitching*		
Canoeing, Rowing (for pleasure)*		
Sailing*	3.5	
Golf (with power cart, 9 holes = $1\frac{1}{2}$ hrs., 18 holes = 3 hrs.)		

Horseback Riding*	
Softball*	
Volleyball*	
Archery*	4.0
Swimming (non-swimmer)*	
Table Tennis*	
Walking (3 mph, 10 blocks/mi)*	
Conditioning Exercises*	4.5
Gymnastics*	
Contemporary Dance*	
Social Dancing*	5.0
Bicycling	
Golf (no power cart, 9 holes-1 $\frac{1}{2}$ hrs., 18 holes-3 hrs.)	6.0
Cross-Country Hiking***	
Field Hunting****	
Stream Fishing****	
Run-Walk*	6.5
Swimming (swimmer)*	7.0
Scuba Diving*	
Water Skiing*	
Handball*	
Tennis*	
Badminton*	
Basketball*	
Paddleball*	
Ice or Roller Skating**	
Squash*	
Square Dancing	
Field Hockey*	8.0
Mountain Climbing***	
Snow Skiing	9.0
F. Occupation	
29. Driving	2.0
30. Walking	4.0

TABLE 2.--Continued.

		WMR BMR	(Work-to-basal ratio multiplied by time spent by each subject in that activity.)
Individual Activities			
31.	Bicycling	5.0	
32.	Walking and Standing (no arm work)	4.0	
	a. Light arm work (waitress, airline hostess, bookbinder)	4.1	
	b. Moderate arm work (housekeeper or maid)	4.2	
	c. Heavy arm work (scrubbing or special cleaning)	4.5	
33.	Standing (no arm work)	2.5	
	a. Light arm work (teacher, elevator operator, sales clerk, cook, dental hygienist, librarian, social worker, musician other than pianist or organist, medical technician, supervise lunch as a teacher might have to do, bar tender, light assembly work)	3.1	
	b. Moderate arm work (bakery worker, hairdresser, cook, dishwasher, nurse, occupational therapist)	3.2	
34.	Sitting- Light arm movement (secretary, classroom preparation)	2.0	
35.	See No. 13b.		
36.	Ascend and Descend a full flight of stairs	6.7	
	Ascend and Descend a partial flight of stairs	3.3	
37.	Driving	2.0	
38.	Walking	4.0	
39.	Bicycling	5.0	
40.	Sitting- Light arm movement	2.0	
41.	See No. 33.		
42.	See No. 32.		
43.	See No. 13b.		

44. Ascend and Descend a full flight of stairs	6.7
Ascend and Descend a partial flight of stairs	3.3
G. Sedentary- (for use on Short Form rather than on Long Form)	
Lying Down- resting or napping	1.2
Personal Care	1.4
Sitting (eating, listening to the radio, watching television, sewing, coffee break, talking, smoking, visiting, riding in a car)	1.4
Playing the Piano or Organ	2.0
Attending a Picnic	2.5
Standing	2.5
Playing Instrument other than Piano or Organ	3.1
H. All unaccounted for time was assumed as sedentary activity at a work-to-basal ratio of	1.4

*60 minutes per exposure
 **120 minutes per exposure
 ***180 minutes per exposure
 ****240 minutes per exposure

Exact minutes per exposure are used on the short form.

for filling out the remaining three 24-hour record forms were explained to the subject. These three forms, with directions for filling out, and a stamped self-addressed envelope for returning the forms were left with each subject.

The worksheets for computing energy expenditure for each descriptive activity group and energy groups, are presented in the Appendix, Forms 3-5.

Treatment of Data

A frequency distribution of average daily energy expenditure was calculated by age group and for the total population using the data of the yearly interview questionnaire and 24-hour recall records. The number of subjects falling into each division according to data obtained from each form is presented. The average daily energy expenditure for each index (descriptive and energy activity groups) was calculated from the data obtained from each form by age group.

The reliability of the 24-hour recall record was investigated using the t test. The t test used assumed two normal dependent or correlated subpopulations with nothing known about the variance:

Formula:

$$t = \frac{M_2 - M_1 - \delta_0}{\sqrt{\frac{N\epsilon D^2 - (\epsilon D)^2}{N^2 (N-1)}}$$

The .05 level of confidence was selected. In addition, rank order correlations were computed to further assess the reliability of the measurement. Using these statistical techniques, comparison was made of energy expenditure as measured by both forms on the descriptive activity groups: leisure; occupation; homemaking/ community; total (all groups combined) by age group and for the total population.

CHAPTER IV

RESULTS

Examination of the data presented in Table 3 shows that the greatest frequency of average daily caloric expenditure estimated from both the 24-hour record and yearly interview questionnaire occurred in the 2500-2799 calorie range followed by the 2800-3099 and the 2200-2499 ranges. Only a few scattered cases fell above or below these ranges. The average daily caloric expenditures estimated from the 24-hour recall record (short form) and yearly interview questionnaire (long form) for age group and for the total population is presented in Table 4. Comparison of energy expenditures estimated from both the long and short forms are similar for age groups and for the total population. In the descriptive activity subgroups, the greatest number of calories were expended for homemaking/ community and the least number in leisure. The same pattern was evident in the energy activity groups: the greatest number in light-sedentary and the least number in active.

The significant difference between the means obtained from the 24-hour recall record and the yearly interview questionnaire occurred in the category of leisure for the 20-34 age group and for the total population.

TABLE 3.--Frequency distribution of average daily caloric expenditure estimated from 24-hour recall record and yearly interview questionnaire--by age groups and total population. (N equals 73.)

Range of Total Calories	Age Groups							
	N=25 20-34		N=25 35-49		N=23 50+		N=73 Total Population	
	Form Long ¹	Short ²	Form Long	Short	Form Long	Short	Form Long	Short
3700-3999	0	1	0	0	0	0	0	1
3400-3699	1	0	1	0	1	0	3	0
3100-3399	2	1	2	2	2	1	6	4
2800-3099	6	7	8	7	4	5	18	19
2500-2799	8	11	10	14	11	11	29	36
2200-2499	6	5	4	2	3	6	13	13
1900-2199	2	0	0	0	2	0	4	0
1600-1899	0	0	0	0	0	0	0	0

¹Long Form: Yearly Interview Questionnaire.

²Short Form: 24-Hour Recall Record.

TABLE 4.--Average daily caloric expenditure for 24-hour recall record and yearly interview questionnaire by age group and total population.

Activity Groups	Age Groups							
	N=25		N=25		N=23		N=73 Total	
	20-34 years		35-49 years		50-69 years		Population	
	Form		Form		Form		Form	
	Long ¹	Short ²	Long	Short	Long	Short	Long	Short
1. Energy Activity Groups								
a. Sleep	474	500	425	497	405	489	436	495
b. Light	1955	2032	2170	2094	2056	2037	2061	2055
c. Moderate	176	116	153	152	200	140	176	136
d. Active	76	90	55	32	38	12	57	45
e. Sedentary	687	645	694	655	800	668	725	656
2. Descriptive Activity Groups								
a. Homemaking/Community	1050	907	1254	1266	1078	1074	1129	1083
b. Leisure	119	237	83	103	102	151	101	164
c. Occupation	352	448	348	254	313	295	338	333
d. Total	2682	2738	2804	2775	2698	2677	2729	2732

¹Long Form: Yearly interview questionnaire.

²Short Form: 24-hour recall record.

The rank order correlation coefficients in Table 5 revealed highest relationship between the 24-hour recall record and the yearly interview questionnaire for occupation and homemaking/community activities by group as well as for the total population. Leisure and total energy expenditure showed the lowest relationships. The results of the correlation analyses supports the above findings.

It is interesting to note, however, that the total energy expenditure value indicated no significant difference between the two forms. From the data, it would appear that the short form is a more reliable measure for the older age groups than the younger age group. The reliability of measurement for younger age group seemed to be affected by the leisure component. Examination of Table 1 indicated that the greatest variability occurred in the age group 24-34, particularly in the range of 3700-3999 for total calories expended. The same trend can be noted for leisure component for this age group in Table 2. Perhaps this is explained by the fact that their leisure activities do not vary much throughout the year and so remains relatively constant. The results indicate that the leisure component needs further refinement. It is readily apparent in this study that the short form is a more reliable measurement for the older age groups.

TABLE 5.--Comparison of descriptive activity subgroups by 24-hour recall record and yearly interview questionnaire for age groups and the total population.

A G E G R O U P S									
		n=25 20-34		n=25 35-49		n=23 50-69		n=73 Total Population	
Descriptive Activity Groups	r	t	Significant Differences	r	t	Significant Differences	r	t	Significant Differences
Homemaking and Community	** .621	2.058	N.S. ^a	* .439	- .2351	N.S.	* .495	.0500	N.S.
Leisure	.305	-2.4249	S. ^b	* .415	-1.1841	N.S.	.206	-1.3517	N.S.
Occupation	** .739	-1.564	N.S.	** .758	1.5442	N.S.	** .876	.2382	N.S.
Total Expenditures	.117	1.1142	N.S.	.334	.9017	N.S.	.315	.4190	N.S.
There is a Signi- ficant Difference when t is			<-2.06 >+2.06			<-2.06 >+2.06			<-2.00 >+2.00

^aN.S. means there is no significant difference.

^bS. means that there is a significant difference.

*=r_s significant at .05.

**r_s significant at .01.

Significance Values for r_s

N/rt:	>r _s	.05: >r _s	.01: >r _s
25	2.069:	.397	2.807: .505
23	2.080:	.414	2.831: .525
73	2.000:	.230	2.600: .302

*Siegel, Sidney: Nonparametric Statistics,
McGraw-Hill Book Co., New York, 1956;
pp. 202-213, Table B, p. 248. "To test
the significance of an obtained r_s . . . :

$$t = r_s \sqrt{\frac{N-2}{1-r_s^2}} . "$$

CHAPTER V

SUMMARY AND CONCLUSIONS

The primary purpose of this study was to validate the data obtained from a 24-hour recall record against information obtained from an interview questionnaire covering the entire year. In this study, the reliability of the 24-hour recall record method will be determined by its ability to classify subjects into similar descriptive activity groups by comparison with data obtained from yearly interview questionnaires.

Seventy-three Caucasian middle class women served as subjects. All subjects were volunteers. The subjects were divided into three age groups: 20-34; 35-49; and 50 and over. Four 24-hour recall records were obtained on each subject during the summer of 1966. One recall record was obtained by interview. The other three recall records were kept by each subject as a personal diary covering three consecutive days. The days covered by the recall record included two week days and two weekend days. Each subject was interviewed using the yearly interview questionnaire. The information obtained from these recall records (24-hour and yearly) was the source of data for assessing physical activity energy

expenditure. Caloric costs of different activities was determined based on information in the literature. The reliability of the 24-hour recall record was investigated using the t test and rank order correlations. Using these statistical techniques, a comparison was made of energy expenditure as measured by both forms on the descriptive activity subgroups: leisure, occupation, homemaking and community.

In general, the data obtained from these two forms revealed similar trends; distribution of caloric expenditure in the descriptive activity groups and energy groups for age and for the total population. No significant differences were found for classification of subjects into descriptive activity groups for homemaking/community and occupation. Leisure was the one descriptive activity group that showed significant differences. The results of the rank order correlations verified the above results. Homemaking/community and occupation had the highest rank order correlations and leisure the lowest. This difference is explainable by the fact that the weekly record was kept during the summertime when the subjects engaged in more physical activity. It would appear that the 24-hour recall record with additional questions pertaining to change in leisure activities over the year is a reliable procedure for classifying subjects into activity subgroups with reasonable accuracy.

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APPENDICES

APPENDIX A

- Form 1. Background Information
- Form 2. Instructions and 24-Hour Activity Recall Record (short form).
- Form 3. 24-Hour Recall Record--Descriptive Activity Groups.
 - Part 1. Work Sheet.
 - Part 2. Summary Work Sheet.
- Form 4. 24-Hour Recall Record--Energy Groups.
 - Part 1. Work Sheet.
 - Part 2. Summary Work Sheet.
- Form 5. Wessel's Yearly Interview Activity Questionnaire.
- Form 6. Work Sheet - Yearly Questionnaire.
 - Part 1.
 - Part 2.

Form 1. Background Information

Name _____		Subject Number _____	
Date _____		Interviewer _____	

1. Name _____	Birthdate _____	Years _____	Months _____	Age at last birthdate _____
2. Marital Status _____	If married, husband's occupation _____			
3. What is highest grade you completed (check one)	1. _____ None	2. _____	Elem. 1-8	
4. What is the highest degree awarded to you? (check one if applicable)	3. _____	Sec. 9-12	4. _____	College 1-5
5. What is the major source of your family income? (check one)	1. _____	High School Diploma		
	2. _____	Bachelor		
	3. _____	Master		
	4. _____	Doctorate		
	1. _____	Inherited Savings and Investments		
	2. _____	Earned Wealth		
	3. _____	Profits, Fees, Royalties		
	4. _____	Salary, Commissions		
	5. _____	Wages on Hourly Basis		
	6. _____	Odd Jobs or Seasonal Work		
	7. _____	Public Relief		

Form 2. Instructions and 24-Hour Activity Recall
Record.

Name _____ Subject Number _____

Date Given _____

1. Fill out form twenty-four hour activity recall record.
Include 3 consecutive days- Friday, Saturday, Sunday,
or Saturday, Sunday, and Monday in the four-day record.

1. Friday (Date) _____
2. Saturday (Date) _____
3. Sunday (Date) _____
4. Monday (Date) _____

2. Start each day when you wake up in the morning.
3. Count hours of sleep from when you go to bed until you
wake up the following morning.
4. Be as accurate as possible in time spent in each activity.
5. In activities which are not self-explanatory, be sure to
indicate whether you were sitting, standing, or walking.
6. If you lifted, carried, or pushed something, please
indicate how much it weighed.
7. Include the number of times you climbed stairs- up and
down counts as one trip. This number may be added at the
end of the day.
8. At the left-hand side of each line, write the time spent
for each activity. Then write what the activity was. Start
each new time on a new line. If you need more room, write
on the back of the page.
9. Each record should be filled out at the same time each day.
10. Return these records in the attached self-addressed
stamped envelope.
11. If you run into difficulty, call Gail Brown at this
phone number 355-6074.

Thank you so much for your cooperation.

Form 3. 24-Hour Recall Record--Descriptive Activity Groups
Part 1. Work Sheet

Name _____
Subject number _____
Day _____ Date _____

I. Homemaking Meal Preparation & Cleanup	Straightening up Shopping & Dusting, Vacuum- Walking to/ ing, Sweeping, from Stores Bed-Making	Light washing, Ironing, & Folding, & Put- ting Clothes Away.	Stripping & Remaking Bed.
	Mopping Floors Cleaning Bath- room, Special Cleaning	Child Care	
II. Community	III. Sleeping	IV. Sedentary Sitting Eating Personal (Sitting) Care	Lying Down
V. Leisure	VI. Occupation- Working while: Sitting	Walking	Driving to/ from or in connection with work

Form 5. Wessel's Yearly Interview

Activity Questionnaire¹

Name _____
Subject Number _____
Date _____
Interviewer _____

Introduction: We know that most of us receive assistance with household duties from one or more members of our families. I am interested in the time you, yourself, spend in these activities rather than in the total time spent by the family or by professional help outside of the family.

- A. Homemaking - Weekly, Regular - First, I would like to ask you some questions about homemaking duties which the majority of women do daily or weekly. (Where time is indicated, interviewer should note time in hours and minutes).

Time Spent

About how much time did you spend last week doing the following:

1. Marketing and shopping? Include the time you were in the stores and the time spent in loading and unloading the groceries and packages but not the time spent in getting to and from the store. 1. _____
2. Getting to and from the stores by:
(a) walking 2a. _____
(b) bicycle 2b. _____
3. Preparing meals? Include preparing the food, setting the table, serving the food and packing lunches.
3a. Breakfasts _____
3b. Lunches _____
3c. Dinners _____
Total 3. _____

¹Form developed over a period of three years in conjunction with physiological assessment of women carried on at the Human Energy Research Laboratory, Dept. H.P.R., M.S.U..
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4. Cleaning up after meals? Include clearing the table; putting food away; scraping, stacking, washing, rinsing, drying and putting the dishes away; cleaning the stove and sink and emptying the garbage.
- 4a. Breakfasts _____
- 4b. Lunches _____
- 4c. Dinners _____
- Total _____ 4. _____
5. Gathering clothes and linens; spotting, putting clothes into and removing from the washer if you use one? Include light hand washing and the time taken to put clothes in and remove from an automatic dryer if you use one. 5. _____
6. Scrubbing clothes, hand wringing or hanging clothes on a line to dry? 6. _____
- 7a. Dampening, hand ironing, folding and putting clothes away? 7a. _____
- 7b. Ironing or pressing using a mangle? 7b. _____
8. Dusting, vacuuming and sweeping? 8. _____
9. Picking up clothes, putting rooms in order and making beds on days you didn't strip them? 9. _____
10. Stripping beds and remaking them? 10. _____
11. Wet mopping and sponging floors and cleaning the bathroom? Even if you do it weekly, please don't include scrubbing and waxing floors or shaking rugs. These will be asked later. 11. _____
12. Driving a car for such purposes as visiting, getting to and from community activities, chauffeuring family members to school, work, music lessons, sports, etc., in other words, for anything other than getting to and from your work or in connection with your work? 12. _____
- B. Homemaking - Weekly, Special - Now I would like to ask about other activities you might do weekly, depending on your own personal situation.

AQ-3
Subject No. __

13. Do you have small children or infants who need assistance with feeding, bathing, dressing and so on? Yes _____ No _____
(if "no", interviewer should go on to question 14; if "yes", ask sub-questions under 13.)

13a. How much time did you spend last week feeding, bathing, dressing and putting the children to bed?

13a. _____

13b. Lifting or carrying small children or infants. How much does each child weigh?

13b. _____

wgt. _____

wgt. _____

13c. What types of physical activities do you regularly do with small children or infants such as playing on the floor with them, pushing a stroller, playing in the yard, etc.? How much time did you spend last week doing each? (Don't use weight of child for playing, walking in the yard, or pushing child on swings, etc.)

13c₁ _____
Activity

13c₁ _____

13c₂ _____
Activity

13c₂ _____

13c₃ _____
Activity

13c₃ _____

14. Are there family members or others who have physical impairments or chronic conditions requiring special care which you, yourself, have performed for approximately the last year? Yes _____ No _____ (if "no", go to question 15; if "yes", ask sub-questions.)

14a. About how much time did you spend last week carrying, lifting, or pushing this person? How much does the person weigh?

14a. _____

wgt. _____

14b. Carrying trays, bringing medications and running errands?

14b. _____

14c. Are there other things you do for this person? How much time did you spend last week doing them? (List)

AQ-4
Subject No. ____

14c₁ _____

14c₁ _____

14c₂ _____

14c₂ _____

15. a. About how many times did you ascend and descend a full flight of stairs last week? Count up and down as one trip. (Except in occupation.)

15a. _____
No. of trips

- b. About how many times did you ascend and descend a partial flight of stairs last week? This would roughly be between 3 and 9 steps.

15b. _____
No. of trips

16. About how many hours do you sleep a night?

16. _____
hours/night

In relationship to what you have just told me about your weekly activities, would you say that the time you spend in these homemaking activities changed much in the last year? (If questioned on the word "much", check "yes" and ask questions, a, b and c) Yes _____ No _____ (if "no" skip to Catagory "C"; if "yes", ask a, b, and c.)

- a. For how long did it change? _____ (weeks)

- b. What kind of change was it? (Find out which weekly activities changed and get a quantitative estimate of how much more or less time was spent - e.g. 1/2 as much, 5 hours per week more, didn't do any at all, etc.)

activities

more or less time?

- c. Why did it change? _____

- C. Homemaking - Yearly - Now, if I may, I would like to ask about some of the things you may have done over the last year, but which you probably did not do as regularly as what I have already asked. (In all questions concerning

AQ-5
Subject No. ____

yearly activities, help respondent to figure total time in hours per year by asking "for how many weeks?" If she tends to think in hours per week record in hours per year.)

17. About how much time did you spend in the last year doing such things as scrubbing floors on hands and knees, waxing floors, shampooing rugs or furniture, polishing furniture, beating rugs, washing woodwork, walls or windows, cleaning cupboards, rearranging furniture or doing other special cleaning? 17. ____
18. About how much time did you spend in the last year in doing work around the home such as painting walls or ceilings, hanging wallpaper, doing carpentry work such as building shelves or cupboards, sawing or chopping wood, laying flagstone or cement for a patio, painting the outside of the house, painting lawn furniture and washing, painting or hanging screens or storm windows? 18. ____
19. Did you spend any time in the last year taking care of a temporarily sick or injured person? Yes ____ NO ____ (if "no", skip to question 20; if "yes", ask 19 a, b and c.)
- a. About how much time did you spend carrying, lifting, or pushing this person? How much does this person weigh? 19a. ____
wgt. ____
- b. How much time carrying trays, bringing medications and running errands? 19b. ____
- c. Were there other things you did for this person? _____. How much time did you spend doing them? 19c. ____
20. About how much time did you spend last year shoveling snow? 20. ____
21. Are there any community activities or clubs such as Girl Scouts, church activities, Red Cross work, soliciting for the Mother's March, garden clubs, hospital work that you do? Yes ____ NO ____ (if "no" skip to question 22; if "yes", ask questions 21a, b and c and fill in the chart on Community Activities.)
(21. Community Activity scores go directly from chart to Work Sheet.)

AQ-6

Subject No. _____

- 21a. What are the names of the organizations or groups? (Interviewer should list here and also fill in the names of the organizations on the chart (Community Activities Chart)).

- 21b. Would you tell me, generally, the types of things you do in each? Please mention if you use machines, tools or equipment in these activities. (Interviewer should repeat the names of the organizations and list the types of things done by the name of the organization. List separately things done that are of different activity levels--such as typing and making beds as might be the case with volunteer hospital work.)
- 21c. About how much time did you spend last year doing each of these activities? (Interviewer should again repeat the name of the organization and the types of work done and list the times on the chart - e.g. "How much time do you spend typing at the hospital?" "About how much time do you spend making beds at the hospital?" NOTE: If any of the work involves lifting, carrying or pushing, find out the weight of the object and record this in the "kinds of things done" column.

COMMUNITY ACTIVITIES CHART

Name of organization	kinds of things done	Time yr.	MP ONE	Scores time/yr x $\frac{MP}{E.H.}$		
				Light	Moderate	Active
A	A ₁					
	A ₂					
	A ₃					
B	B ₁					
	B ₂					
	B ₃					
C	C ₁					
	C ₂					
	C ₃					
TOTALS						

- ## SPORTS ACTIVITY CHART

Name of Sport	Special Instructions (check applicable blanks)	Times Done/ Yr.	Mins/ Expos.	Total Min/ Yr.	WMR BMR	Scores =		
						Time/yr x $\frac{\text{WMR}}{\text{BMR}}$		
						Light	Moderate	Active
Swimming	Swimmer____ or Non Swimmer____							
Golf	9 Holes____ or 18 Holes____ Walk__ or Cart__							
Others:								
Totals								

25. (Recreational Activities Scores are to be put directly from the chart to the work sheet.)

- ### OTHER RECREATIONAL ACTIVITIES CHART

Name of Activity	Special Instructions (check applicable blanks)	Times/ Yr.	Mins/ Expos.	Time/ Yr.	EMR EMR	Scores = Time/yr x EMR		
						Light	Moderate	Active
Fishing	Type? stream__, boat__, shore__, etc.							
Hunting	Kind? blind__, field__							
Dance	Kind? social__, folk or square__, contemporary__							
Boating	Type? row__, canoe__, sail__, motor__							
Hiking	Type? Mts.__, flat walks__							
Others:								
Totals								

AQ-9
Subject No. ____

26. About how many times did you walk for one half hour or more last year? Please do not include any time you mentioned under hiking.

26. ____
Timesx60=Time

27. About how many times did you do conditioning exercises, gymnastics exercises or exercises for the purpose of loosing weight, figure control or for any other purpose for one half hour or more last year?

27. ____
Timesx60=Time

28. What other non-sitting activities did you engage in that have not been included? And how often did you do each?

28a. _____	28a. _____
28b. _____	28b. _____
28c. _____	28c. _____

- D. Employment - A few last questions on your work if you are employed or self-employed.

Have you been employed in the last year? Yes ____
No ____ (if "no", the interview is completed; thank respondent for assistance; if "yes", continue with the questions.)

Are you currently employed? Yes ____ No ____ (if "no", go to questions under Non-Current Employment; if "yes", ask questions under Current Employment.)

Current Employment

What is your present occupation? _____

How many hours a week do you work? _____

How many weeks per year do you do this work? _____

29. How many hours last week did you spend driving in connection with this work? Include time driving to and from work and any driving you do during work?

29. ____

30. How many hours did you spend last week walking to or from work?

30. ____

AQ-10
Subject No. __

31. How many hours did you spend last week riding a bicycle to, from or in connection with your work? 31. _____
32. How much time did you spend last week walking while at work? 32. _____
- 32a. What types of things do you do while walking?
- _____
- _____
33. How much time did you spend last week standing while at work? 33. _____
- 33a. What types of things do you do while standing?
- _____
- _____
34. How much time did you spend last week sitting while at work? 34. _____
- 34a. What types of things do you do while sitting?
- _____
- _____
35. How much time did you spend last week lifting, pushing or carrying objects while at work? 35. _____
- 35a. About how much do these things weigh? wt. _____
36. About how many times last week did you ascend and descend a full flight of stairs? Count up and down as one trip. 36. _____
- No. of trips

AQ-11
Subject No. _____

* * * * *

Have you basically done the same type of activity each week while you have worked at this occupation over the last year? Yes _____ No _____ (if "yes", skip questions a, b and c; if "no", ask questions a, b and c.)

a. For how many weeks did it differ? _____

b. What kind of change was it? (Find out what activities changed and get a quantitative estimate of how much more or less time was spent.)

activities

More or less time spent?

c. Why did it change? _____

* * * * *

Have you held any other job in the last year? Yes _____ No _____
(if "no", the interview is over; thank respondent; if "yes", ask the questions under Non-Current Employment.)

Non-Current Employment

While you are not currently doing this work, what other kinds of employment have you had in the last year? _____

_____ (* - use dotted lines if 2 non-current jobs were held in the last year)

How many hours per week did you work? _____

For how many weeks did you work at this in the past year? _____

37. How many hours per week did you spend driving in connection with this work? Include time driving to and from work and any driving in connection with the work. 37. _____

38. How many hours per week did you spend walking to and from work? 38. _____

AQ-12
Subject No. ____

39. How many hours per week did you spend riding a bicycle to and from work or in connection with your work?

39. _____

40. How much time did you spend per week sitting while at work?

40. _____

40a. What types of things did you do while sitting?

41. How much time did you spend per week standing while at work?

41. _____

41a. What types of things did you do while standing?

42. How much time did you spend walking while at work?

42. _____

42a. What types of things did you do while walking?

43. How much time did you spend per week lifting, carrying or pushing objects?

43. _____

43a. About how much did these objects weigh?

wgt. _____

wgt. _____

44. About how many times per week did you walk up and down a full flight of stairs?

44. _____

AQ-13
Subject No. __

Did you basically do the same type of activity each week while you worked at this occupation? Yes _____ No _____

Yes _____ No _____

(if "yes", interview is concluded; thank respondent; if "no", ask questions a, b and c.)

a. For how many weeks did it differ? _____ - - -

b. What kind of change was it?

- - - - -
- - - - -
- - - - -
- Activities - - -

- - - - -
- - - - -
- - - - -
How much more or less
time?

c. Why did it change? _____
- - - - -

(Interview is concluded; thank respondent for assistance.)

Form 6. Work Sheet--Yearly Questionnaire.

Name _____ Date _____ Tabulator _____ Subject Number _____

Activity	Time/week in mins. (15a+bare in # of times)	Weeks	Time/week (use only if time spent changed during the year)	Weeks	Time/Year in mins.	WMR ENR *	Score = time/year x $\frac{\text{WMR}}{\text{ENR}}$		
							Light 1.1- 4.4 cal.	Moderate 4.5-6.0 cal.	Active 6.1+ cal.
1						4.0			
2a						4.0			
2b						5.0			
3						3.2			
4						3.2			
5						3.2			
6						4.5			
7a						3.2			
7b						4.2			
8						4.2			
9						4.2			
10						4.5			
11						4.5			
12						2.0			
13a						3.0			
13b						*			
13c1						*			
13c2						*			
13c3						*			
14a						*			
14b						4.2			
14c1						*			
14c2						*			
15a						6.7			
15b						3.3			
Totals									
Homemaking									
Weekly									
16						1.0			

Form 6. Part 1--continued.

Name _____ Date _____ Tabulator _____ Subject Number _____

						Score = time/year x $\frac{WMR}{BMR}$		
Activity	Time/week in minutes	Weeks	Time/week (use only if time spent changed in the year)	Time/year in minutes	WMR BMR *	Light	Moderate	Active
						1.1- 4.4 cal.	4.5-6.0 cal.	6.1+ cal.
29					2.0			
30					4.0			
31					5.0			
32					*			
33					*			
34					*			
35					*			
36					6.7			
37					2.0			
38					4.0			
39					5.0			
40					*			
41					*			
42					*			
43					*			
44					6.7			
Totals								
Occupation								
Grand Total								
Homemaking, Community, Leisure								
and Occupation (*1-15, 17-44)								
Totals								
Sedentary**								
Grand Total - Homemaking, Community,								
Leisure, Occupation, Sedentary								
(everything but sleep) (#1-15, 17-44)								

*WMR

BMR will depend on weight, activity, etc. and cannot be filled in until questionnaire is given. Where weight is variable, it is boxed in in the top right box.

**Sedentary Time = 525600 minutes--total minutes accounted for (include time for homemaking, community, leisure, occupation, and sleep). Sedentary Score = 1.4 cal. x time.

Form 6. Part 1--continued.

Name _____		Date _____		Tatulator _____		Subject Number _____			
						Score = time/year x $\frac{\text{WMR}}{\text{BMR}}$			
Activity	Time/week (mins.)	Weeks	Times Done/year	Min./ expos.	Time/year (mins.)	WMR BMR *	Light 1.1- 4.4 cal.	Moderate 4.5-6.0 cal.	Active 6.1+ cal.
17						4.5			
18						4.5			
19a						*			
19b						4.2			
19c						*			
20						5.8			
Totals Homemaking Yearly									
Grand Total Homemaking Weekly and Yearly (1-15 and 17-20)									
21									
Totals Community									
Grand Total Homemaking and Community (#1-15 and 17-21)									
22						6.1			
23						5.8			
24									
25									
26						4.0			
27						4.5			
28a						*			
28b						*			
28c						*			
Totals Leisure									
Grand Total Homemaking, Community and Leisure (#1-15 and 17-28)									

Form 6. Summary Sheet for Yearly Questionnaire-Time and Piece/Day.

[illegible]

Name _____
 Subject No. _____
 Age Group _____
 Date _____

Form 6. Summary Sheet for Yearly Questionnaire-Time and Score/Day.

Categories	Based on Questions	Total Time Mins./Day	Total Time--Minutes/Day				Daily Score = Yearly Score ÷ 365			
			Sleep	Moderate	Active	Total Score Average/Day	Sleep	Light	Moderate	Active
Homemaking and Community	1-15 and 17-21		---		6.1+ cal.		1.0 cal.	1.1-4.4 cal.	4.5-6.0 cal.	6.1+ cal.
Leisure	22-28		---		6.1+ cal.		1.0 cal.	1.1-4.4 cal.	4.5-6.0 cal.	6.1+ cal.
Occupation	29-44		---		6.1+ cal.		1.0 cal.	1.1-4.4 cal.	4.5-6.0 cal.	6.1+ cal.
Sleep	16		---	---	---		1.0 cal.	1.1-4.4 cal.	4.5-6.0 cal.	6.1+ cal.
Sedentary	Calculated		---	---	---		1.0 cal.	1.1-4.4 cal.	4.5-6.0 cal.	6.1+ cal.
Grand Totals Average/Day			---	---	---		1.0 cal.	1.1-4.4 cal.	4.5-6.0 cal.	6.1+ cal.



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