

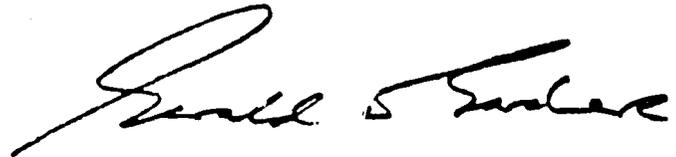
TO: Charlotte G. Neumann, P.I. Nutrition CRSP-Kenya
FROM: Gerald W. Gardner, Ph.D.
RE: Report of visit to the field August 10-September 9.

Although the main purpose of my visit was frustrated through equipment not being delivered on time to UCLA, several important functions were achieved.

1. The Physical Activity Pilot Study was completed (see attachment).
2. The arrangement for the laboratory at Kararumo were finalized.
3. A complete inventory of equipment and supplies already provided the field was made, and
4. The Beckman MMC, when it did arrive, was checked out.

Meetings with my counterpart, Prof Thairu and his staff Meke and Julius were held on several occasions, and although no training on the MMC was possible, protocols were reviewed and discussed. I was also able to work with Julius on the Physical Activity Recorders and the transfer of data from tape to hard copy.

The two staff meetings - one with all the enumerators and one with field staff, consultants and counterparts were also informative and worthwhile.



Physical Activity Pilot Study - Kenya

Between February and July 1983 Activity Recorders (Cardiodyne - Cardiocassette II) were placed upon eight (8) adult males, eight (8) adult females, four (4) preadolescent boys and four (4) redolescent girls as they performed representative everyday physical activities. The activity records tapes were then played back through a single channel EKG (Hewlett-Packard Model 1500B) and the heart rate for known activity recorded. From an average of the heart rate (HR) data a category of activities was compiled (See appendix) ranging from very light activities (HR <100BPM) through light activities (HR 100-120 BPM), moderate activities (HR 120-140 BPM) heavy activities (HR 140-160 BPM) and very heavy activities (HR > 160 BPM).

Field tests were also conducted at the Pilot Study Site on four (4) representative subjects (lead females ages 20-36 years) to check for feasibility and subject tolerance.

An enumerator (female) applied the electrodes and gave the subjects instructions for activation of the recorders and how to "voice over" for recording activities. These tests showed:

1. If correctly applied, the disposable type electrodes can provide good contacts for at least eight (8) hours without irritation to the subject.
2. The Cardiocassette if correctly anchored by tape and positioned does not interfere with normal activities of the adult women.
3. An enumerator with a minimal amount of instruction was quite capable of correctly applying the electrodes in the privacy of the subjects own house.
4. The Ss were able to learn how to activate the recorders, and to "voice over" the activities they were about to start or had just completed.
5. The Supervisor was able to service the recorders in the field, play back the tapes in the Embu laboratory and produce reliable and meaningful data.
6. On the basis of the Pilot Study data a form was constructed to serve both the direct measurement and recall parts of this study. Oxygen uptake data for the later to be provided by testing done in the Work Capacity phase of the project.

For the Main Study a sample of ten (10) lead females (5 pregnant and 5 non pregnant) will be followed one day/week for the first year. Data will consist of eight (8) hours direct measurement and sixteen (16) hours of recall.

Gerald W. Gardner



Average Heart Rates - Pilot Study

Adults 20-40 yrs N=8 8

Children 7-10 yrs N=4 4

<u>Activity</u>	<u>Children</u>		<u>Adults</u>	
Sleeping				
Sitting	89	92	85	81
Standing			88	87
Eating				
Food Preparation				
Walking-unloaded-flat	89		101	90
uphill	141		115	101
dwnhill	130	128		89
-loaded -flat			127	120
uphill	174	166	149	137
dwnhill			121	124
Running slow			132	133
fast	168	157		
Milking				87
Sweeping	126	119	95	93
Washing Clothes			103	
Cutting Grass			133	104
Weeding				
Chopping Wood				170
Threshing				
Digging			143	132
Planting			110	
Harvesting-Collecting- Gathering	124		113	103
Construction - Light - Heavy				
Bicycling			107	99

Energy Expenditure Based upon Heart Rates

Adult Females Only

<u>Very Light</u> (<u>< 100 BPM</u>)	<u>Light</u> (<u>100-120 BPM</u>)	<u>Moderate</u> (<u>120-140 BPM</u>)	<u>Heavy</u> (<u>140-160 BPM</u>)	<u>Very Heavy</u> (<u>>160 BPM</u>)
Sleeping	Walking-UNLD/ Uphill Walking-UNLD/ Dwnhl	Walking-LD/Flat	Walking-LD/uphill	Chopping firewood
Sitting	Washing clothes	Walking LD/ Downhill	Digging	
Standing	Planting	Cutting Grass		
Eating	Collecting/ gathering	Jogging		
Sweeping	Bicycling			
Food Prep.				
Walking-UNLD/flat				

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Physical Activity Recording

Supervisor

Will visit field at least 2X/wk.

Responsibilities

1. Maintain equipment - check batteries
clean recording heads
provide new tapes
2. Pick up tapes from field worker(s)
3. Make hard copy of tapes with times and activities noted
4. Complete physical activity data form
5. Provide supplies to field as needed - electrodes etc.

Field Worker(s)

Will collect data on 2Ss/day

Responsibilities:

1. Preparation of Ss
 - a. Abrad skin at electrode locations. First use alcohol wipe to remove grease and dirt, then scratch skin with pad provided on electrodes.
 - b. Apply electrodes in best positions for recording and patient comfort.
 - c. Snap on patient cable to electrodes Green (C) White (L) Red (R).
 - d. Tape down cables and lead out of Ss dress (tape down at neck).
 - e. Adjust recorder straps on Ss waist.
 - f. Connect recorder to patient cable.
 - g. Press "voice over" button (Red) and record HH[#], Ss[#] and name, time of day and date.
2. Instruction of Ss
 - a. Have Ss activate "voice over" button and speak to recorder whenever starts new activity.
 - b. Provide examples of activities.
 - c. Have Ss record baseline HR after 5 min rest period.
 - d. Notify Ss of arrangements for retrieving equipment.
3. Data Collection

6-8 hours of daily activity will be recorded directly with the recorders while the balance of time will be obtained by recall. Use the physical activity form for recall time allocations. (The supervisor will complete these for direct measurement and VO₂).

Physical Activity Form

Time	Activity	HR	VO ₂	Time	Activity	HR	VO ₂
0800 AM				0800 PM			
15				15			
30				30			
45				45			
900				900			
15				15			
30				30			
45				45			
1000				1000			
15				15			
30				30			
45				45			
1100				1100			
15				15			
30				30			
45				45			
1200				1200			
15				15			
30				30			
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400				400			
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45				45			
600				600			
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30				30			
45				45			
700				700			
15				15			
30				30			
45				45			