

**PHYSICAL DEMANDS ANALYSIS:****COOK/PRODUCTION KITCHEN AIDE**

CLIENT: Fairhaven LTC

COMPANY: Achieva Health

OCCUPATION: Cook/Production Kitchen Aide

REASON FOR REFERRAL: To determine physical demands of the Cook/Production Kitchen Aide

DATE OF ASSESSMENT: August 14<sup>th</sup>, 2014

DATE OF REPORT: Tuesday September 16, 2014

ASSESSORS: Christian Gallucci, M.Ed., B.Sc., R.Kin.  
Achieva Health

SIGNATURE:



Christian Gallucci  
M.Ed., B.Sc., R.Kin.

| ESSENTIAL TASKS   | PHYSICAL REQUIREMENTS  | FREQ./DURATION  |
|---|--|---|
| <p>1.0 Cooking Meals</p> <p>1.1 Preparing and cooking the meals</p> | <p>The tasks often changes depending on the menu. However the Cook/Production Kitchen Aide is either standing or walking. All food is prepared in an upright position. The Cook/Production Kitchen Aide engages in trunk flexion (0-45°) and rotation and neck flexion.</p> <p>The counter is 90 cm high and 70 cm deep; the Cook/Production Kitchen Aide has to engage in extended reach up to 60-70 cm to access materials at the back of the counter as well as above it (approximately 170 cm high) requiring approx. 90°-120° of shoulder flexion.</p> <p>The Cook/Production Kitchen Aide has to reach below the waist and above the head for items that are stored on shelves 175 cm from the floor. These tasks involve repetitive shoulder flexion (90°-120°), and elbow flexion (45°-90°) Also repetitive flexion of the knees (45°-90°) when squatting to retrieve items on lower shelves (50 lbs max).</p> <p>The Cook/Production Kitchen Aide has to engage in upper extremity activities such as grasping, pinching, twisting of the trunk, pronation/ supination of the wrist and manipulating cooking utensils in large and small appliances, fine finger dexterity and a great deal of reaching using both arms.</p> <p>Lifting and lowering bowls, pots, pans, etc. The weight of these can vary between 0.1-5 lbs.</p> <p>The ovens (2 conventional, 1 rational oven). The weight lifting pans in and out of the oven would vary depending on the menu between 0.1-5 lbs. There are also 2 steamers (used 6-7 times/day), 2 steam kettles and a deep fryer (used 1-2 times/week).</p> | <p>Continuous</p> <p>Occasionally</p> <p>Occasionally</p> <p>Frequently</p> <p>Occasionally</p> <p>Occasionally</p> |
| <p>1.2 Opening cans of soup/food</p>                                | <p>Mechanically opening 10-20 (48oz) cans of soup/food for each meal requires palmar grasping, wrist and forearm manipulation.</p>   | <p>Occasionally<br/>10-20 cans of soup/food<br/>1/day</p>   |
| <p>1.3 Cutting/Chopping</p>   | <p>Power grip of knife; repetitive elbow flexion/ extension and wrist manipulation</p>   | <p>Occasionally</p>   |

#### 1.4 Stirring soup or other food contents in large pot



Mixing the contents inside a large pot that is 95 cm (top of pot) from the floor requires palmar grasping, slight shoulder abduction and flexion and extension of the elbow to move the whisk in a circular motion.

Occasionally

| Back                | Neck            | Right  |  |   |                            | Hand Height<br>(See note 2)   |
|---------------------|-----------------|--|--|---|----------------------------|-------------------------------|
|                     |                 | Shoulder   | Elbow                                    | Wrist   | Grip                       | 20-200 cm                     |
| Flex                | Flex,<br>Extend | Flex,<br>Abduct,<br>Adduct,<br>internal/<br>external<br>rotation | Flex,<br>Extend,<br>Pronate,<br>Supinate | Flex,<br>Extend,<br>Ulnar/<br>Radial<br>Deviate | Pinch,<br>Palmer,<br>Power |                               |
| Forces              |                 | Left   |  |   |                            | Forward Reach<br>(See note 3) |
| Lift force 1-50 lbs |                 | Shoulder   | Elbow                                    | Wrist   | Grip                       | 18-60 cm                      |
|                     |                 | Flex,<br>Abduct,<br>Adduct,<br>internal/<br>external<br>rotation | Flex,<br>Extend,<br>Pronate,<br>Supinate | Flex,<br>Extend,<br>Ulnar/<br>Radial<br>Deviate | Pinch,<br>Palmer,<br>Power |                               |

#### 2.0 Handling Food

##### 2.1 Retrieving items from storage

Lifting boxes/bags from levels varying from floor 188 cm. The heaviest containers are kept on the floor or lower shelves. The items can weigh up to 44 lbs-50 lbs (flour, sugar, oatmeal, bag of onions and carrots). The average weight of an item that would illicit the use of a unilateral carry would be approximately 10-15 lbs. The employee would have to engage in squatting, stooping and/or crouching postures to access these containers. The employee is also required to engage in overhead reaching, lifting and lowering to access the containers on the upper levels of the storage area. Common postures are neck and trunk flexion and extension. Shoulder flexion and extension (45°-120°), elbow flexion (0°-90°) and wrist flexion (0°-45), as well as palmar grasping are necessary.

Occasionally

##### 2.2 Transferring the food to the warmers

Lifting (2-11 lbs) and placing inserts into warmers (racks from 28 cm-127 cm) and wheel to cambros (racks at 41cm-169cm). Postures include trunk flexion, bending, squatting and stooping. Palmar grasping and elbow flexion also required.

Occasionally



| Back  | Neck         | Right                                 |                                 |   |               | Hand Height<br>(See note 2)   |
|---|--------------|---------------------------------------|---------------------------------|---|---------------|-------------------------------|
|   |              | Shoulder                              | Elbow                           | Wrist                                       | Grip          | 30-220 cm                     |
| Flex  | Flex, Extend | Flex, Extend, Abduct, Internal rotate | Flex, Extend, Pronate, Supinate | Flex, Extend, Ulnar deviate, radial deviate | Power, Palmer |                               |
| Forces (See note 3)                                   |              | Right                                 |                                 |   |               | Forward Reach<br>(See note 3) |
| 2-50 lbs bilateral lift<br>~10-15 lbs unilateral lift |              | Shoulder                              | Elbow                           | Wrist                                       | Grip          | 18-70 cm                      |
|   |              | Flex, Extend, Abduct, Internal rotate | Flex, Extend, Pronate, Supinate | Flex, Extend, Ulnar deviate, radial deviate | Power, Palmer |                               |

### 3.0 Tidying the kitchen

#### 3.1 Wiping down all surfaces

The Cook/Production Kitchen Aide must engage in flexion and extension of the neck Flexion (0-45°) and extension (0-20°), shoulders (0-170°), full repetitive extension/ flexion of elbows, wrists, trunk flexion (up to 90°) and crouching (up to 120° of knee flexion). Medial and lateral deviation of wrists to wipe in and around various objects.

Occasionally

#### 3.2 Cleaning stationary pot (steam kettle)

The Cook/Production Kitchen Aide must hold a stooped posture over a large stationary pot that is 90 cm tall to properly clean the inside of it. The employee must engage in extended reach, shoulder flexion (45-90°) and medial and lateral deviation of the wrists.

Occasionally (1-2/day)

#### 3.3 Pot Washing

The Cook/Production Kitchen Aide /production kitchen aide will wash pots in the sink and will put them away at the end of their shift. They are kept in the pot storage on a 5 tier shelf (155cm, 125cm, 94cm, 65cm and 15cm). It can take up to 10 lbs of force to lift the mixer bowl to clean.

Occasionally (approximately 1 hour per meal)

#### 3.4 Removal of garbage

Power grip; lift and carry garbage bag (approx. 5-10lbs) to cart to bring to the large garbage bin.

Rarely;  
2-3x/ day



| Back                | Neck         | Left  |                                 |                                     |               | Hand Height<br>(See note 4) |
|---------------------|--------------|---|---------------------------------|-------------------------------------|---------------|-----------------------------|
|                     |              | Shoulder                                      | Elbow                           | Wrist                               | Grip          | 30 -100 cm                  |
| Flex                | Flex, Extend | Flex, Extend, Abduct, Adduct, Internal Rotate | Flex, Extend, Pronate, Supinate | Flex, Extend, Ulnar/ Radial deviate | Palmer, Pinch |                             |
| Forces (See note 3) |              | Right   |                                 |                                     |               | Forward Reach               |
| Up to 10 lbs lift   |              | Shoulder                                      | Elbow                           | Wrist                               | Grip          | 18-70 cm                    |
|                     |              | Flex, Extend, Abduct, Adduct, Internal Rotate | Flex, Extend, Pronate, Supinate | Flex, Extend, Ulnar/ Radial deviate | Palmer, Pinch |                             |

| Mobility   | Environmental concerns  | Conditions of work  | Sensory and Cognitive  |
|--|---|---|--|
| <b>Sitting:</b>  | <b>Unstable footing:</b> Slippery floors after mopping and when there is water on the floor | <b>Work Alone</b> (physically isolated from others)                                     | <b>Hearing:</b> communicate with team members  |
| <b>Standing:</b> Intermittent with walking   | <b>Heat stress:</b> hot beverages/food, stove, steamer, oven                                | <b>Work independently</b> (with other people in vicinity)                               | <b>Vision:</b> close visual acuity when preparing meals  |
| <b>Walking:</b> Intermittent with standing   | <b>Noise:</b> mixers, dishwasher  | <b>Work cooperatively</b> with Dietary Aids   | <b>Touch:</b> temperature taking of food   |
| <b>Climbing:</b> may climb stairs in the event of emergency situations             | <b>Moving objects:</b> carts  | <b>Work direction:</b> supervised   | <b>Smell:</b> food smells, grease trap odour   |
| <b>Crouching/squatting:</b> clean items on floor, retrieving item on lower shelves | <b>Vibration:</b> while using food mixer  | <b>Pace controlled by:</b> self   | <b>Speech:</b> communicate with team members   |
| <b>Kneeling:</b> to access lower levels  | <b>Sharp tools:</b> knives, cutlery, scissors   | <b>Multi-tasking:</b> perform multiple tasks at a time                                  | <b>Writing:</b> record food temperatures and dates   |
| <b>Balancing</b>   | <b>Lighting</b>   | <b>Emotional situations:</b>  | <b>Reading literacy:</b> daily activity log, reading recipes, production sheets, snack labels and product directions |
| <b>Foot action required:</b>   | <b>Chemical exposure:</b> sanitizers, oven cleaners, disinfectant, and soaps                | <b>Confrontational situations:</b>  | <b>Numerical literacy:</b> basic math skills   |
| <b>Fine finger dexterity:</b> chopping, pinching                                   | <b>Contact stress</b>   | <b>Operate equipment:</b> stove/oven, fridge, freezer, food mixers, pots & pans, mixers | <b>Decision making:</b> prioritize food preparation  |
|  |   |   | <b>Memory:</b> recall resident's daily activities  |
| <b>Head</b>  | <b>Eyes:</b> safety glasses if working with sanitizers                                      | <b>Feet</b>   |  |
| <b>Ears:</b> listen for timers   | <b>Hands:</b> oven mitts, vinyl gloves  | <b>Other:</b> wear face mask. gown if exposure to chlorine                              |  |
| <b>Shift information and job rotation</b>  |   |   |  |

Cook/Production Kitchen Aides are assigned to non-rotating shifts of days (09:30-17:30). Each shift is entitled to one 30-minute break and two 15-minute breaks.

Production Kitchen Aides are assigned to non-rotating shifts of days (06:30-14:30, 11:30-19:30 and 13:15-20:00). Each fulltime shift is entitled to one 30-minute break and two 15-minute breaks.

## Notes

1. **Functional requirements** have been defined as follows:
  - a) “Standing” includes any time spent weight-bearing on the feet, including “standing stationary”, which implies standing with no foot movement.
  - b) Waist and shoulder heights are “average adult” heights. (An “average adult” is 171.5 cm, or 5’ 7 1/2” tall.) Particularly tall and small operators may use different postures from those summarised on page 1.
  - c) “Substantial” refers to posture, force, or frequency demands which, in the professional opinion of the ergonomist, may aggravate an injury for that body part.
2. “Motorised equipment” includes forklifts, tow motors, powered hand carts, cranes, and vehicles.
3. **Forces** (weight, push, pull) are measured directly where possible, using a calibrated force gauge. Various sources of data were collected for patient handling forces. Forces required to roll a client onto his/her side were reported as 13-23 kg with the patient’s legs straight, and 6.6-11.9 kg with one knee bent for 55-100 kg (121-220 lb) patients in the following research paper: Daynard, D., Yassi, A., Cooper, J.E., Tate, R., Norman, R., and Wells, R. (2001). *Applied Ergonomics*, 32 (3) 199-214. Forces to sit a client from a lying position in bed measured 14-26 kg for 58.2-77.3 kg (128- 170 lbs) patients (Zhuang et al, 1999). Forces required to pull a client’s back away from the backrest of the wheelchair (while slumped in chair) measured 11-20 kg and forces required to stand a client from a seated position measured 17-32 kg (Daynard et al, 2001). Where a client’s body part is lifted (e.g. lift arm to clothe resident), ranges of weights are based on anthropometric data for a small female to a large male. Force matching may be used where direct measurement is not possible, particularly for grip or pinch forces. Forces are estimated in accordance with accepted force matching procedures (Bao & Silverstein, 2005). To complete force matching, the worker is asked to complete the task and then immediately replicate the task force against a force gauge, or using a grip or pinch dynamometer. At least five readings are obtained, and the average of the middle three values is calculated. When more than one operator performs the job, the process is repeated with at least two different workers, and the average of the workers’ force matching values is reported. Forces estimated using force matching are indicated in *italics* in this report. Where push and pull forces are sustained over a distance (as in pushing a cart), initial and sustained forces are measured with the movement velocity and acceleration that are typical for the job. Forces are collected in kg units, as per the force gauge scale units. To convert kg to N, multiply the kg value by 9.81.
4. **Hand height** refers to the *vertical* distance between the hands and the surface on which the operator is standing. **Forward reach** refers to the *horizontal* distance between the hands and whatever prevents the operator from standing closer.
5. The **posture descriptions** are based on a right hand dominant worker performing the job. Note that the postures may be different for a left hand dominant worker.
6. **Task frequencies**, as indicated in brackets after the task names, were determined by observation and estimated by the Cook/Production Kitchen Aide, and confirmed as reasonable by supervisors during validation.
7. **Photographs** were taken using the Cook/Production Kitchen Aide as a model rather than photographing Residents.

## PHYSICAL DEMANDS ANALYSIS SUMMARY:

**FREQUENCY LEVELS** - used during the analysis of job demands and conditions. Additional forces, weights and measurements are indicated when required.

| Frequencies      | Definitions                            | Hours distributed throughout workday |
|------------------|--|--------------------------------------|
| N = Not Required | 0% of the shift                        | 0 hrs.                               |
| R = Rarely       | Less than 5% of the shift or not daily | 0.5 hrs.                             |
| O = Occasionally | Between 6% - 33% of the shift          | 3 hrs.                               |
| F = Frequently   | Between 34% - 66% of the shift         | 5.5 hrs.                             |
| C = Continuously | Over 67%                               | 8 hrs.                               |

| Code  | Description                | N | R | O | F | C | Comments  |
|-------|----------------------------|---|---|---|---|---|---|
| Si    | Sitting                    | X |   |   |   |   |   |
| St    | Standing                   |   |   |   |   | X | While slicing meat, cooking, baking, and stocking.  |
| Kn    | Kneeling                   |   | X |   |   |   | To clean or to put an item away on a low shelf or on the floor. Kneeling is not normally held for more than a few minutes.  |
| CrO   | Crouching – Deep Static    |   | X |   |   |   | To reach or arrange items located on low shelves. This activity happens throughout the day but is not normally held for more than a few minutes.  |
| L     | Leaning                    |   |   | X |   |   | While preparing food, stocking shelves or accessing equipment on low levels.  |
| BaL   | Balancing                  |   | X |   |   |   | When the employee leans forward over a hot stove or fryer.  |
| WK    | Walking                    |   |   |   |   | X | Performed to access all areas of the kitchen and storage areas. Distance does not normally exceed 30 meters at a time.  |
| R     | Running                    | X |   |   |   |   |   |
| J     | Jumping                    | X |   |   |   |   |   |
| CRL   | Crawling                   | X |   |   |   |   |   |
| SQt   | Repetitive Squatting       |   | X |   |   |   | When accessing or arranging items below the knee level.   |
| STr   | Climbing – Stairs          |   | X |   |   |   | A short step ladder to enable the employee to reach food or equipment off of an elevated storeroom shelf.   |
| FB/si | Forward bending / sitting  | X |   |   |   |   |   |
| FB/st | Forward bending / standing |   |   |   | X |   | While preparing food, accessing the rear elements on the stove, stocking the shelves or accessing equipment.  |
| TW/si | Twisting / sitting         | X |   |   |   |   |   |
| TW/st | Twisting / standing        |   |   |   | X |   | Frequently occurs throughout the shift to access all hard to reach areas in the kitchen and storage room.   |
| FBPh  | Full Body Push             |   |   |   | X |   | Pushing racks, carts, warmers and baked goods in and out of the oven. Max push force 17 lbs.  |
| FBPI  | Full Body Pull             |   |   |   | X |   | Pulling racks, carts, warmers and baked goods in and out of the oven. Max pull force 17 lbs.  |
| RC    | Right Hand Carry           |   |   |   | X |   | Most carrying is done for short distances with food products and cooking utensils. Weights vary depending on what the Cook/Production Kitchen Aide is serving. The average weight of a unilateral carry would be 10-15 lbs.   |
| LC    | Left Hand Carry            |   |   |   | X |   | Most carrying is done for short distances with food products and cooking utensils. Weights vary depending on what the Cook/Production Kitchen Aide is serving. The average weight of a unilateral carry would be 10-15 lbs.   |
| FC    | Front Carry                |   |   | X |   |   | Most carrying is done for short distances with food products and cooking utensils. Weights vary depending on what the Cook/Production Kitchen Aide is serving. The average weight of a bilateral carry would be 0-50lbs (bag of oatmeal, sugar, flour, onions, carrots). Carts are also available to transport items if |

|             |                          |          |          |          |  |
|-------------|--------------------------|----------|----------|----------|--|
|             |                          |          |          |          | needed.  |
| <b>HG</b>   | Hand Grasping – Right    |          |          | <b>X</b> | Manipulating all cooking utensils, carrying cooking equipment and food.  |
| <b>HG</b>   | Hand Grasping – Left     |          |          | <b>X</b> | Manipulating all cooking utensils, carrying cooking equipment and food.  |
|             | Throwing                 | <b>X</b> |          |          |  |
|             | R. Up. Ext. Coordination |          |          | <b>X</b> | constantly grasping, pinching, pronation/supination and manipulating cooking utensils and large and small appliances, fine finger dexterity and a great deal of reaching using both arms.  |
|             | L. Up. Ext. Coordination |          |          | <b>X</b> | constantly grasping, pinching, twisting, turning and manipulating cooking utensils and large and small appliances, fine finger dexterity and a great deal of reaching using both arms.   |
|             | Neck postures/movements  |          |          | <b>X</b> | Neck flexion and rotation when mixing/monitoring food.   |
| <b>R-e</b>  | Reaching - elevated work |          | <b>X</b> |          | While removing or putting items on storeroom shelves.  |
| <b>R-sw</b> | - b/w shou/waist         |          |          | <b>X</b> | When reaching to adjust knobs, retrieve ingredients and other cooking equipment.   |
| <b>R-bw</b> | - below waist            |          | <b>X</b> |          | To access equipment and food from lower storage shelves.   |
| <b>R-oh</b> | - overhead (prone)       | <b>X</b> |          |          |  |
| <b>L-fw</b> | Lifting - floor to waist |          | <b>X</b> |          | Lifting is required up to 50 lbs, moving equipment, food crates, and cases of canned goods from floor to chest height, then onto carts and worktable. Lifting and lowering baking sheets full of food in and out of the oven.                                  |
| <b>L-wo</b> | - waist to overhead      |          |          | <b>X</b> | Cooking utensils and ingredients from top shelves, moving cooking equipment and food from waist to overhead, to access the top shelves of the storage room as well as the top shelves. Lifting and lowering baking sheets full of food in and out of the oven. |
| <b>L-hz</b> | - horizontal             |          |          | <b>X</b> | Manipulating all cooking utensils, carrying cooking equipment and food.  |
| <b>L-oh</b> | - overhead (prone)       | <b>X</b> |          |          |  |