



HOSPITALITY INDUSTRY
OCCUPATIONAL
JOB DICTIONARY

RESTAURANTS AND CATERING

An analysis of regular tasks and
human movements common to
workers and employers working
in restaurants and catering.



DISCLAIMER

The information produced by WorkCover Corporation of South Australia in this publication is correct at the time of printing and is provided as general information only. In utilising general information about workplace health and safety and injury management, the specific issues relevant to your workplace should always be considered. This publication is not intended as a substitute for the requirements of the Workers Rehabilitation and Compensation Act, 1986 or the Occupational Health Safety and Welfare Act 1986.

FOREWORD

Rehabilitation happens a lot faster when an injured person is in the workplace on alternative duties or in some type of training where they are encouraged and valued and where there is immediate support for the injury if required.

The need for a job dictionary was identified by the Hospitality Industry OHS Committee and developed in collaboration with WorkCover Corporation for the restaurants and catering sector.

The dictionary analyses a variety of tasks to assist employers, employees and medical practitioners to decide on the appropriate tasks required for an employee to return to work during the rehabilitation process of a specific work-related injury.

The work, the worker and the worksite form an interactive accord. Injury management programs can only be effective if they address each of these components and management continuously supports them.

The dictionary can also be used as a resource or tool for managers and supervisors to recruit new workers and train existing employees.

'Working safely is the way of life' is the Hospitality Industry OHS Committee's vision for the hospitality industry, and I hope this guide will bring you one step closer to making that vision a reality.

Angelo Mignanelli
Chair, Hospitality Industry OHS Committee
SAfer Industries Program

PROCEDURE MANUAL

HOW TO USE THIS DICTIONARY FOR YOUR OCCUPATION

Welcome to the 'Hospitality industry job dictionary for restaurants and catering'. You can customise the dictionary by using your VDU systems and the disk provided. Please download the occupations relevant to your organisation from the attached CD. A range of occupations relevant to restaurants and catering are listed, however not all may be relevant to your organisation.

You can either add or omit information to accurately tailor a job description. You may even wish to attach some additional photographs. Ensure the work attributes sections that list the frequency of activities is updated. The columns on 'never, rare, occasional, frequent and constant' may need to be modified accordingly for your particular organisation.

Work mechanics/ergonomics may change from time to time and from job to job, therefore the human factors sections (such as heights, reaches, rest breaks, safety gadgets etc.,) may need regular updates.

HOW TO USE THIS DICTIONARY FOR REHABILITATION PURPOSES (PRO-ACTIVE EMPLOYERS)

1. Find and download the occupational description for the injured worker from the software, eg, a chef's job description could be downloaded and printed.
2. Ensure the task matches the duties performed or else modify the script accordingly prior to printing.
3. Either fax or email this information to the treating physician if requested by the rehabilitation provider.
4. Identify suitable tasks from within the range of duties for the injured worker to commence work, with the agreement of the treating physician and, if involved, the rehabilitation provider.
5. Agree on how to update/increase the injured worker's duties or seek an occupational therapist's guidance to outline the duties program.

If the worker is unable to undertake their pre-injury duties, you as an employer could offer alternative duties from within this job dictionary. This process ensures reduction in income maintenance costs and the development of secondary injuries.

HOW TO USE THIS DICTIONARY AS A PREVENTATIVE TOOL

FOR PRE-EMPLOYMENT ASSESSMENTS

- a) The assessing physician is able to browse different occupational demands and establish suitable medical assessments, so they are prepared when determining a worker's suitability for the given job.
- b) Occupational Therapy Functional Capacity Evaluation could be conducted where tests could be modified to match with the job demands. Objective measurements of the workers' capacities and limitations are compared.

FOR EDUCATION PROGRAMS

- a) To demonstrate correct and incorrect work practices, using the photos taken during the job dictionary preparations.
- b) To prepare a slide show in conjunction with the basic anatomy/bio-mechanics and medical information, later to be printed into a small booklet for in-house training programs.

AS POLICY INFORMATION

- a) Feedback from workers and supervisors should be collected and analysed following the education programs. This feedback should then be listed as good and bad work habits. All parties must then reach an agreement as to which work practices should be undertaken for the future. The education program would have highlighted the medical and subsequent administrative consequences of non-compliance to these agreed work practices.
- b) This folder could be regularly updated via an in-house human resources or occupational health and safety representative.

AS AN ADDITION TO OHS AUDITS

- a) Information collated during job dictionary assessments can be forwarded to the in-house OHS adviser or an external adviser.

User-friendly software could be developed to assist employers inexperienced in management of workers compensation and identification of suitable duties. Such software may assist in fast-tracking suitable duties based on bodily parts to be forwarded to the treating physician.

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- Glenelg Golf Club
- Hyatt Hotel Adelaide
- Lakes Resort
- Lenzerheide Restaurant
- Mannum Club
- Murray Bridge Hotel
- Para Hills Community Club
- Sailmaster Tavern
- Salisbury North Football Club
- Stamford Hotels
- Whitehorse Inn

FUNCTION COORDINATOR

(PLEASE ALSO REFER TO CASUAL TASKS WHICH ARE INCLUDED IN THESE ROLES)

HUMAN FACTORS

Reaches:	Generally within range.
Heights:	Waist to overhead height.
Controls and displays:	Computer keyboard, mouse.
Force exertion/lift:	2kg folder.
Endurance required:	Sit for up to five hour stints.
Static muscle loading:	High for upper limb girdle.
Work/rest patterns:	Usually four hours a day computer work. Thirty-minute break following five hours worked.
Frequency of handling:	Constant keyboard.
Grasping requirement:	Cylindrical for folder, pinch for paper/documents.
Size of article:	Folder size grasp.
Tools:	Computer workstation.
Protective clothing:	Not applicable.

WORK ATTRIBUTES:

	Never (0%)	Occasional (1%-33%)	Frequent (34%-66%)	Constant (67%-100%)
Sit				XXXXXXXX
Stand		XXXXXXXX		
Walk		XXXXXXXX		
Climb	XXXXXXXX			
Balance	XXXXXXXX			
Neck stoop				XXXXXXXX
Forward bending		XXXXXXXX		
Turning/twisting		XXXXXXXX		
Kneel/squat		XXXXXXXX		
Crouch/crawl		XXXXXXXX		
Pull/push		XXXXXXXX		
Carry/lift		XXXXXXXX (Folder)		
Reach overhead		XXXXXXXX		
Handling		XXXXXXXX (Folder)		
Fingering				XXXXXXXX

BODY DEMANDS:

	Never (0%)	Occasional (1%-33%)	Frequent (34%-66%)	Constant (67%-100%)
Neck				XXXXXXXX
Back		XXXXXXXX		
Shoulders		XXXXXXXX		
Elbows		XXXXXXXX		
Wrists/fingers		XXXXXXXX		
Legs (front counter)			XXXXXXXX	

TASK ANALYSIS (photographs 1 and 2)

1



2

These roles require workers to complete up to four hours paperwork per day for rosters, accounts, etc. These workers also complete casual tasks (please refer to task analysis).

Workers complete computer work at computer workstation, with monitor directly in front of worker and just below eye level, with keyboard within reaching range, and documents placed to right of worker requiring repetitive right lateral cervical flexion rotation. Workers who are unable to touch-type use constant forward neck flexion to complete task (photograph one). Ergonomic height adjustable, back adjustable chairs should be available to use.

These workers may also be required to complete waiting and general banquet tasks eg, setting up. They may attend the functions to meet and greet patrons and are required to be multi-skilled workers.

BANQUET/FUNCTION STAFF

HUMAN FACTORS

Reaches:	Generally within range ie, head height to mid-thigh height.
Heights:	Ground to overhead height.
Controls and displays:	Handles for trolleys.
Force exertion/lift:	35-40kg force for pushing trolley up ramps. 10kg lift of drink/food.
Endurance required:	Constant stand/walk.
Static muscle loading:	Mild to moderate for thoraco-lumbar region, as variety of dynamic postures acquired.
Work/rest patterns:	Thirty-minute break following five hours worked. Usually employed on a casual basis.
Frequency of handling:	Constant for serving drinks/food, for functions. Also varied depending on work load.
Grasping requirement:	Palmar for plates, cylindrical for trolley push.
Size of article:	Dinner plate size, glasses, lifting of chairs, etc.
Tools:	Bottle openers, waiter's friend.
Protective clothing:	Non-slip and closed-toed shoes, uniform.

In smaller venues these tasks may be completed by food and beverage attendants, bar/club managers, waiting staff.

WORK ATTRIBUTES:

	Never (0%)	Occasional (1%-33%)	Frequent (34%-66%)	Constant (67%-100%)
Sit	XXXXXXXX			
Stand			XXXXXXXX	
Walk				XXXXXXXX
Climb	XXXXXXXX			
Balance	XXXXXXXX			
Neck stoop			XXXXXXXX	
Forward bending			XXXXXXXX	
Turning/twisting			XXXXXXXX	
Kneel/squat			XXXXXXXX	
Crouch/crawl	XXXXXXXX			
Pull/push			XXXXXXXX	
Carry/lift			XXXXXXXX (Serving)	
Reach overhead			XXXXXXXX	
Handling				XXXXXXXX
Fingering	XXXXXXXX			

BODY DEMANDS:

	Never (0%)	Occasional (1%-33%)	Frequent (34%-66%)	Constant (67%-100%)
Neck			XXXXXXXX	
Back				XXXXXXXX
Shoulders				XXXXXXXX
Elbows				XXXXXXXX
Wrists/fingers				XXXXXXXX
Legs (front counter)				XXXXXXXX

TASK ANALYSIS

1 – DANCE FLOOR (photographs 1-3)



1



2



3

This task requires worker to push/pull trolley of up to 20 dance floor panels requiring 30kg of push/pull force, for pushing up to 50 metres (photograph one). Worker then retrieves dance floor panels from trolley, requiring lift of up to 15kg with shoulder abduction (photograph two), then places tracks down onto the ground requiring stooping or squat/kneel postures (photograph three).

2 – CHAIRS (photograph 4)

This task requires worker to manoeuvre stacks of six chairs via trolley up to 50 metres to banquet/function room. This requires 10kg of force up ramp, with 5kg on carpet (photograph four). Workers then remove chairs of 5kg lift between knee to shoulder height and place into banquet room.



4

3 – STAGE (photographs 5-6)



5



6

This task requires worker to push stage panels on castors out to banquet room up to 50 metres, requiring 10-15kg push/pull force. Worker then unhooks one side of stage (photograph five), at overhead height, then pulls stage down requiring 30kg lift (photograph six). Worker then retrieves stage following function, requiring lifting of 30kg and push forces.

4 – COFFEE STATION (photograph 7)

This task requires worker to push/pull and manoeuvre coffee station on castors to banquet room up to 50 metres, requiring the set-up of up to six stations on the day of the function. This task requires 5kg push/pull force. Workers set up coffee station via pulling open, with forward and lateral flexion of the lumbar spine (photograph seven). Workers then place coffee cups or coffee pots etc. onto the table between waist and shoulder height.

Alternatively coffee stations will consist of standard trestles without castors that do not fold and require the worker to lift and carry the trestle weighing approximately 20kg.



7

5 – CUTLERY, CROCKERY (photographs 8-9)

8



9

This task requires worker to push trolley of up to 25kg push/pull force out to banquet room up to 50 metres, to manoeuvre cutlery etc. as close to table set-up as possible. Four to five people usually set up tables with two tubs usually carried per person, which are retrieved between ground and overhead height (photograph eight). Tubs weigh up to 5kg.

Alternatively trolleys as depicted in photograph nine may be used. This particular trolley requires accessing items from ground to waist height. The trolley is taken from the kitchen to the function area with no carrying required as items are directly accessed from the trolley, which is positioned next to the table.

6 – TABLE SET UP (photographs 10-15)

10



11

This task requires workers to set up tables or trestles requiring 5kg of push/pull forces, then open up tables, requiring slight stooping and lifting forces (photograph 10). Workers then place tablecloths on up to 20 tables, which may require overhead reach (photograph 11).



12



13

Alternatively (at smaller venues), workers may have to manoeuvre trestles and tables without the use of trolleys or equipment. The worker may position the table onto its side and fold the legs of the table requiring stooping/ lumbar and thoracic stoop to reach the legs and reaching out of the body range and then lift the table to approximately waist height that may weigh up to 20kg (photograph 12).

The table is then carried at waist height to the desired area. Alternatively the worker may push/pull the table along the ground against the carpet. Palmar grasping will be used to hold the table and wrist extension with traction is required. This method places a great deal of strain through the wrists and upper limb girdle and should be avoided. When two workers are available they will share this task however, it may be conducted by a single worker.



14



15

Glasses or cutlery (which may be placed onto tables) are generally held statically with the left or right upper limb, with glasses tray placed onto stand (photograph 14), or cutlery held statically with the left upper limb and placed onto table via right upper limb (photograph 15). This task requires static elbow flexion.

7 – SERVING CUSTOMERS (photographs 16-18)

16



17



18

This task requires worker to retrieve plates from kitchen at shoulder height (photograph 16), and either carry and place onto trolley and push out to banquet room (photograph 17), with trolley below waist level, requiring forward flexion of the lumbar spine. Palmar grasping is required to handle the plates.

Workers then place plates onto table for customers, requiring overreach and slight lateral flexion to reach table while avoiding touching customers (photograph 18). Workers are rotated between food service or drink services throughout the night, requiring static elbow flexion to hold plates or trays as required. They may be required to carry up to three plates at one time requiring one plate to be stabilised on the forearm.

8 – ACCESS RAMP (photograph 19)

This task requires at least four workers to lift an approximately 50kg wheelchair ramp and place onto steps. This task is conducted via stoop postures (photograph 19). This ramp is also used by workers to push trolleys up to banquet room. Four workers place ramp into small cubby hole, requiring awkward stooping postures to lift and manoeuvre into small space. Please note, ramp is less than 7:1 ratio.

Note:

- Access ramps may be used to push/pull tables, trestles etc, up from stores to banquet room. These ramps may be carpeted or non-carpeted.
- Other venues may have mainly flat surfaces, with no steep ramps required.



19

RECOMMENDATIONS

1. Dance floor trolleys and stage trolleys should be acquired, to be pushed/pulled by a two-person team at all times because this task is in the heavy work category. Ideally push/pull forces should be less than 5kg to minimise cumulative trauma to the upper limb girdle.
2. It is preferable that larger tables and trestles that are to be regularly moved are on castors and folding so that they can be transported with minimal lifting requirements using minimal push/pull forces and thus reducing strain on the upper and lower limb girdles.
3. Workers may benefit from rotating tasks of serving, setting tables, or drink service, at least every day, to avoid overuse of their dominant upper limb, or development of non-dominant upper limb static muscle loading problems due to static elbow flexion required to hold tray etc. Workers may also benefit from rotating holding trays/plates in opposite upper limb to avoid overuse or cumulative trauma.
4. Uncarpeted ramps may require non-slip surfaces to be sprayed, to avoid any possible slipping when working or pushing trolleys up or down.
5. Workers may benefit from the use of correct work postures. Back care education and lifting/handling principles could be reinforced via on-site education sessions:
 - a) lifting to be conducted with feet at least shoulder width apart
 - b) carry and push/pull be conducted with load as close to the body as possible, with neutral shoulders and semi-flexed elbows
 - c) workers to complete correct foot work for push/pull or lifting including feet facing in direction of movement
 - d) lifting to be conducted with squat postures, to avoid back stooping.
6. Pre-employment evaluations may be beneficial to be conducted for all new employees, to ensure potential employees have the physical capacities to meet the physical demands of the job.
7. A diagram of a correct computer work station set up has been included on page 87 outlining the following essential features:
 - a) correct seated posture with ankles, knees and hips at 90° of flexion, with the lumbar curve supported by the tilting backrest
 - b) a footrest may be required to support this correct posture, depending on the height of the operator
 - c) when keyboarding, shoulders should be in a neutral position with elbows bent to 90°
 - d) monitors should be adjusted approximately one arm's length away, with the top of the screen at eye level
 - e) frequently used items such as mouse pad, telephone, pens, pencils etc., should be placed as close to the work station as possible to avoid excessive stooping and over-reaching.
8. A Micro-desk document holder may be beneficial for computer work tasks. This is a clear perspex adjustable tilt document holder, which allows documents to be placed over keyboard for workers to maintain minimal lateral neck flexion to view documents on table. Alternatively, an ergo tilt document holder may be beneficial to place documents on behind keyboard, with keyboard directly in front of ergo tilt. Depending on desk space available a keyboard trolley tray can be used to place the keyboard under the desk so the document holder can be placed on the desk.
9. It may be beneficial for the computer monitor to be on a telescopic platform so that it is at eye level. Platforms are available from office equipment suppliers.
10. Pause exercise breaks are essential to minimise static muscle loading, especially for food/drinks service.
11. Vertical handles for trolleys are preferred to allow neutral forearm position, to minimise strain on the wrist. The current horizontal handle locations lead to fully pronated forearms.
12. Workers should use trolleys/equipment and a two-person team to move tables and chairs to reduce lifting requirements.

DRINK SERVERS/BAR ATTENDANTS

HUMAN FACTORS

Reaches:	Generally between ground to overhead height.
Controls and displays:	Variety of knobs and levers for items, eg, coffee machine, dishwasher, and generally at waist height.
Force exertion/lift:	6kg glasses tray, 20kg plastic tub.
Endurance required:	Constant standing.
Static muscle loading:	Dynamic postures used, however possible low level for upper limb girdle.
Work/rest patterns:	Thirty-minute break following five hours worked.
Frequency of handling:	Constant for drinks, trays, coffees etc.
Grasping requirement:	Cylindrical for cups, palmar for various trays.
Size of article:	Glasses, wine bottles, drinks tray.
Tools:	Bottle openers, knives.
Protective clothing:	Standard uniform.

WORK ATTRIBUTES:

	Never (0%)	Occasional (1%-33%)	Frequent (34%-66%)	Constant (67%-100%)
Sit	XXXXXXXX			
Stand				XXXXXXXX
Walk		XXXXXXXX	XXXXXXXX	
Climb	XXXXXXXX			
Balance	XXXXXXXX			
Neck stoop		XXXXXXXX	XXXXXXXX	
Forward bending			XXXXXXXX	
Turning/twisting	XXXXXXXX			
Kneel/squat		XXXXXXXX		
Crouch/crawl	XXXXXXXX			
Pull/push		XXXXXXXX		
Carry/lift			XXXXXXXX	
Reach overhead			XXXXXXXX	
Handling				XXXXXXXX
Fingering		XXXXXXXX		

BODY DEMANDS:

	Never (0%)	Occasional (1%-33%)	Frequent (34%-66%)	Constant (67%-100%)
Neck		XXXXXXXX	XXXXXXXX	
Back			XXXXXXXX	
Shoulders				XXXXXXXX
Elbows				XXXXXXXX
Wrists/fingers				XXXXXXXX
Legs				XXXXXXXX

2 – DRINKS SERVICE (photographs 6-9)



6



7



8

Workers may be required to access wine at overhead height, requiring reach out of range (photograph six). Wine bottles may be reached within range with dominant upper limb when a safety step is used (photograph seven).

Refilling requires using gross cylindrical grasping and one to two bottles of wine. Pouring involves shoulder abduction, internal rotation, external rotation with pronation/supination motions of the dominant hand.



9

TASK ANALYSIS

1 – COFFEE MAKING (photographs 1-5)



1



2



3

This task may require worker to make coffees at waist height, requiring forward neck flexion to view coffee machine, cylindrical grasping for coffee utensils (photograph one) and possible reaching at shoulder height to access cups above coffee machine. Worker then may carry coffee out to patron on tray requiring palmar grasping (photograph two), and static elbow flexion with the non-dominant hand. Alternatively the worker will carry drinks and coffees by hand to the patrons requiring lateral pinch to hold the saucer. Worker may possibly place coffees onto service area, for other waiters to deliver (photograph three) requiring reach out of range.



4



5

This task requires workers to use coffee machines between waist to chest height, requiring cylindrical gripping to hook coffee tool onto machine and reach at head height for coffee cup (photograph four). Internal/external rotation of the shoulder is required when hooking coffee tool onto the machine. Worker then maintains static reach within range to complete the coffee. Worker then carries saucer to the table. Depending on the work site this task may be completed by drinks service staff.

3 – DISHWASHING (photograph 10)

Worker must lift 6-7kg drink trays and place into the dishwasher at shin height (photograph ten), requiring forward stooping. This would preferably be conducted with kneeling/squatting postures.



10

4 – OTHER TASKS

- Items may be stored at different levels of the establishment depending on the venue. This may require the workers to carry items up flights of stairs.
- Workers may remove empty kegs, requiring 8kg of lift, throughout their shift. Bar staff may access drinks from shin to overhead height or waist to overhead height depending on the venue.
- Drink servers may also clear tables, requiring carrying of plates and cups up to 20 metres and then wiping down tables. Bar staff generally wipe down bars during the day and night, at shoulder height which may require slight overreaching to access the bar over the bench, depending on the design of the bar.
- Drinks staff may access stock first thing in the day, requiring possible lift of cartons of beer, boxes of wine, requiring maximum lift of 20kg.
- Stock may be brought to areas by stores and purchasing, boots yardsmen and bar workers, then placed into areas by bar staff. This requires stocking from shin to overhead height depending on the design of the bar. This may be conducted with the use of a trolley or sack truck to transport the items, which is preferable to reduce lifting and carrying requirements.

5 – BAR MANAGER

Bar managers complete all drink service tasks as above as well as the following:

- boots yardsmen roles such as clearing beer lines, depending on the venue
- gaming staff roles
- stock control and ordering daily, and may be required to lift kegs weighing approximately 80-100kg from ground to knee height for short distances onto a sack truck to transport to bar areas. Alternatively a keg caddy could be used to eliminate lifting.
- general maintenance tasks, eg, climbing ladders to change signs, changing light globes etc.

RECOMMENDATIONS

1. Handles may need to be enlarged to minimise tight gripping and subsequent potential for carpal tunnel and tendonitis condition.
2. Waiting or drink service staff may benefit from alternating hand usage.
3. General education of work postures and material handling will be essential to minimise the potential trauma due to cumulative affects of the following incorrect work practices:
 - a) lifting with feet at least shoulder width apart
 - b) preferable squatting as opposed to stooping of the back
 - c) carry with load as close to body as possible
 - d) feet facing the directions of transfers rather than twisting
 - e) pause exercise breaks should be encouraged in this area to minimise the static muscle loading soreness of the upper limb girdle.
6. Pre-employment screening prior to work commencement may be beneficial to minimise re-injury or aggravation of pre-existing conditions. This may also assist in matching potential workers with physical capacities required to complete these job tasks.
7. It may be beneficial to use small step ladders for repetitive reach over shoulder height.
8. Cartons of wine and tubs of ice requiring 20kg lift should be carried via two-person lift/carry.
9. Keg caddies should be used to transport kegs to avoid lifting.
10. Anti-fatigue and anti-slip mats for use in the kitchen/bar areas can be purchased from hospitality equipment suppliers. These mats soften the ground surface and provide cushioning to reduce static muscle loading on the lower limb girdle caused by prolonged standing on hard surfaces, and provide a non-slip surface to reduce risk of falls.

FOOD AND BEVERAGE ATTENDANT

HUMAN FACTORS

Reaches:	Generally between ground to overhead height.
Controls and displays:	Variety of knobs and levers for items, ie, coffee machine, dishwasher, and generally at waist height.
Force exertion/lift:	6kg glasses tray.
Endurance required:	Constant standing.
Static muscle loading:	Dynamic postures used, however possible low level for upper limb girdle.
Work/rest patterns:	Thirty-minute break following five hours worked.
Frequency of handling:	Constant for drinks, trays, coffees etc.
Grasping requirement:	Cylindrical for cups, palmar for various trays.
Size of article:	Glasses, wine bottles, drinks tray.
Tools:	Bottle opener.
Protective clothing:	Standard uniform.

WORK ATTRIBUTES:

	Never (0%)	Occasional (1%-33%)	Frequent (34%-66%)	Constant (67%-100%)
Sit	XXXXXXXX			
Stand				XXXXXXXX
Walk				XXXXXXXX
Climb	XXXXXXXX			
Balance	XXXXXXXX			
Neck stoop				XXXXXXXX
Forward bending			XXXXXXXX	
Turning/twisting	XXXXXXXX			
Kneel/squat			XXXXXXXX	
Crouch/crawl	XXXXXXXX			
Pull/push		XXXXXXXX		
Carry/lift			XXXXXXXX	
Reach overhead			XXXXXXXX	
Handling				XXXXXXXX
Fingering				XXXXXXXX

BODY DEMANDS:

	Never (0%)	Occasional (1%-33%)	Frequent (34%-66%)	Constant (67%-100%)
Neck				XXXXXXXX
Back				XXXXXXXX
Shoulders				XXXXXXXX
Elbows				XXXXXXXX
Wrists/fingers				XXXXXXXX
Legs				XXXXXXXX

TASK ANALYSIS

1 – ACCESSING STOCK (photograph 1)

Most bars have fridges and shelves located from ground to overhead height. To access stock workers are required to squat to access items located below waist height (photograph one). This is preferable to stooping. When fridges are being stocked the worker may be required to squat for prolonged periods and shoulder flexion and extension is required to place the items utilising cylindrical grasping to hold bottles. Depending on the depth of the fridges and shelves, slight over- reaching may be required. Overhead reaching is required when placing items above shoulder height.



1

2 – DRINK SERVICE (photographs 2-3)



2



3

Bar attendants may serve beer (photograph two). This requires the worker to hold a glass requiring cylindrical grasping with their non-dominant hand and then to pull the beer tap lever down using elbow flexion with minimal force and cylindrical grasping with the dominant hand. They then place the drink onto the bar for the customer. Workers may also prepare other drinks such as spirits, soft drinks and wine. This may require the worker to access bottles located on shelves above head height (photograph three) requiring overhead reaching.

3 – TILL OPERATION (photograph 4)

Till set up will vary depending on the venue. This task requires the worker to enter the item into the till computer using index finger of the dominant hand. Neck flexion is required to view the screen. The worker will then manipulate coins and notes using tripod and lateral pinch grasping.



4

4 – DISH WASHING (photograph 5)

This task requires the worker to lift trays of glasses weighing approximately 6-8kg and place them into the automatic dishwasher that is located at shin to knee height. This requires forward stooping (photograph five) and should preferably be completed using squatting postures. Glasses are then put away once wash has completed.



5

5 – POLISHING CUTLERY AND CROCKERY (photographs 6-7)

6



7

Workers may be required to polish cutlery and crockery (photograph six). This task is usually completed at a waist height bench in the bar area. This may require carrying tubs or trays of crockery and cutlery weighing up to approximately 15kg from the kitchen to the bar area (photograph seven). Polishing crockery requires the worker to hold the plate or cup in one hand using gross grasping and then to wipe the item with the towel requiring wrist movements of ulnar and radial deviation to provide the wiping motion. Tripod grasping is used to manipulate the cutlery.

6 – MOVING FURNITURE (photograph 8)

Workers may be required to move furniture including lifting chairs up to 5kg and carrying them for short distances, or pushing/pulling them along the ground for short distances requiring minimal push pull forces and slight forward stooping (photograph eight). They may also be required to lift tables of approximately 10kg and carry them for short distances.



8

7 – TAB/KENO OPERATION (photographs 9-11)



9



10



11

Some venues have TAB and KENO facilities that are operated by the bar staff. Workers may be required to put up signs and racing guides daily for approximately five minute periods, requiring overhead reaching. These tasks require the worker to operate the machines located on the bench at approximately waist height (photographs 9-11) requiring neck flexion to view the screen and fine fingering to operate the keys. These tasks are conducted for less than two-minute periods frequently throughout the shift. Tills are counted three to four times per day for five to ten- minute periods standing at the machine, requiring fine fingering including tripod grasping and lateral pinching to manipulate coins and notes.

8 – OTHER

Workers may also collect meals from the kitchen area and serve to the customers at the bar area, depending on the venue, requiring palmar grasping to hold the plates. They may also clear five to six plates at a time from the bar area and carry them to the kitchen area. Workers may clean the bar area by wiping down the work surfaces and cleaning ashtrays, requiring bilateral upper limb usage.

RECOMMENDATIONS

1. Handles may need to be enlarged to minimise tight gripping and subsequent potential for carpal tunnel and tendonitis condition.
2. Waiting or drink service staff may benefit from alternating between the static elbow flexion and holding of trays with non-dominant upper limb to avoid potential for tendonitis conditions and cumulative trauma.
3. General education of work postures and material handling will be essential to minimise the potential trauma due to cumulative affects of incorrect work practices:
 - a) lifting with feet at least shoulder width apart
 - b) preferable squatting as opposed to stooping of the back
 - c) carrying with load as close to body as possible
 - d) feet facing the direction of transfer rather than twisting
 - e) pause exercise breaks should be encouraged in this area to minimise the static muscle loading soreness of the upper limb girdle.
4. Pre-employment screening prior to work commencement may be beneficial to minimise re-injury or aggravation of pre-existing conditions. This may also assist in matching potential workers with physical capacities required to complete these job tasks.
5. Safety step is beneficial to be used for repetitive reach over shoulder height.
6. Cartons of wine and tubs of ice requiring 20kg lift should be carried via two-person lift/carry.
7. Keg caddies should be used to transport kegs to avoid lifting.
8. Anti-fatigue and anti-slip mats for use in the kitchen/bar areas can be purchased from hospitality equipment suppliers. These mats soften the ground surface and provide cushioning to reduce static muscle loading on the lower limb girdle caused by prolonged standing on hard surfaces, and provide a non-slip surface to reduce risk of falls.
9. Most frequently used items and heavier items should be located from waist to shoulder height to minimise reaching requirements.

DRINK SERVICE STAFF

HUMAN FACTORS

Reaches:	Reaching between chest to waist height.
Heights:	Predominantly at mid-thigh level for dinner tables.
Controls and displays:	None specific.
Force exertion/lift:	Twenty litre water bottles maximum, otherwise 5kg for pushing/pulling trolleys or carrying a crate of four wine bottles.
Endurance required:	Between three and seven-hour shifts.
Static muscle loading:	Nil.
Work/rest patterns:	Thirty-minute break following five hours worked.
Frequency of handling:	Frequent to constant depending on the task at hand.
Grasping requirement:	Variety of grasps such as hook for holding the crate of wine bottles, cylindrical for trolley manoeuvring, prehensile for cutlery, palmar strainful grasp for bottle opening etc.
Size of article:	Variable – ie, cutlery, wine glasses, coffee cups etc.
Tools:	Bottle openers and pens.
Protective clothing:	Standard uniform.

WORK ATTRIBUTES:

	Never (0%)	Occasional (1%-33%)	Frequent (34%-66%)	Constant (67%-100%)
Sit	XXXXXXXX			
Stand			XXXXXXXX	
Walk				XXXXXXXX
Climb		XXXXXXXX		
Balance	XXXXXXXX			
Neck stoop	XXXXXXXX			
Forward bending			XXXXXXXX	
Turning/twisting			XXXXXXXX	
Kneel/squat		XXXXXXXX		
Crouch/crawl	XXXXXXXX			
Pull/push		XXXXXXXX		
Carry/lift				XXXXXXXX
Reach overhead		XXXXXXXX		
Handling				XXXXXXXX
Fingering		XXXXXXXX		

BODY DEMANDS:

	Never (0%)	Occasional (1%-33%)	Frequent (34%-66%)	Constant (67%-100%)
Neck		XXXXXXXX		
Back			XXXXXXXX	XXXXXXXX
Shoulders				XXXXXXXX
Elbows				XXXXXXXX
Wrists/fingers				XXXXXXXX
Legs				XXXXXXXX

TASK ANALYSIS

1 – COCKTAIL PARTIES/SERVICE (photographs 1-5)



1



2



3

Involves carrying a tray with a fully extended wrist in the dominant hand (photographs one and two) and weights of around 3-4kg. The task may require walking around with this tray in hand and refilling glasses (photograph three). Refilling may involve one to two bottles and require gross cylindrical grasping. Pouring involves shoulder abduction, internal rotation, external rotation with pronation/supination motions of the dominant hand.



4



5

2 – TABLE PARTIES (photographs 6-11)



6



7



8



9



10



11

Food service can involve two plates being carried in one hand and the other placed in the contra-lateral hand with prehensile grasping (photographs six and seven).

Clearing of the tables involves carrying up to ten plates at a time, which could weigh just over 10kg. Scraping, stooping over the table and similar motions with skilful actions are desirable simultaneously (photograph eight).

Pouring coffee while carrying a hot kettle of up to two litres may also entail some pronation/supination motions with the forearms and abduction rotation postures with the shoulders (photograph nine).

Manoeuvring and pushing/pulling trolleys is involved along with carrying trays full of glasses, cups etc., (photographs 10-11). The push/pull forces are less than 5kg .

WAITING STAFF

(Hotels, clubs, restaurants)

HUMAN FACTORS

Reaches:	Between ground to overhead height.
Controls and displays:	Variety of hand tools with knobs or levers located between waist to head height, eg, dishwasher.
Force exertion/lift:	Push 5kg of stock trolley.
Endurance required:	Prolonged walking and frequent standing activities.
Static muscle loading:	Moderate for upper limb girdle for meal preparation.
Work/rest patterns:	Thirty-minute break following five hours worked.
Frequency of handling:	Constant handling of dishes etc.
Grasping requirement:	Palmar grasping for plates, cylindrical for cutlery and bottle openers.
Size of article:	Dinner plates, glasses, bottles, cups.
Tools:	Industrial dishwasher, ladle, knives and forks, dishes, bottle opener, coffee machines
Protective clothing:	Standard hygiene control uniform.

WORK ATTRIBUTES:

	Never (0%)	Occasional (1%-33%)	Frequent (34%-66%)	Constant (67%-100%)
Sit	XXXXXXXX			
Stand			XXXXXXXX	
Walk				XXXXXXXX
Climb	XXXXXXXX			
Balance	XXXXXXXX			
Neck stoop				XXXXXXXX
Forward bending		XXXXXXXX		
Turning/twisting	XXXXXXXX			
Kneel/squat			XXXXXXXX	
Crouch/crawl	XXXXXXXX			
Pull/push		XXXXXXXX		
Carry/lift				XXXXXXXX
Reach overhead			XXXXXXXX	
Handling				XXXXXXXX
Fingering			XXXXXXXX	

BODY DEMANDS:

	Never (0%)	Occasional (1%-33%)	Frequent (34%-66%)	Constant (67%-100%)
Neck				XXXXXXXX
Back				XXXXXXXX
Shoulders				XXXXXXXX
Elbows				XXXXXXXX
Wrists/fingers				XXXXXXXX
Legs				XXXXXXXX

TASK ANALYSIS

1 – CUSTOMER SERVICE (photograph 1)

Worker is required to serve customers from the cash register (photograph one), requiring constant neck flexion to view screen or cash tray and fingering skills usually with second digit of dominant hand.



1

2 – SERVING MEALS (photographs 2-4)



2



3



4

Waiting staff are required to retrieve the meals from the kitchen area benches at either waist or shoulder height and carry them to the tables in the restaurant/function area. They may be required to carry up to three plates at one time requiring bilateral palmar grasping to hold the plates and stabilising one plate on their forearm. The worker then places plates onto the table in front of the patron requiring slight lateral flexion in placing the meal in order to avoid contact with the patron.

Workers may serve drinks to the customers at the table requiring them to transport drinks from the bar to table area using a tray requiring palmar grasping with the dominant hand as these trays are usually carried one-handed. Alternatively, the worker may carry glasses by hand for up to three glasses at one time.

3 – TAKING ORDERS (photograph 5)

Orders are taken at the table or counter depending on the venue. The information is written on a docket and then taken to the kitchen. Alternatively a computer system may be used to transfer orders to the kitchen area requiring the worker to enter information into the computer via a touch screen located at chest height (photograph five).



5

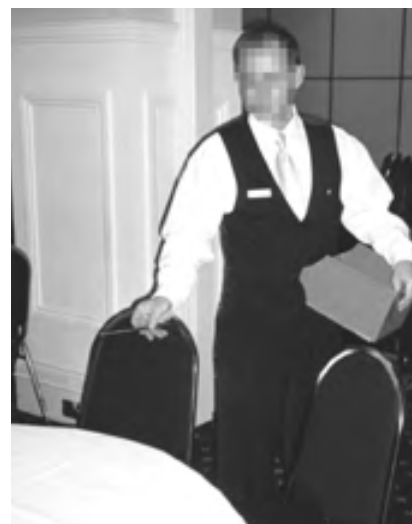
4 – SETTING TABLES (photographs 6-10)



6



7



8

Workers may be required to move furniture eg, tables and chairs within the restaurant area. The restaurant area is set prior to the meal service time and during the meal periods as tables are cleared.

When setting tables prior to the meal time the worker may use a trolley with items located on shelves from ground to head height to transport cutlery, plates etc., required for the tables and unload each item as it is required (photographs six and seven). Alternatively in other venues workers may carry crates of required items eg, cutlery, (photograph eight), and place them on tables.

The trolleys are pushed out into the restaurant area and positioned next to the table as it is being set. Workers will acquire slight stooping postures to place items onto the tables. During service time when tables are set individually the worker will either carry the items to the tables from the kitchen area or use a tray requiring palmar grasping.



9



10

Glasses may be taken to the tables using trays or crates (photograph nine) that weigh up to approximately 8kg or alternatively by hand for lesser weights. They are placed on the tables with the dominant upper limb requiring slight stooping and lateral flexion to place them on the table.

Tablecloths are placed onto the tables (photograph 10) which may require overhead reach.

5 – TABLE CLEARING (photographs 11-12)



11



12

Worker clears table, requiring picking up of dishes, scraping rubbish into bin at waist height bench (photograph 11), then placing crockery/cutlery into trays. Worker then pushes the tray through dishwasher requiring slight reach out range, for minimal push/pull force. Worker then pulls down dishwasher, via right or left upper limb, with reach at shoulder height. Worker wipes tables down at bench height, then returns to the kitchen to place clean dishes away (photograph 12), between knee and over-head height. This task also requires workers to set tables or fold napkins requiring minimal lifting and handling forces, however constant forward neck flexion to view tables or fold napkins.

Worker also places stock away at start of the day, requiring maximum lift of 5-10kg for items such as six packs of alcohol, bags of vegetables etc., and possible manoeuvre of stock trolley, with 5kg push/pull force maximum.

6 – PREPARING COFFEES (photographs 13-14)

13



14

This task requires workers to use coffee machines between waist and chest height, requiring cylindrical gripping to hook coffee tool onto machine and reach at head height for coffee cup (photograph 13). Internal/external rotation of the shoulder is required when hooking coffee tool onto the machine. Worker then maintains static reach within range to complete the coffee. Worker then carries the saucer to the table. This task may be completed by drink service staff depending on the work site.

OTHER – DRINK SERVICE

Drinks may be served by waiting staff from the bar to the table area depending on the size of the venue. Workers will either use a tray to transport the drinks to the table area or, for smaller amounts, may carry up to three glasses at one time.

WAITING STAFF (Coffee shops)

HUMAN FACTORS

Reaches:	Generally within range, ie, between mid-thigh to chest height.
Heights:	Ground to overhead.
Controls and displays:	Variety of hand tools with knobs and levers located between waist to shoulder height, ie, coffee machine.
Force exertion/lift:	Moving stock may require moving cartons of wine etc., depending on the venue.
Endurance required:	Constant stand/walk.
Static muscle loading:	Moderate level for the upper limb girdle.
Work/rest patterns:	Thirty-minute break following five hours worked.
Frequency of handling:	Constant for coffee cups/plates/glasses.
Grasping requirement:	Prehensile to gross grasping for knives. Cylindrical for cups, palmar for saucers.
Size of article:	Cups/saucers/plates/glasses.
Tools:	Variety of kitchen utensils.
Protective clothing:	Standard hygiene control uniform.

WORK ATTRIBUTES:

	Never (0%)	Occasional (1%-33%)	Frequent (34%-66%)	Constant (67%-100%)
Sit	XXXXXXXX			
Stand				XXXXXXXX
Walk				XXXXXXXX
Climb	XXXXXXXX			
Balance	XXXXXXXX			
Neck stoop				XXXXXXXX
Forward bending			XXXXXXXX	
Turning/twisting	XXXXXXXX			
Kneel/squat			XXXXXXXX	
Crouch/crawl	XXXXXXXX			
Pull/push	XXXXXXXX			
Carry/lift		XXXXXXXX		
Reach overhead			XXXXXXXX	
Handling				XXXXXXXX
Fingering				XXXXXXXX

BODY DEMANDS:

	Never (0%)	Occasional (1%-33%)	Frequent (34%-66%)	Constant (67%-100%)
Neck				XXXXXXXX
Back				XXXXXXXX
Shoulders				XXXXXXXX
Elbows				XXXXXXXX
Wrists/fingers				XXXXXXXX
Legs				XXXXXXXX

TASK ANALYSIS

1 – COFFEE SERVICE (photographs 1-2)



1



2

Workers use coffee machines between waist and chest height, requiring cylindrical gripping to hook coffee tool onto machine and reach at head height for coffee cup (photograph one). Worker then maintains static reach within range to complete coffee. Cylindrical grasping is required to grasp handle of the coffee machine. Worker also retrieves cakes/rolls etc., from glass cabinets between shin to shoulder height requiring forward reaching.

2 – GRILLING (photograph 3)

This task requires worker to access griller for toasting items. Grillers are at waist or overhead height (photograph three), requiring out of range reach. It is recommended that, when space is available, grillers are located at bench height to reduce reaching requirements.



3

3 – CUSTOMER SERVICE (photograph 4)

This task requires worker to access cash register. At this particular venue the register has an adjustable angle, allowing for neutral neck position. Worker then is required to complete forward neck flexion to access cash tray. The cash register set-up varies from venue to venue. It is recommended that till screens are located at approximately chest height to reduce neck flexion required.



4

4 – DISHES (photograph 5)

This task requires the worker to access an industrial dishwasher, with minimal push/pull forces in opening and loading the dishwasher, then pull down lever at head height if dishwasher is located on the bench. Alternatively the dishwasher may be placed under the bench requiring the worker to stoop or squat to access it. In smaller venues there may not be a dishwasher, requiring the worker to wash the dishes by hand. Worker then place dishes between waist to ground level (photograph five).



5

5 – CLEANING STOVETOPS/OVENS/BENCHES (photograph 6)

This task involves cleaning the hotplate using chemicals and a scraper for up to 30-minute periods following meal times. The worker pours chemicals on the stovetop and then uses the scraper unilaterally with gross grasping of the dominant upper limb, requiring shoulder flexion and extension and slight forward stooping (photograph six). This task may also be completed by kitchen hands.



6

6 – CATERING STAFF (photographs 7-8)



7



8

Food is prepared on site at catering facilities by cooks and chefs in a similar manner to that analysed previously in standard commercial kitchens. Refer to page 45 and 63 for analysis for chef/cook and kitchenhand staff.

Kitchenhand staff may go out to the venues to wash and rinse dishes at the site and are required to work within various settings, eg, kitchens in private houses, offices etc. They will assist with cleaning tasks required. Some venues may not have the use of a sink, requiring workers to wash and rinse items in tubs which may be located on the ground, requiring stooping or squatting to access. Alternatively tubs could be placed at table height to reduce these requirements.

Catering staff are usually multi-skilled workers and may be required to prepare food, and carry trays of food and drinks around to patrons requiring palmar grasping to hold the trays and constant standing and walking. Workers may serve wine to the patrons from the bottle requiring gross cylindrical grasping to hold the bottle. The work surface is usually a trestle, which is transported to the venue.

Staff may be required to carry equipment up stairs, ramps, in lifts etc. and may work in outside areas where uneven and slippery surfaces exist. Work demands will vary for each job dependent on the size and the requirements.

Food is transported to the venue in a van (photograph seven) or in a hired refrigerated vehicle, requiring workers to drive to the venues. Workers will place the boxes of food weighing up to approximately 15kg and cartons of drinks weighing up to approximately 20kg into the van requiring forward stooping postures to place and remove the boxes into the van at approximately shin height and over-reaching may be required. Some catering companies have larger vans that equipment is stored in permanently.

Food and equipment are placed into the van and transported to the venue in boxes and baskets (photograph eight). This requires the worker to lift and carry at waist height up to approximately 15-20kg to the van and from the van to the required area once at the venue.

Catering venues may also use hired equipment that is delivered to the venues eg, plates, glasses and crockery. Workers are only required to rinse the hired equipment as it is washed by the hire company.

CHEF (Small venues)

HUMAN FACTORS

Reaches:	Usually between chest and thigh height.
Heights:	Ground to shoulder.
Controls and displays:	Variety of knobs and levers located at waist height, eg, gas.
Force exertion/lift:	Up to 7kg lift for pans.
Endurance required:	Prolonged standing.
Static muscle loading:	Moderate for upper limb girdle to view bench top/store.
Work/rest patterns:	Thirty-minute break following five hours worked.
Frequency of handling:	Constant grasp of pans if utilised, cylindrical grasp for knife for preparation.
Grasping requirement:	Gross grasping for knives, cylindrical for wok and ladle, palmar for plates.
Size of article:	Pans, pots, utensils.
Tools:	Pans, pots, ladle, stove top, knives.
Protective clothing:	Standard hygiene control uniform.

WORK ATTRIBUTES:

	Never (0%)	Occasional (1%-33%)	Frequent (34%-66%)	Constant (67%-100%)
Sit	XXXXXXXX			
Stand				XXXXXXXX
Walk			XXXXXXXX	
Climb	XXXXXXXX			
Balance	XXXXXXXX			
Neck stoop				XXXXXXXX
Forward bending		XXXXXXXX		
Turning/twisting		XXXXXXXX		
Kneel/squat	XXXXXXXX			
Crouch/crawl	XXXXXXXX			
Pull/push		XXXXXXXX		
Carry/lift				XXXXXXXX
Reach overhead		XXXXXXXX		
Handling				XXXXXXXX
Fingering				XXXXXXXX

BODY DEMANDS:

	Never (0%)	Occasional (1%-33%)	Frequent (34%-66%)	Constant (67%-100%)
Neck				XXXXXXXX
Back				XXXXXXXX
Shoulders				XXXXXXXX
Elbows				XXXXXXXX
Wrists/fingers				XXXXXXXX
Legs				XXXXXXXX

TASK ANALYSIS

1 – FOOD PREPARATION (photographs 1-6)



1



2



3

Worker is required to prepare ingredients including peeling, cutting or chopping vegetables at the start of the day. This is conducted at waist height on a bench, requiring constant neck flexion and gross grasping for knife, with dominant upper limb and stabilising the object with non-dominant upper limb.

This task also requires worker to cook with pan requiring approximately 7kg lift, holding with non-dominant hand, and using ladle with dominant hand (photographs two and three). Worker also requires frequent reach at head height for ingredients to ladle (photograph three).

The chef may cook food such as roast meat and vegetables in the oven, which is located below waist height in most kitchens. There may be up to four roasts in one pan at a time requiring lifting of 10kg. This requires the worker to squat or stoop (photograph four) to remove the trays of food. Squatting is preferable to stooping.



4



5



6

Food is cooked on the stove at waist height. The worker is required to stir sauces, soups etc. using utensils requiring gross grasping with their dominant upper limb and reaching within the body range. The worker may also grill food in the griller, which is usually located at approximately head height (photograph six). This requires shoulder flexion to approximately 110° depending on the height of the worker.

Once meal is completed the worker will collect plates usually located on shelves from ground to waist height requiring stooping or squatting to access. The plate is then placed onto the service area at waist height and served using utensils requiring gross grasping with dominant upper limb. Alternatively the worker may take the plate to the stove top requiring static holding of the plate using palmar grasping in the non-dominant upper limb while serving the meal using dominant upper limb.

2 – ACCESSING STORES/INGREDIENTS (photographs 7-8)



7



8

Goods are stored from ground to overhead height in most kitchens in the storeroom and freezer areas (photographs seven and eight) requiring squatting, stooping postures and overhead reaching to access items. Stooping postures (photograph seven) should be avoided with emphasis to be placed on squatting to access items below waist height.

CHEF (Large venues)

HUMAN FACTORS

Reaches:	Generally within reach between thigh to chest height.
Heights:	Ground to overhead.
Controls and displays:	Variety of knobs and levers located at waist height including stove top or ovens.
Force exertion/lift:	20kg pots via two-person lift.
Endurance required:	Constant standing/walking.
Static muscle loading:	High levels for the upper limb girdle.
Work/rest patterns:	Thirty-minute break following five hours worked.
Frequency of handling:	Frequent to constant for knife for food preparation.
Grasping requirement:	Cylindrical, saucepan, pots. Prehensile to gross grasping for knives. Palmar grasping for plates. Hook grasping for large pots.
Size of article:	Large soup pot, extra-extra-large stock pot.
Tools:	Kitchen utensils, crankshaft for stock pot (only at some venues) and a variety of kitchen utensils.
Protective clothing:	Hats, aprons, standard uniform.

WORK ATTRIBUTES:

	Never (0%)	Occasional (1%-33%)	Frequent (34%-66%)	Constant (67%-100%)
Sit	XXXXXXXX			
Stand				XXXXXXXX
Walk				XXXXXXXX
Climb	XXXXXXXX			
Balance	XXXXXXXX			
Neck stoop				XXXXXXXX
Forward bending		XXXXXXXX		
Turning/twisting	XXXXXXXX			
Kneel/squat		XXXXXXXX		
Crouch/crawl	XXXXXXXX			
Pull/push		XXXXXXXX		
Carry/lift			XXXXXXXX	
Reach overhead			XXXXXXXX	
Handling				XXXXXXXX
Fingering				XXXXXXXX

BODY DEMANDS:

	Never (0%)	Occasional (1%-33%)	Frequent (34%-66%)	Constant (67%-100%)
Neck				XXXXXXXX
Back				XXXXXXXX
Shoulders				XXXXXXXX
Elbows				XXXXXXXX
Wrists/fingers				XXXXXXXX
Legs				XXXXXXXX

TASK ANALYSIS

1 – FOOD SERVICE (photographs 1-2)



1



2

This task requires the chef to collect plates at knee height, using squat/kneel postures (photograph one), then place plates at waist height onto service area. Chefs ladle food and prepare dishes at waist height, and briefly reach out of range to move plates to opposite side of service area for waiters to collect. This task requires forward neck flexion to view bench at waist height (photograph two).

2 – PREPARATION (photographs 3-5)



3



4

This task requires workers to prepare various foods including fruit for morning, requiring reach between waist and chest height, and gross gripping for knife (photograph three) then fingering/handling of items once prepared (photograph four). Worker would then lift rubbish from waist height to bin, requiring lift of up to 10kg.

Worker also prepares desserts, usually on stainless steel bench at waist height requiring reach out of range and neck flexion to view bench (photograph five). Workers also move large pots from stove, or access saucepans on the stove at waist height requiring neck flexion to view post.



5

3 – STOCK POT (photographs 6-7)



6



7

This task requires worker to access stock from the stockpot. Workers place large pot onto the ground, which is collected between ground and shoulder height (photograph six). Worker then uses crankshaft to turn stockpot to pour into smaller pot (photograph seven). Stock is then lifted by a two-person lifting team requiring hook grasping for 20kg lift. The pot is lifted on to stove at waist height. Alternatively a Bratt Pan/Tilt Frier could be used. This is an electrical device that can be tilted automatically with no lifting required. The pan is tilted electrically and the contents is collected in a bucket/container situated on the floor, which is then lifted from ground to waist height and carried to where it is required.

4 – CARVERY CHEF - BISTRO (photograph 8)

The carvery chef is required to stand at the buffet in the bistro area for the meal serving period and carve meat for customers, top up salads and vegetables and keep the buffet area clean. This task requires bilateral upper limb usage to stabilise the meat and carve with dominant upper limb. Cylindrical grasping is required to use knives and other required equipment. This task is done while standing and involves slight stooping and neck flexion to view the food for preparation at the bench located at waist height. Shoulder flexion/extension is required to cut the meat and slight forward stooping to access the areas of the buffet.



8

RECOMMENDATIONS

1. Anti-fatigue and anti-slip mats can be purchased from hospitality equipment suppliers to be used in the kitchen areas. These mats soften the ground surface and provide cushioning to reduce static muscle loading on the lower limb girdle caused by prolonged standing on hard surfaces and provide a non-slip surface to reduce risk of falls.
2. Frequently used goods, heavier items and utensils should be stored between waist and chest height. Overhead storage and ground level storage should be used to store light goods/items or goods/items used on an occasional basis only.
3. Boxes and goods in freezers and storage areas should be arranged so that staff members can access them as close as possible, avoiding stooping postures and over-reaching when lifting.
4. Kick or step stools should be used by shorter staff in order to reduce overhead reaching requirements in store room areas.
5. Workers may benefit from the use of correct work postures. Back care education and lifting/handling principles could be reinforced via on-site education sessions:
 - a) lifting to be conducted with feet at least shoulder width apart
 - b) carry, push/pull be conducted with load as close to the body as possible, with neutral shoulders and semi-flexed elbows
 - c) workers to complete correct foot work for push/pull or lift including feet facing in direction of movement to avoid twisting
 - d) lifting to be conducted with squat postures, to avoid back stooping
 - e) avoid stooping postures by re-designing the workstation or squatting when necessary
 - f) avoid over-reaching postures by re-designing the work area or the techniques used, so that the shoulders can maintain a neutral to semi-flexed position.
6. It may be beneficial to conduct pre-employment evaluations for all new employees, to ensure they have the capacity to meet the physical demands of the job. This will assist in eliminating the potential of re-aggravation following commencement of work. Pre-existing conditions could surface while performing this assessment.
7. Ergonomic knives are available that allow the arm, wrist and hand to maintain a natural and neutral position and reduces effort required for standard knives. These can be acquired for people with wrist conditions.

CAFETERIA COOK

HUMAN FACTORS

Reaches:	Usually between chest and waist height.
Controls and displays:	None specific.
Force exertion/lift:	Excess oil drums, about 18kg.
Endurance required:	Prolonged standing and walking for eight hours per day.
Static muscle loading:	Mild to moderate whilst cooking (photograph two).
Work/rest patterns:	Thirty-minute break following five hours worked.
Frequency of handling:	Variety of activities, facilitating job rotations.
Grasping requirement:	Palmar cylindrical grasping for hand tools while cooking.
Size of article:	Spoons, ladles etc.
Tools:	As above.
Protective clothing:	Dust control uniforms for spillages.

WORK ATTRIBUTES:

	Never (0%)	Occasional (1%-33%)	Frequent (34%-66%)	Constant (67%-100%)
Sit	XXXXXXXX			
Stand			XXXXXXXX	
Walk			XXXXXXXX	
Climb	XXXXXXXX			
Balance	XXXXXXXX			
Neck stoop		XXXXXXXX		
Forward bending		XXXXXXXX		
Turning/twisting		XXXXXXXX		
Pull/push		XXXXXXXX		
Kneel/squat		XXXXXXXX		
Crouch/crawl	XXXXXXXX			
Carry/lift			XXXXXXXX	
Reach overhead		XXXXXXXX		
Handling			XXXXXXXX	
Fingering		XXXXXXXX		

BODY DEMANDS:

	Never (0%)	Occasional (1%-33%)	Frequent (34%-66%)	Constant (67%-100%)
Neck		XXXXXXXX		
Back			XXXXXXXX	
Shoulders			XXXXXXXX	
Elbows			XXXXXXXX	
Wrists/fingers			XXXXXXXX	
Legs		XXXXXXXX		

TASK ANALYSIS

1 – COOKING AND FRYING (photographs 1-4)



1



2

Involves lifting/handling trays from the oven located between shin and chest height weighing between 5-10kg (photograph one). These activities are performed infrequently, along with other chores using large palmar grasping with forward stooped postures.

Stirring action involves shoulder forward flexion of 90° predominantly using the right dominant hand (photograph two). Lifting/handling of these 10 litre containers may require bilateral hook grasping to transfer between the store to the working bench located exactly behind at 180° half circle (photograph three).



3



4

Frying chips or similar involves lifting/handling weights of around 5-8 kg with tight palmar grasping (photograph four). This is an intermittent activity carried out during peak hours, usually lasting for up to 90 minutes and rotated with other chores.

2 – EMPTYING OIL (photograph 5)

Involves lifting/handling of the oil containers, weighing up to 18kg, to be transferred from the frying section to an outside area via physical carrying. This is carried out at least two to three times per day.



5

3 – WASHING DISHES (photograph 6)

Washing dishes involves forward stooping postures working at a deep sink usually lasting for about 30-45 minutes at any one time. This task is usually carried out after completion of cooking chores in the latter part of the afternoon.



6

4 – STOCKING (photograph 7)

Stocking fridges and freezers involves reaching in the freezer or the fridge with forward stoop postures and bilateral lifting of weights around 5-8kg at any one time. This is an interchangeable activity, having to reach within the full body range.



7

5 – SLICING (photograph 8)

Slicing involves to and fro motions with the dominant hand, usually right handed, demanding shoulder and upper limb girdle activity. This is carried out intermittently, usually lasting for five to ten minutes at any one time.



8

6 – GENERAL HOUSEKEEPING (photograph 9)

General housekeeping involves using a bucket handle mop system with spot mopping and general sweeping activities, and carried out usually at the completion of the shift. These chores may take anywhere between 40 to 60 minutes at any one time.



9

7 – CHOPPING/CUTTING (photograph 10)

Chopping and cutting involves working at a thigh high bench with palmar grasping of the knife, requiring gross eye-hand coordination. These tasks may take anywhere from 30 to 45 minutes, and also require preparation involving lifting/handling of tubs weighing around 5kg. This is a preparatory phase of cooking.



10

8 – DISPLAYS (photograph 11)

Maintaining food displays involves lifting/handling trays of cooked food to be transferred to the outside area and walking approximately 20 metres while carrying the hot trays. Hand gloves are worn to prevent scalding while transferring the cooked food into the display units, usually at chest height. Cold food, salads and sandwiches are also transferred at a similar height.

Note was taken of two working tables of approximately 84" and 86" respectively with the ability for height adjustments.



11 |

RECOMMENDATIONS

1. Lightweight mop and bucket system eg, an ergo-wringer is preferred rather than the bucket handle mop system to minimise back and shoulder twisting postures.
2. A flat topped trolley for transferring oil drums be considered rather than manually handling the waste oil (photograph five).
3. Purchase small bags of onions of 5-10kg rather than 20kg to minimise cumulative traumas associated with heavier lifting.
4. A false-bottomed sink for dish washing would minimise forward stooping postures.
5. A power-hose tap usually seen in commercial restaurants will minimise forward stooping postures and an extended hose connected to the tap will minimise over-reaching.
6. Job rotations be encouraged as much as possible.
7. Pause exercise breaks be encouraged at least every hour for up to a minute or two.
8. Correct work practices of appropriate footwork, squat kneeling rather than stooping or over-reaching etc., may need to be instigated via group education.

CATERING COOK

HUMAN FACTORS

Reaches:	Usually between head and waist height.
Controls and displays:	Push button controls for the ovens and hand controls for the taps.
Force exertion/lift:	Lifting/handling trays weighing around 8-10kg whilst at the serving area.
Endurance required:	Prolonged standing/walking activities for eight hours per day, five days per week.
Static muscle loading:	Moderate whilst cooking and dishwashing (refer photograph three).
Work/rest patterns:	Thirty-minute break following five hours worked.
Frequency of handling:	Constant handling of a variety of kitchen utensils.
Grasping requirement:	Large palmar grasping, often with cylindrical grasping with the dominant hand for spoons, ladles etc.
Size of article:	As indicated earlier for chefs.
Tools:	As indicated earlier for chefs.
Protective clothing:	Dust control uniform or an apron as depicted in the photographs.

WORK ATTRIBUTES:

	Never (0%)	Occasional (1%-33%)	Frequent (34%-66%)	Constant (67%-100%)
Sit	XXXXXXXX			
Stand				XXXXXXXX
Walk				XXXXXXXX
Climb	XXXXXXXX			
Balance	XXXXXXXX			
Neck stoop			XXXXXXXX	
Forward bending		XXXXXXXX		
Turning/twisting		XXXXXXXX		
Kneel/squat		XXXXXXXX		
Crouch/crawl	XXXXXXXX			
Pull/push	XXXXXXXX			
Carry/lift			XXXXXXXX	
Reach overhead		XXXXXXXX		
Handling				XXXXXXXX
Fingering	XXXXXXXX			

BODY DEMANDS:

	Never (0%)	Occasional (1%-33%)	Frequent (34%-66%)	Constant (67%-100%)
Neck		XXXXXXXX		
Back			XXXXXXXX	
Shoulders			XXXXXXXX	
Elbows			XXXXXXXX	
Wrists/fingers			XXXXXXXX	
Legs			XXXXXXXX	

TASK ANALYSIS



1



2



3

The majority of the cooking is oven heating of the pre-cooked items. Therefore workers are transferring trays weighing approximately 8kg between head to waist height with bilateral palmar grasping and over-reaching (photograph one). This could result in shoulder/elbow and upper limb girdle activity throughout the day.

Workers lift/handle trays, which are kept in the bain-marie or warmer to be regularly transferred to the outside bay while serving activity commences (photograph two). This continues for approximately 90 minutes as several operators are serving the hot food. The cook is usually shunting between the kitchen and the serving areas.

The larger trays are washed in a deep sink leading to inadvertent lumbar flexion of approximately 15-20° (photograph three). Note the connected hose to the head-high tap to facilitate or minimise some forward flexion and over-reaching. Often this activity will continue for approximately 15-20 minutes at any one time but is carried out interchangeably throughout the day.

RECOMMENDATIONS

1. Consider a false-bottom sink to minimise forward reaching.
2. Non-slip floor and/or suitable carpets.
3. Review the size of the trays if found heavy by the respective operators. Alternatively, serve a smaller amount of food to reduce the weight.
4. Review the height of the ovens. They could be lowered to chest to waist height rather than at head to chest height.

KITCHENHAND

HUMAN FACTORS

Reaches:	Forward reach out of the body range may be required occasionally, overhead reaching occasionally.
Heights:	Ground to overhead.
Controls and displays:	Variety of knobs and levers located at waist height including stove top or ovens, taps, hose.
Force exertion/lift:	Twenty litre pots via two-person lift.
Endurance required:	Constant standing/walking.
Static muscle loading:	High levels for the upper limb girdle.
Work/rest patterns:	Thirty-minute break following five hours worked.
Frequency of handling:	Frequent to constant for knife for food preparation.
Grasping requirement:	Cylindrical, saucepan, pots, hose. Prehensile to gross grasping for knives. Palmar grasping for plates. Hook grasping for large pots.
Size of article:	Large soup pot, extra-extra large stock pot.
Tools:	Kitchen utensils, crankshaft for stock pot, variety of kitchen utensils as depicted in photograph.
Protective clothing:	Hats, aprons, standard uniform depending on workplace.

WORK ATTRIBUTES:

	Never (0%)	Occasional (1%-33%)	Frequent (34%-66%)	Constant (67%-100%)
Sit	XXXXXXXX			
Stand				XXXXXXXX
Walk				XXXXXXXX
Climb	XXXXXXXX			
Balance	XXXXXXXX			
Neck stoop				XXXXXXXX
Forward bending		XXXXXXXX	XXXXXXXX	
Turning/twisting	XXXXXXXX			
Kneel/squat			XXXXXXXX	
Crouch/crawl	XXXXXXXX			
Pull/push		XXXXXXXX		
Carry/lift			XXXXXXXX	
Reach overhead			XXXXXXXX	
Handling				XXXXXXXX
Fingering				XXXXXXXX

BODY DEMANDS:

	Never (0%)	Occasional (1%-33%)	Frequent (34%-66%)	Constant (67%-100%)
Neck				XXXXXXXX
Back				XXXXXXXX
Shoulders				XXXXXXXX
Elbows				XXXXXXXX
Wrists/fingers				XXXXXXXX
Legs				XXXXXXXX

TASK ANALYSIS

1 – ASSIST CHEF (photographs 1-2)



1



2

This task requires workers to assist the chef by ladling sauces onto dishes or garnishing (photographs one and two), which is conducted at waist height requiring frequent reach just out of range, as well as constant forward neck flexion and gross grasping of utensils with dominant upper limb.

2 – RINSING AND SCRUBBING (photographs 3-4)



3



4

Workers are required to rinse pots, pans and plates etc. at the sink (photograph three). Power-hose taps, which are seen in some venues, are hand-held hoses/taps requiring cylindrical grasping with a lever that is activated by a slight amount of pressure. Although trigger grasping (photograph three) may be used, cylindrical is preferable. Workers may scrub pans either in the sink, requiring stooping postures due to the depth of the sinks, or on the bench area located next to the sink at waist height (photograph four). This is a preferable method as stooping is avoided and reaching requirements are minimal.

3 – LOADING THE DISHWASHER (photographs 5-6)



5



6

Dishes are placed into a dishwasher tray at bench height (photograph five). In some smaller venues where less space is available dishwashers may be placed under the bench requiring the workers to squat or stoop to access the dishwasher. Waiting staff will usually scrape and stack the plates on the bench near the sink area. The tray is then pushed along the bench into the dishwasher with minimal push/pull force. Industrial dishwashers are opened and closed via a handle at shoulder height.

The washed dishes are then removed from the tray (photograph six) and put away in the kitchen area. The worker acquires various postures ranging from squatting to overhead reaching for shelves at various heights. Some venues may use trolleys to transport large quantities of dishes around the kitchen.

4 – OTHER DUTIES

Kitchenhands generally complete cleaning tasks within the kitchen areas such as sweeping and mopping floors requiring lifting of 10kg buckets of water, or alternatively hosing floors down, wiping down benches/shelves and cleaning stovetops. They also take rubbish out requiring lifting of approximately 10kg bags to waist height and carrying them to larger bins usually located in outside areas. Often these bins are large and require the worker to lift over their shoulder to dispose of the bag.

5 – CLEANING STOVETOPS/OVENS/BENCHES (photograph 7)

This task involves cleaning the hotplate using chemicals and a scraper. This task is conducted for 15 to 30- minute periods at the end of the working day. The worker pours chemicals onto the stovetop and then uses the scraper unilaterally with gross grasping of the dominant upper limb requiring shoulder flexion and extension and slight forward stooping (photograph seven).



7

RECOMMENDATIONS

1. A false bottom sink for dishwashing would minimise forward stooping postures and reaching requirements.
2. Power-hose taps will minimise forward stooping postures and an extended hose connected to the tap will minimise over-reaching for dish washing tasks.
3. Job rotations should be encouraged as much as possible to minimise overloading of muscle groups.
4. Pause exercises/stretch breaks should be encouraged at least hourly for up to two minute periods.
5. Correct work practices of appropriate footwork where the feet are facing the direction of transfers rather than twisting, emphasis on squatting and kneeling postures rather than stooping/bending or over-reaching. This may need to be instigated via educational sessions incorporating the following:
 - a) carry, push/pull be conducted with load as close to the body as possible, with neutral shoulders and semi-flexed elbows
 - b) workers to complete correct foot work for push/pull or lift including feet facing in direction of movement to avoid twisting
 - c) lifting to be conducted with squat postures, to avoid back stooping
 - d) avoid stooping postures by redesigning the workstation or squatting when necessary
 - e) avoid over-reaching postures by redesigning the work area or the techniques used, so that the shoulders can maintain a neutral to semi-flexed position.
6. It is recommended that heavier items should be located at between waist and chest height, with lighter and less frequently used items placed in higher areas if unable to be stored at waist height, to minimise straining of the upper limb girdle.
7. Pre-employment screening prior to placement using specific assessment tools to rule out any pre-existing conditions/injuries and avoid potential aggravation following work commencement.
8. Anti-fatigue and anti-slip mats to be used in the kitchen areas can be purchased from hospitality equipment suppliers. These mats soften the ground surface and provide cushioning to reduce static muscle loading on the lower limb girdle caused by prolonged standing on hard surfaces, and provide a non-slip surface to reduce risk of falls.

SALES ASSISTANT - Food and beverage products

HUMAN FACTORS

Reaches:	Within the full body range.
Controls and displays:	Push button control keypad for checkout operations.
Force exertion/lift:	Lifting/handling 12-16kg for drink crates etc.
Endurance required:	Eight hours per day, five days per week.
Static muscle loading:	Mild while standing at the till for mid upper back region.
Frequency of handling:	Occasional to frequent whilst stocking the fridge.
Grasping requirement:	Large palmar grasping for stocking drink bottles.
Size of article:	Bottles.
Tools:	None specific.
Protective clothing:	None specific, except standard uniform.

WORK ATTRIBUTES:

	Never (0%)	Occasional (1%-33%)	Frequent (34%-66%)	Constant (67%-100%)
Sit		XXXXXXXX		
Stand			XXXXXXXX	
Walk			XXXXXXXX	
Climb	XXXXXXXX			
Balance	XXXXXXXX			
Neck stoop		XXXXXXXX		
Forward bending			XXXXXXXX	
Turning/twisting		XXXXXXXX		
Kneel/squat		XXXXXXXX		
Crouch/crawl		XXXXXXXX		
Pull/push	XXXXXXXX			
Carry/lift		XXXXXXXX		
Reach overhead		XXXXXXXX		
Handling			XXXXXXXX	
Fingering	XXXXXXXX			

BODY DEMANDS:

	Never (0%)	Occasional (1%-33%)	Frequent (34%-66%)	Constant (67%-100%)
Neck		XXXXXXXX		
Back			XXXXXXXX	
Shoulders			XXXXXXXX	
Elbows			XXXXXXXX	
Wrists/fingers		XXXXXXXX		
Legs		XXXXXXXX		

TASK ANALYSIS

1 – STOCKING FRIDGE (photographs 1-4)



1



2



3

Stocking fridges involves lifting/handling crates and boxes weighing 12-16kg between waist and shin height to be transferred (photographs one to four). This is an infrequent activity usually lasting for up to half an hour at any one time. Note photographs two, three and four depicting reaching between head to floor height, at times using the step stool (photograph four).

Note the reaching generally within the body range. Reaching slightly forward, with occasional forward flexion at the lumbo-sacral region may also be desirable. These activities are regularly rotated with other chores.



4

2 – CASHIER (photograph 5)

Involves standing or sitting on a high chair while keying the prices of respective items. This task could be rotated with other chores.



5

3 – GENERAL HOUSEKEEPING (photographs 6-7)

6



7

General housekeeping involves using an upright vacuum cleaner for spot cleaning and wiping tables, often having to reach slightly outside the body range but could be attempted with due care. These chores can be undertaken without having to manually lift/handle chairs or tables. Other chores may involve refilling the coffee urns/systems involving reaching between chest and waist height, and wiping the tables at the serving area, bain-marie etc.

RECOMMENDATIONS

1. Back care education and correct lifting/handling techniques be emphasised.
2. Suitable trolleys be considered for transferring the crates between the storerooms and the fridge areas.
3. A suitable kick stool rather than the step stool to facilitate easier moving around rather than having to lift.
4. Job rotation at least every hour.
5. Working at mid-chest/waist height be facilitated with minimal lifting/handling.

CATERING ASSISTANT

HUMAN FACTORS

Reaches:	Usually chest to waist height.
Heights:	Approximately 84cm from the ground level.
Controls and displays:	None specific.
Force exertion/lift:	Occasionally lifting around 5kg.
Endurance required:	Prolonged standing/walking and a variety of other work postures for eight hours per day.
Static muscle loading:	Mild to moderate whilst serving at the service area for mid to upper back region.
Work/rest patterns:	Thirty-minute break following five hours worked.
Frequency of handling:	Moderate pace at the conveyor belt and dishwashing line.
Grasping requirement:	Various hand functions, palmar, cylindrical, spherical and circular grasps.
Size of article:	Small food items, plates, cutlery etc.
Tools:	None specific.
Protective clothing:	Standard dust control uniform.

WORK ATTRIBUTES:

	Never (0%)	Occasional (1%-33%)	Frequent (34%-66%)	Constant (67%-100%)
Sit	XXXXXXXX			
Stand				XXXXXXXX
Walk				XXXXXXXX
Climb	XXXXXXXX			
Balance	XXXXXXXX			
Neck stoop		XXXXXXXX		
Forward bending		XXXXXXXX		
Turning/twisting			XXXXXXXX	
Kneel/squat			XXXXXXXX	
Crouch/crawl		XXXXXXXX		
Pull/push	XXXXXXXX			
Carry/lift		XXXXXXXX		
Reach overhead		XXXXXXXX		
Handling				XXXXXXXX
Fingering	XXXXXXXX			

BODY DEMANDS:

	Never (0%)	Occasional (1%-33%)	Frequent (34%-66%)	Constant (67%-100%)
Neck		XXXXXXXX		
Back			XXXXXXXX	
Shoulders			XXXXXXXX	
Elbows			XXXXXXXX	
Wrists/fingers				XXXXXXXX
Legs		XXXXXXXX		

TASK ANALYSIS

1 – TRAY CUTLERY MENU PERSON (photographs 1-3)



1



2



3

This task involves working at a 68cm high table, including collecting hotplates on the left-hand side and trays on the right-hand side to be placed onto the cutlery conveyor belt with slight forward flexion at the shoulders and lumbo-sacral region. Note the forward displacing of the trays following placement of the cutlery and similar items. Usually this activity is performed for a maximum of 90 minutes at any one time either for breakfast, lunch or afternoon tea. Note the bilateral palmar grasping for hot plates, trays and similar items without any strainful involvement of lifting/handling or pushing/pulling.

2 – MAIN MEAL SERVER (photograph 4)

Operator is located on the left-hand side of the service area and uses the dominant right hand for spooning various meal items on to plates, later to be placed on to the tray located on the conveyor belt. Approximately one serving for every 20-30 seconds may be typical depending on the demands. Working at waist height is required with gross eye-hand coordination for a maximum of 90 minutes.



4

3 – DESSERTS, JUICES, COLD AND HOT FOOD (photograph 5)

Involves reaching at trolleys between knee and chest height in approximately 180° circle. Various items are placed onto the conveyor belt located on the left hand side of the operator. Gross bilateral grasping for placement of various dessert utensils and later placing of the lids is desirable.



5

4 – MASHED POTATOES/VEGETABLES/SANDWICHES/SALAD PLACEMENT (photographs 6-7)



6



7

Involves reaching once at 180° for various items placed on the trolleys and in the front of the operators, requiring forward flexion at the lumbo-sacral region and bilateral grasping of spoons to serve on to the plate on the tray on the conveyor belt. A frequency of approximately 20-30 seconds of physical motion is desirable over a course of 90 minutes during the day.

5 – TEAS/SUGAR/SALT/PEPPER/BREAD ETC OPERATOR (photograph 8)

Pincer grasping bilaterally is desirable with slight forward flexion or twisting whilst placing it onto the trays. Correct work practices (waiting for the tray to get closer to the operator) would ensure the worker avoids over-reaching.



8

6 – CHECK MENUS, SPECIAL DIETS AND PLACE LIDS (photograph 9)

This operator is at the end of the service area line and places the lids to cover the food and the drinks glasses on the trays. This activity is later completed by placing the trays onto the trolleys. Note the lids placed on the trolleys located between head to waist height, meaning the worker must reach sideways on the left-hand side.



9

7 – LOADING TROLLEYS (photographs 10-12)

10



11



12

Note the trays being placed between chest and knee height on a 14-tray trolley with seven on each row. Note also another operator placing the drinks on to the trays once the trays are on the trolleys. These trolleys are later pushed or manoeuvred around in the outside bay, and then transferred to the respective wards via the operators. The push/pull forces are measured at around 5kg.

8 – DISHWASHER AREA/LOADING BAY (photographs 13-14)

13



14

Two operators usually strip the trays to be later loaded on to the bench. Note the side-on postures of one of the operators when unloading the trays to be transferred at between head and knee height (photograph 13). This may lead to inadvertent twisting unless correct footwork is implemented. Leftover food is scraped into the bin in a front-on posture (photograph 14) and later the trays placed onto the bench within the body range. Over-reaching should be discouraged.

9 – UNLOADING BAY (photographs 15-17)



15



16



17

The worker picks items up off the bench and places them on to the trolleys, at times having to step aside approximately five steps. Inadvertent slight over-reaching can occur for the trays (photograph 15) or head height reaching for placing the hot plates on the trolleys (photograph 17). Stooping/reaching postures may also be required while placing the cups or other items on the trolleys. Overall, this activity is undertaken for between 90 minutes and two hours and is usually rotated on hotter days.

Photograph 18 shows the narrow passageway where the operators may have to push the trolleys through after being emptied/unloaded at one end of the dishwasher.

Other features:

- a) significant hot draft at the unloading bay due to the warming action of the dishwasher at an average of 40° C
- b) lack of job rotation
- c) operators tend to stay on one particular job.



18

RECOMMENDATIONS

1. Job rotations at least every hour.
2. The trolleys be reviewed with these aims in mind:
 - a) two wheels with optional lock preferably at the rear end whilst directing for easier manoeuvrability. This will also assist whilst transferring onto the escalator without the front wheels being caught.
 - b) increase the diameter and the breadth of the wheels
 - c) consider pneumatic rather than hard soled tyres
 - d) consider vertical handles rather than horizontal handles. Such handles be between shoulder and waist height. Length should facilitate for easier manual manoeuvrability by varied height operators and offer hand controls.
3. Education on correct work practices and techniques for pushing/pulling and lifting/handling.
4. Pause exercise breaks at least every hour for up to a minute or two.
5. Consider a full-length shock absorbing non-slip carpet in the dishwasher area rather than patches of carpet as they pose the risk of tripping.

GLOSSARY

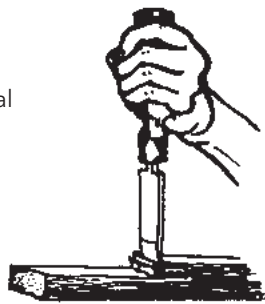
Abduction	Motion away from the midline. Increased the angle between a limb and the sagittal plane.
Adduction	Motion toward the midline. Decreased the angle between a limb and the sagittal plane.
Bending	A loading mode in which a load is applied to a structure in a manner that causes it to bend about an axis, subjecting the structure to a combination of tension and compression.
Biceps	Long twin-bellied muscle going from the shoulder blade to the proximal end of the radius, thus crossing and acting on both the shoulder and the elbow joints.
Carpal tunnel	Channel on the palmar side of the wrist formed by the irregular small bones of the wrist and tough ligament stretched across it. Through the carpal tunnel pass the flexor tendons of the fingers, the median nerve, and some blood vessels.
Deltoid	Large muscle of the shoulder that abducts and otherwise moves the upper arm about the shoulder joint against external loads.
Distal	In a limb: further away from the body. Elsewhere: further away from the central axis of the body.
Dorsiflexion	Bending upwards around an axis.
Dynamic work	"Work" according to the definition in mechanics. Defined as the product of a force multiplied by the distance through which its point of application moves.
Ergonomics	A multidisciplinary activity dealing with the interactions between man and his total working environment, plus such traditional and environmental aspects as atmosphere, heat, light, and sun, as well as of tools and equipment of the work place.
Extension	The position of the joints of the extremities and back when one stands at rest, or the direction of motion that tends to restore this position; the opposite of flexion.
Flexion	Movement involving the bending of a joint whereby the angle between the bones is diminished; the opposite of extension (except at shoulder).
Force	An action that changes the state of rest or motion of a body to which it is applied.
Frontal plane	The plane that passes through the longitudinal axis of the body.
Goniometer	Device measuring the angle and range of angular movement between two body segments connected by a joint.
Isometric work	A muscle exerts a force (ie contracts) against resistance without producing any motion, for example, to hold a weight still with the extended arm. Isometric work, which results in increased demand for calories, is different from work in mechanics, defined as force multiplied by the distance an object moves.

Kyphosis	Convexity of the spine. Normally observed in the thoracic region.
Lordosis	Concave curvature of the spine. Exists in the neck and in the lumbar region.
Lumbosacral joint	Joint between fifth lumbar vertebra and sacrum.
Medial	Reference to that side of an anatomical structure that is closest to the midsagittal plane.
Median Nerve	Large important nerve. Activates muscles that pronate the forearm and flex forearm, wrist and fingers. The sensory part of the nerve provides feedback information from the thumb and the first two and one half fingers.
Plantar flexion	Bending about the ankle joint in the direction of the sole of the foot.
Pronation	The action of rotating the flexed forearm toward the midsagittal plane, so that the hands become prone, with palms down, back of hand up.
Proximal	In a limb, closer to the body. Elsewhere, closer to the central axis of the body.
Pulmonary	Pertaining to the lung.
Range of motion	The range of translation and rotation of a joint for each of its degrees of freedom.
Rotation	Motion in which all points describe circular arcs about an immovable line or axis.
Scoliosis	Lateral curvature of the spine.
Stiffness	A measure of resistance offered to external loads by a specimen or structure as it deforms.
Strain	Deformation (lengthening or shortening) of a body divided by its original length.
Stress	Load per unit area which develops on a plane surface within a structure in response to externally applied loads.
Supination	Process of rotating the flexed forearm outward so that hand becomes "supine", that is, "palms up".
Tendinitis	Also tendonitis. Inflammation of tendon (including tendon sheath).
Tendon	Connective tissue attaching muscle to bone.
Tendon sheaths	Tubular structures through which tendons rub. They are lined with a synovial membrane and, therefore not only guide but also lubricate the tendons.
Torsion	A loading mode in which a load is applied to a structure in a manner that causes it to twist about an axis, subjecting the structure to a combination of shear, tension, and compressive loads.
Transverse	Crosswise; in a horizontal direction.
Triceps	Three-headed large extensor muscle of the forearm. Originates from the back of the humerus and the shoulder blade and inserts into the proximal tip of the ulna.
Work	The amount of energy required to move a body from one position to another. Mechanical work is defined as the product of force applied to the distance moved in the direction of the force.

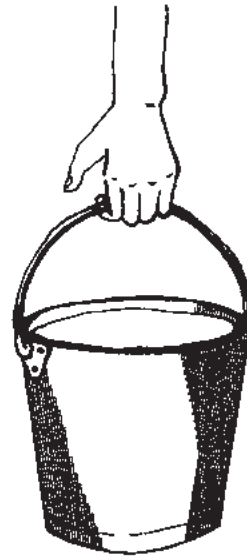
TYPES OF GRIPS



a) Cylindrical



b) Ball/spherical



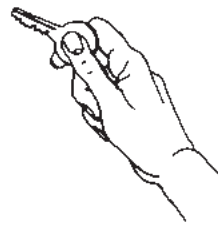
c) Hook)



a) Palmar



b) Pinch

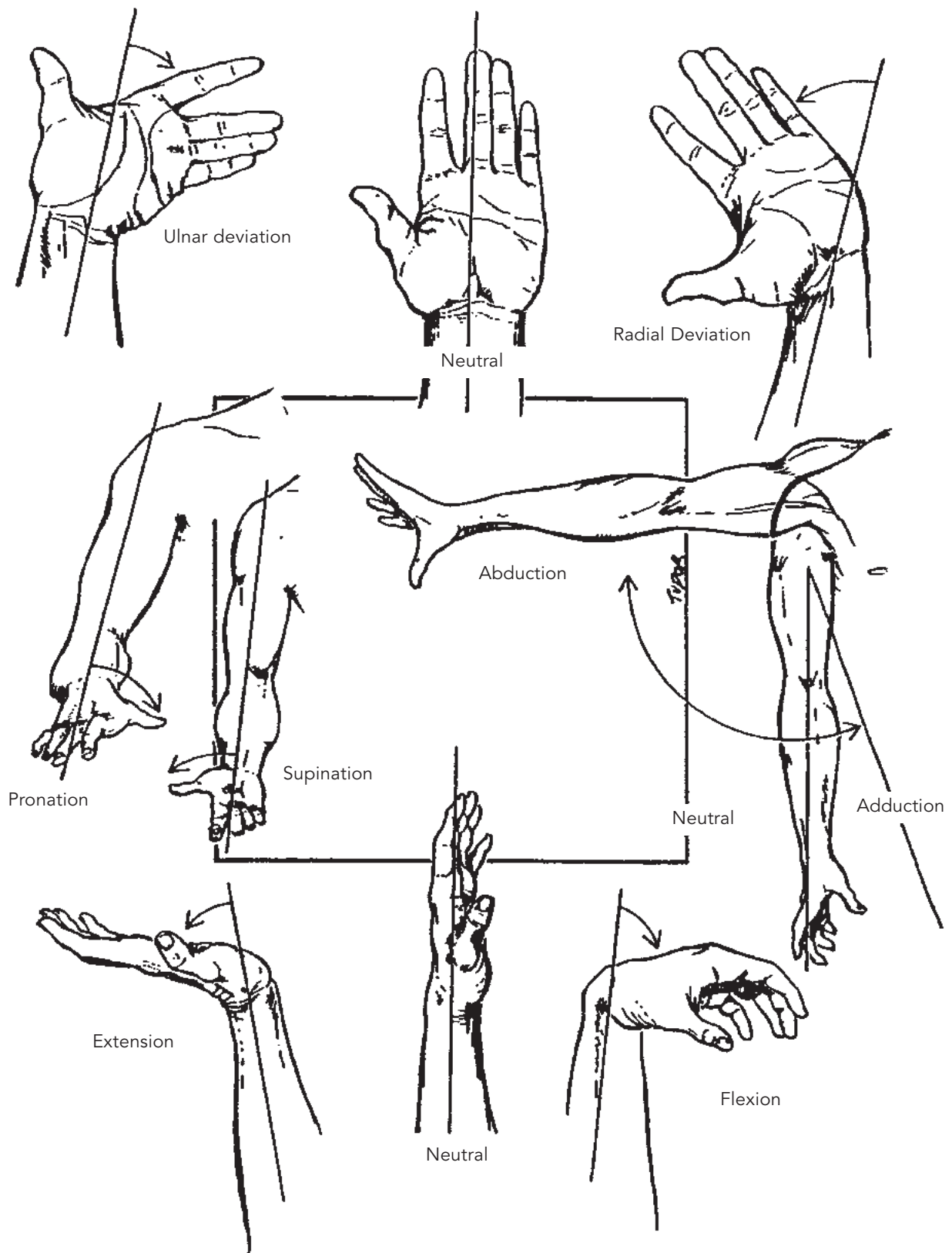


c) Key/lateral



d) Pincer

POSITIONS OF THE HAND AND ARM



PHYSICAL DEMAND CHARACTERISTICS

LEVEL	WEIGHT LIFTED	FREQUENCY OF LIFT	WALKING/CARRYING	TYPICAL ENERGY REQUIRED
Sedentary	10 lbs or less	Infrequently	None	1.5 metres
Sedentary-light	15 lbs 10 lbs or less	Infrequently Frequently	Intermittent self-paced No load	2.0 metres
Light *	20 lbs 10 lbs or less	Infrequently Frequently	2.5 mph no grade OR Slower speed with 10 lbs or less	2.5 metres
Light-medium	35 lbs 20 lbs or less	Infrequently Frequently	3.0 mph no grade OR Slower speed with 2.0 lbs or less	3.0 metres
Medium	50 lbs 25 lbs or less	Infrequently Frequently	3.5 mph no grade OR Slower speed with 2.5 lbs or less	3.5 metres
Medium-heavy	75 lbs 35 lbs or less	Infrequently Frequently	3.5 mph no grade with 3.5 lbs load OR 115 lbs. wheelbarrow 2.5 mph no grade	4.5 metres
Heavy	100 lbs 50 lbs or less	Infrequently Frequently	3.5 mph with 50 lbs or less load	6.0 metres
Very heavy	In excess of 100 lbs 50 lbs to 100 lbs	Infrequently Frequently	3.5 mph with 50 lbs or more load	7.5 – 12.0 metres

* Even though the weight lifted may be negligible a job is considered "light" if it requires a significant amount of walking or standing or frequent use of arm and/or leg controls.

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GLOSSARY OF TERMS USED TO DESCRIBE PHYSICAL WORK

FREQUENCY OF WORK PERFORMANCE

The accepted standard for describing the physical and rate of work performance (frequency) is the Dictionary of Occupational Titles (DOT Manual) researched and published by the United States Department of Labour (4th edition, revised 1991). The DOT Manual defines the rate of work performance, or frequency, according to the following criteria:

FREQUENCY DEFINITIONS	FREQUENCY OF WORK PERFORMANCE			
Percent of the day	Infrequent 1 – 2%	Occasional 3 – 33%	Frequent 34 – 66%	Constant 67 – 100%
Material handling				
Repetitions per day	1 – 4 reps	5 – 32 reps	33 – 250 reps	251 – 2,000 reps
Max reps per hour	1 every 2 hours	4 reps/hour	31 reps/hour	250 reps/hour
Non-material handling				
Repetitions per day	1 – 4 reps	5 – 100 reps	101 – 800 reps	> 800 reps
Max reps per hour	1 every 2 hours	12 reps/hour	100 reps/hour	> 100 reps/hour
Repetitive & static				
Repetitions per day	1 – 50 reps	51 – 250 reps	250 – 1,000 reps	1,000 – 20,000 reps
Max reps per hour	6 reps/hour	31 reps/hour	125 reps/hour	2,500 reps/hour

PHYSICAL DEMAND LEVEL

The strength required to perform work is described as the physical demand. There are five levels that describe the physical demand for average job performance, according to the DOT Manual.

FREQUENCY OF WORK PERFORMANCE	PHYSICAL DEMAND CLASSIFICATION				
	SEDENTARY	LIGHT	MEDIUM	HEAVY	VERY HEAVY
Occasional	5kgs	10kgs	25kgs	50kgs	Over 50kgs
Frequent	Negligible	5kgs	12kgs	25kgs	Over 25kgs
Constant	0	2kgs	5kgs	10kgs	Over 10kgs
Non-material handling	Constant sitting	Constant stand /walk or constant sitting with constant arm/leg work	Constant walking for all categories LIGHT to VERY HEAVY		

Matheson has modified these levels by the addition of intermediate classes to improve the practical application of the DOT Physical Demand Classifications. These are summarised below with their relationship to work frequency:

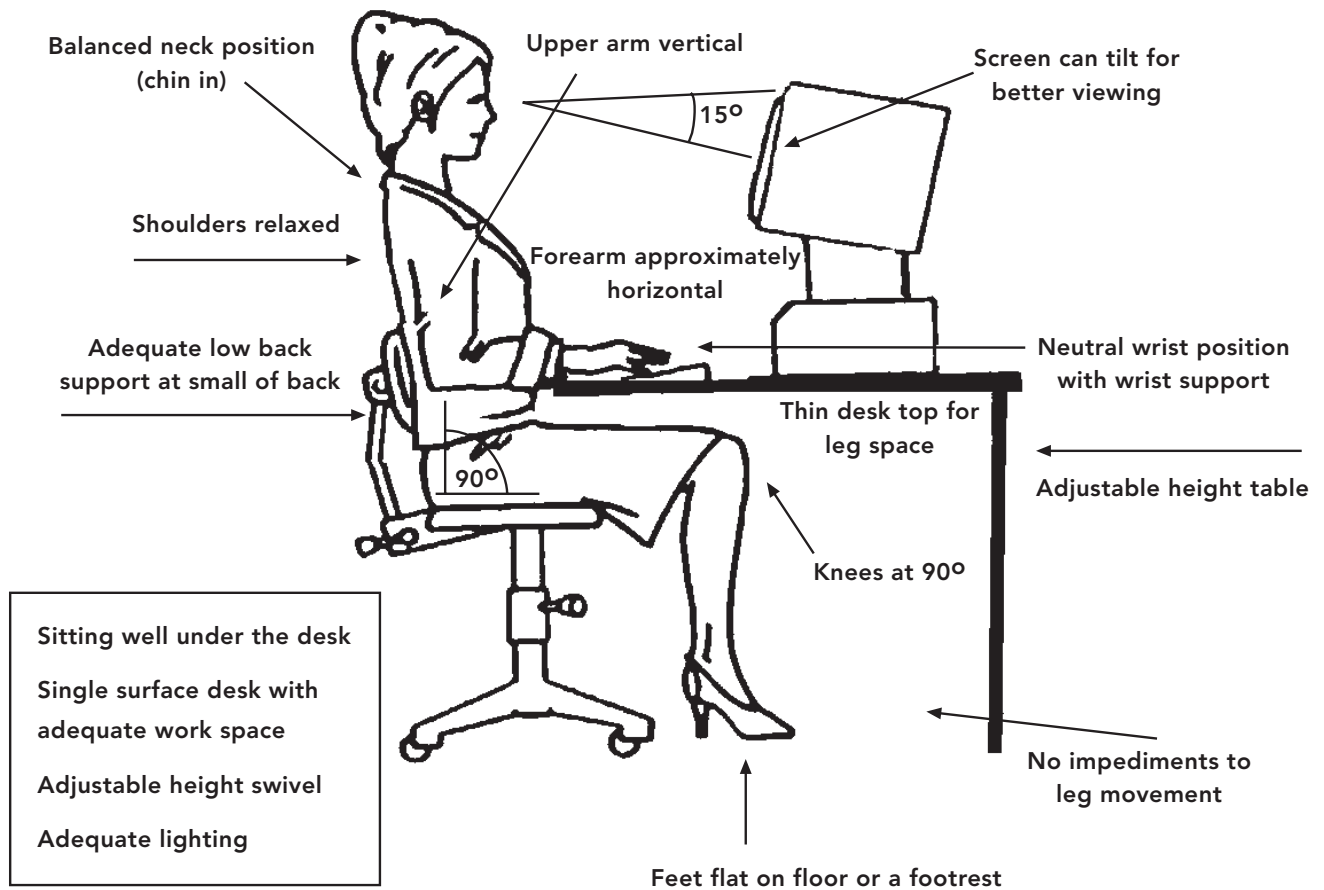
FREQUENCY OF WORK PERFORMANCE	PHYSICAL DEMAND CLASSIFICATION		
	SEDENTARY/LIGHT	LIGHT/MEDIUM	MEDIUM/HEAVY
Occasional	5kgs	10kgs	25kgs
Frequent	Negligible	5kgs	12kgs
Constant	0	2kgs	5kgs
Non-material handling	Constant sitting with constant arm/leg work Constant walking for all categories		

The strength classification and specific weight referred to for physical demand level is based on the worker's ability to exert a force (eg push/pull levers), not just lift or carry the weight.

WORK ACTIVITIES

LIFTING	Raising or lowering an object from one level to another (includes upward pulling and/or exerting upward force to hold an object in static position).
FLOOR LIFT	Floor to knuckle height lift achieved by the use of either a "leg lift" or a "torso lift".
TORSO LIFT	Floor to knuckle height lift achieved by bending over flexing the torso, hips and knees in combination.
LEG LIFT	Floor to knuckle height lift achieved by a full deep squat posture flexing the hips and knees (lumbar lordosis or neutral spine position is maintained).
12" LEG LIFT	Lift from position 12" (30cm) above the floor to knuckle height, achieved by squatting only half way to the floor.
SHOULDER LIFT	Lift from knuckle height to shoulder height using upper limb strength.
OVERHEAD LIFT	Lift from knuckle height to platform or shelf above the head.
CARRYING	Transporting an object, usually holding in the hands, arms or on the shoulder.
PUSHING	Exerting force upon an object so that the object moves away from the force (including stooping, striking, kicking, treading and exerting force to hold an object in static position).
PULLING	Exerting force upon an object so that the object moves toward the force (including jerking and exerting force to hold an object in static position).
SITTING	Remaining in a seated position.
STANDING	Remaining on one's feet in an upright position without moving greater than 3 steps.
WALKING	Moving about on foot greater than 3 steps.
CLIMBING	Ascending or descending ladders, stairs, scaffolding, ramps, poles and the like, using feet and legs, or hands and arms.
BALANCING	Maintaining body equilibrium to prevent falling when walking, standing, crouching or running on either elevated and ungraded, narrow, slippery or erratically moving surfaces.
STOOPING	Bending the body forward and downward by bending spine at the waist, requiring full use of lower extremities and back muscles.
KNEELING	Bending legs at knees to come to rest on knees.
CROUCHING	Bending body forward and downward by bending legs and spine.
CRAWLING	Moving about on the hands and knees.
REACHING	Extending arm(s) in any direction.
HANDLING	Seizing or grasping, holding, turning or otherwise working with the hands. Fingers are only involved to the extent that they are extensions of the hand.

GOOD WORK STATION PRINCIPLES AND EFFICIENT WORKING POSTURE



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