

Kitchens

for children & adults with muscular dystrophy & allied neuromuscular conditions

A guide to the factors to be considered by the disabled person, the community OT and the architectural designer when kitchen adaptations are being planned

To be used in conjunction with:

Chapter 8a	<i>Equipment for Adaptations;</i>
Chapter 10	<i>Disability Needs Assessment Form/Architectural Brief;</i>
Chapter 14	<i>Scales & Templates;</i>
Chapter 18	<i>Addresses: Manufacturers/Suppliers/Sources of Advice.</i>

There are many factors that need to be considered:

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Design criteria

When planning a new kitchen, or adapting an existing kitchen, the design must fit the specific needs of the disabled person to ensure that their ability to use the kitchen is enhanced. This can be achieved if the following issues are considered:

- ⇒ the individual person's knowledge of their own capabilities and coping strategies, in relation to their disability;
- ⇒ an understanding of the particular effects of the condition;
- ⇒ personal choice;
- ⇒ design-planning skills.

The individual person's knowledge of their own capabilities and coping strategies, in relation to their disability

This is really important to ensure their safety in using the kitchen. Talking to the individual and others who will use the kitchen – and *listening* – is the best start. Find out which is their stronger side and how they prefer to carry out activities.

An understanding of the particular effects of the condition

This must reflect both the short-term and long-term needs.

Personal choice

The user has to live with the outcome and must be involved in the selection of units and the appliances to be included in the layout.

Design-planning skills

Experience of kitchen design and knowledge of the products available will be invaluable.

Designing for people with neuromuscular conditions

It is essential to appreciate that people with neuromuscular conditions usually encounter three major problems that should be taken into account in the design. These are:

- ⇒ arm weakness;
- ⇒ leg weakness;
- ⇒ the progressive nature of the disability.

Arm weakness

This will result in:

- ⇒ lack of strength, particularly for lifting;
- ⇒ difficulty in reaching;
- ⇒ the need to support forearms;
- ⇒ weak handgrip and function.

Lack of strength, particularly for lifting

necessitating:

- *a continuous surface* on which to slide the pans;
- *careful positioning of the taps* which allows pans to be filled on the surface, eliminating the need to hold them under a tap or lift them out of the sink;
- *shallow drawers* that cannot be overloaded and therefore will be lighter to pull out.

Difficulty in reaching

necessitating:

- kitchen equipment positioned at the *right height* and within reach;
- drawers and cupboards with *pull-out shelves and baskets* in which items can be located easily.

The need to support forearms

on a surface when working with hands; this may be coupled with the need to sit down.

Weak handgrip and function

can be overcome with specialised kitchen equipment.

Leg weakness

This can be overcome by using a wheelchair or, if the person is able to stand, with the use of a 'perching stool', which will be particularly helpful if standing up from a lower seat height is difficult. Wheelchair-accessible units will be open underneath, or have cupboards with a recess to accommodate the footplates of the chair.

Progressive nature of the disability

It will be essential to consider the short-term and long-term effects of the neuromuscular condition in order to incorporate all the features needed over a period of years, so that future adaptations are not necessary – or are possible with minimum intervention. This may include installing height-adjustable surfaces, needed as follows:

- ⇒ for use when standing and sitting;
- ⇒ for use with wheelchairs of different seat heights;
- ⇒ for use with powered chairs with different heights of joystick control;
- ⇒ to allow the surfaces to be changed to the optimum height for different activities;
- ⇒ to provide flexibility between the needs of the disabled person and anyone else who uses the kitchen.

For use when standing and sitting

A muscle-wasting condition can mean that for several years a wheelchair is used for part of the day only – when someone is tired – or when carrying out an activity that is easier from a wheelchair. Therefore, some people will use the kitchen sometimes when standing and on other occasions from a chair. In this situation, it is impossible to find one optimum height for the surfaces.

For use with wheelchairs of different seat heights

Most people with a neuromuscular condition have more than one wheelchair and as these chairs will have different seat heights or may be used with or without cushions, the height of the kitchen surfaces must reflect these differences.

For use with powered chairs with different heights of joystick control

When a new wheelchair is used, which is likely to be an updated model, it is essential for the surfaces to be altered easily.

To allow the surfaces to be changed to the optimum height for different activities

For anyone with arm weakness, to be able to maximise their hand and arm function, there will be an ideal height at which they need to work, and this will depend on the particular activity.

To provide flexibility between the needs of the disabled person and anyone else who uses the kitchen

Carers' backs are placed under continual strain, and working at the wrong height in the kitchen will add to this problem. Even within the grant legislation, there is reference to the needs of carers.

What is the ideal size of kitchen?

There is no definitive answer, as this depends upon the number of units to be included. If the whole kitchen is to be used by anyone in a wheelchair (now or in the future), it has to be much larger than usual because:

- ⇒ the sink and working surfaces need leg space underneath;
- ⇒ storage units need to be at an accessible level;
- ⇒ stacking units such as a fridge/freezer or a conventional combined oven and hob are unsuitable;
- ⇒ there will have to be space for a table and possibly a powered rising chair;
- ⇒ there must be sufficient space for wheelchair circulation.

The sink and working surfaces need leg space underneath

This means that storage units will need to be separate, taking up additional space, although it is useful to have a cutlery drawer under the drainer or near the sink.

Storage units need to be at an accessible level

Stacking units such as a fridge/freezer or a conventional combined oven and hob are unsuitable

This is because of the difficulty in reaching, and they will have to be installed separately so that each piece of equipment is at the optimum height.

There will have to be space for a table and possibly a powered rising chair

If the person cannot carry meals into another room or use a trolley, it will be essential for the kitchen to be large enough for a table. If the disabled person is able to walk, but has the additional problem of not being able to stand up from a chair, there must be a powered rising chair in the kitchen.

There must be sufficient space for wheelchair circulation

A wheelchair may be **750mm** wide and **1250mm** long, but it is not necessary to provide a complete turning circle in the centre of the kitchen if the chair can be turned underneath the open units. This may be important in a galley kitchen where the open units can be placed at the end of the kitchen or opposite the sink, so that the chair can turn round in this area without the alternative of restricting the number of units installed.

Layout of kitchen units and appliances

The following factors are important when planning the layout:

- ⇒ ensure that the oven, hob and sink are on the same run;
- ⇒ allow a minimum width of **900mm** under the sink, hob and preparation area, and next to the oven;
- ⇒ design the oven housing next to the leg space for the hob;
- ⇒ ensure that there is a space on either side of the hob so that pan handles can be positioned sideways;
- ⇒ be clear about the units and fittings that will be needed;
- ⇒ plan for the circulation of a wheelchair.

Ensure that the oven, hob and sink are on the same run

This allows the disabled person to slide items such as pans, plates and kettles along the worktops, when carrying them from one side of the kitchen to the other is impossible.

Allow a minimum width of 900mm under the sink, hob and preparation area, and next to the oven

900mm is required to give room for the front castors on the wheelchair to turn, as the person will rarely go into the space squarely.

Design the oven housing next to the leg space for the hob

Where space is limited, the same area of leg space can be used for either unit.

Ensure that there is a space on either side of the hob so that pan handles can be positioned sideways

This is a safety precaution so that handles are not left projecting forwards from the surface.

Be clear about the units and fittings that will be needed

The wall space should be divided into **600mm** squares, which is the size of standard kitchen appliances and cupboards, although cupboards can be **500mm** or **400mm** wide. Use the templates to help with the planning. See Chapter 14 *Scales & Templates*.

Plan for the circulation of a wheelchair

An L-shaped or U-shaped kitchen is ideal, however, if there is no alternative to a galley kitchen, the continuous wheelchair-accessible surface should be on one side, with the kitchen appliances (e.g. fridge and storage units) on the other.

Units and worktop height adjustability

Units and worktops can be flexible, with surfaces that are raised for someone standing and lowered to accommodate a wheelchair user. Wall cupboards can be moved up to leave surfaces free. Although they can also be moved down, even at a lower height than usual, it is unlikely that anyone with severe arm weakness will be able to reach into them. However, if reaching is possible, restricting the depth will limit the storage space available and a better option may be for all the items needed regularly to be housed at the front of the cupboard or shelf.

Decisions to make about heights when designing a kitchen will include:

- ⇒ Who will use the kitchen?
- ⇒ Is there an optimum height?
- ⇒ Is it adequate for the disabled person to use only a limited part of the kitchen?
- ⇒ Do some (or all) of the kitchen units need to be height-adjustable?
- ⇒ Can there be a combination of fixed units with manual height-adjustable brackets and/or electrically height-adjustable sections?
- ⇒ Would an electrically height-adjustable trolley be an alternative solution?
- ⇒ Which method of height adjustability is the most suitable?

Who will use the kitchen?

Will this be just the disabled person or others as well?

Is there an optimum height?

If the kitchen has to be shared, is there a height for the surfaces that will be satisfactory for the disabled person and others in the household – or does the kitchen need to be height adjustable?

Is it adequate for the disabled person to use only a limited part of the kitchen?

For disabled children who are interested in cooking, but who are unlikely to use the whole kitchen, it may be adequate to provide a suitable surface for the preparation of simple snacks and for positioning a microwave oven.

Do some (or all) of the kitchen units need to be height-adjustable?

Consider each unit or appliance in relation to the optimum height - and the feasibility of grouping together those that need to be height adjustable.

Can there be a combination of fixed units with manual height-adjustable brackets and/or electrically height-adjustable sections?

Would an electrically height-adjustable trolley be an alternative solution?

Do the oven and the surfaces need to be height adjustable or is this innovative equipment a cheaper and more effective solution? See Chapter 8a *Equipment for Adaptations*.

Thomas Gideon Design

Which method of height adjustability is the most suitable?

- ⇒ Infrequent bracket adjustment;
- ⇒ manual adjustment;
- ⇒ electrical adjustment.

Infrequent bracket adjustment

A few manufacturers make units that can be hung on the wall, at any height. This enables them to be re-hung, at a later date, to suit the changed needs of an individual or family. An experienced fitter will need to change the height of the units and worktops, so this will not give flexibility for the user or users on a day-to-day basis. If you anticipate making height adjustments in this way, avoid tiling down to the worktop. A far better system is to use laminate panels (perhaps in the same colour as the worktop). The brackets to hang the units and worktops can be fixed to the panels, avoiding the need for re-tiling. You can also run all the services behind the panels and avoid re-plastering.

The choice of bracket will depend upon the importance of the ease of adjustment. This may be a bracket under the surface fixed to the wall rail with wing nuts; to adjust the surface height, the wing nuts are removed and the brackets are moved up or down on the wall rail, with the possibility of 10 adjustments of **20mm**.

Huntleigh Renray Ltd

The alternative is a bracket that is infinitely adjustable within a range of **300mm** by rotating the nut at the base. These brackets are supplied to fit any type of kitchen.

Astor-Bannerman (Medical) Ltd

Manual adjustment

This involves winding a handle to move the surfaces, or flicking a switch and lifting or lowering the worktop on a counterweight system, making it unsuitable for independent use by most people with a neuromuscular condition. The only advantage is to enable other people who need to use the kitchen to alter the height, but then they would have to remember to re-adjust the units to the correct height after use.

Electrical adjustment

This method is essential when it is necessary for the height adjustment to be carried out by anyone with arm weakness, in order to provide the independence that the manual system is unlikely to give. A small device with a button is used to raise and lower worktops and kitchen units. This is ideal for moving surfaces and units in a small kitchen, to give the user greater access and storage space and to facilitate use by several people with different needs. Any electrical system must have a safety device to deactivate the power when it detects pressure, for example a finger that might be crushed; this removes the possibility of injuries. When fitting electrical worktops, it is better to fit them against a laminate panel rather than a tiled surface.

Sink

There are a number of issues in relation to the sink that need to be considered with care:

- ⇒ sink depth;
- ⇒ plumbing;
- ⇒ taps;
- ⇒ left-side or right-side draining board?

Sink depth

When deciding on the height of surfaces, begin with the sink as this can cause the most problems. Because wheelchair users need to be able to get their legs underneath, the depth of the sink is critical, particularly as many people will need to get armrests and the joystick of a powered chair underneath. Standard depth bowls (**175mm**) are too deep; they will restrict access by making the worktop too high and also make it difficult for someone who needs to rest on their forearms to reach to the bottom. A bowl depth of **125mm** is ideal and is deep enough to allow washing a saucepan, for example. Other users can increase the depth by using a washing-up bowl in the sink.

Plumbing

Also consider the position of the plumbing. This can hinder leg access and should be placed as near to the wall as possible.

Taps

The factors to be considered are:

- ⇒ advantage of a swivel-mixer nozzle;
- ⇒ height of the nozzle;
- ⇒ forward projection of the nozzle;
- ⇒ length of the lever;
- ⇒ height of the taps.

Advantage of a swivel-mixer nozzle

If lever taps with a swivel-mixer nozzle are installed on the surface at the side of the sink (instead of behind the sink), they can be used to fill the sink with water and also swivelled to fill a pan positioned on the surface. This eliminates the need to hold the pan under the tap or lift it up from the bottom of the sink, both of which will be either difficult or impossible.

Height of the nozzle

This will influence the depth of cooking pan or kettle that can be used.

Forward projection of the nozzle

This will be crucial for reaching the jet of water in the sink for such procedures as preparing vegetables and washing hands.

Length of the lever

In order to limit the need to reach, the levers should be at least **150mm**.

Height of the taps

The taps should be low to prevent the need to reach upwards. Alternatively, remote-control taps can be installed either on the front fascia, ensuring that they do not obstruct access to the sink, or on the surface in the optimum position for the user to reach. Taps on the surface will be easier for anyone relying on sliding their arms and for whom it is difficult to take an arm off the surface to operate the taps or to lift it back again.

Left-side or right-side draining board?

In this choice, many people are influenced by which is the stronger side of their body. However, they should also consider the need to position a tap on the surface adjacent to the sink, and the ability to slide the pans to the hob without the need to pass over the sink.

Surfaces

Because of the need to slide the pans, there should be a continuous surface between the sink and oven with sufficient space for the following in between:

- ⇨ food-preparation surface;
- ⇨ surface for microwave;
- ⇨ hob.

Food-preparation surface

The main area should be between the sink and hob, with a small surface between the hob and oven.

Surface for microwave

It is likely to be necessary to position the microwave on a surface to enable users to stabilise their forearms to open the oven, and to provide a surface on which to lift/slide the items from the oven.

Hob

There must be a space on either side of the hob to ensure that pan handles can be positioned sideways and not left projecting forwards from the surface.

Worktops

The best type of worktop has a 'waterfall' edge (a lip running along the front). Some manufacturers put a raised Corian edge around a laminate worktop. This gives the advantage of colour contrast, an aid to anyone with a visual impairment. A waterfall edge reduces the risk of scalds and water spillage by **70%**. It is particularly useful for washing up, as it prevents water spilling into the lap. With moveable worktops, it is advisable to have a waterfall edge around all four edges or fluids will run off the sides. For a disabled person, cleaning a surface will be easier than cleaning a floor, apart from the fact that a wet floor is a hazard to anyone walking, particularly if they lack balance. *However, it must be assessed whether this edge makes it uncomfortable or difficult to support your arms while sliding items around the surface.*

N.B. Do not use a metal sealing joint for worktop joints; this acts as a barrier to sliding items across the surface.

Ovens, accessories and hobs

The following will need to be discussed:

- ⇒ types of ovens;
- ⇒ oven height and position;
- ⇒ accessories for use with the oven;
- ⇒ split-level hobs.

Types of ovens

Microwave

It is likely to be necessary to position the microwave on a surface (instead of a housing unit) to enable users to stabilise their forearms to open the oven. The added advantage is that this provides a surface in front, large enough to lift or slide items from the oven and then, if necessary, to slide them around the surfaces to the sink.

Combined microwave/convection

This provides the advantages of both methods of cooking and saves space. However, these ovens are smaller than standard ones and will restrict what can be cooked.

Ovens with a pull-down door

These are very dangerous. When in use, the interior surface of the door can reach in excess of **250°C**. It also is a barrier for a wheelchair user trying to reach into the oven and puts the user's arm at full stretch, reducing what can be lifted. For someone with limited strength or poor balance, these factors can make pull-down door ovens a potentially lethal hazard. The hinges of pull-down doors are not designed to take the weight of large items, such as casseroles; eventually, they will give way.

Convection ovens with the choice of left- or right-side opening door

This is likely to be a better solution, as the door will allow access to the oven without obstructing a wheelchair user. These ovens should come with anti-tip shelves, which can be pulled out the full distance. Each shelf should have its own drip tray. With this system, users do not need to lift a cooking dish out to check or stir the contents; they can simply and safely slide it out. Ovens with side-opening doors and pull-out shelves that lock when full out are available from *Atag*.

Floor-standing ovens

These are not suitable for wheelchair users and should be considered only as an additional oven for family cooking if the disabled person is never going to use the oven. However, there may still be the need to install a split-level hob.

Oven height and position

Most accidents in the kitchen involve the oven. Ensuring that it is at the right height, by setting it in an oven housing unit can reduce the risks. It should be sited at the end of the continuous surface, so that it does not interrupt the ability to slide pans.

Accessories for use with the oven

Pull-out surface below the oven

This provides the opportunity for the cook to lean on the forearms when opening the oven door.

Electric height-adjustable trolley

If it is necessary to move items from one area to another, or to slide food either from a surface or any oven shelf and move it to another part of the kitchen, an electric height-adjustable trolley is recommended. This equipment is discussed in detail in Chapter 8a *Equipment for Adaptations*.

Split-level hobs

The choice of hobs is as follows:

- ⇒ gas/electric;
- ⇒ ceramic;
- ⇒ induction.

Gas/electric

The choice between a gas or electric hob is a personal matter, but electric hobs are usually more suitable for sliding pans than gas hobs and may be easier to clean. They also avoid the hazard of a naked flame.

Ceramic

Although ceramic hobs have the advantage of a level surface, the glass may make it difficult to control the pan when stirring. This can be overcome by the use of a hob guard, which keeps the pan in place. The position of the controls should be assessed carefully; they need to be within easy reach without impeding the ability to slide the pans on and off the hob.

Induction

Although generally more expensive, these hobs can be an excellent option for anyone disabled. The hob heats by making a connection with a pan – which therefore must be metal rather than enamelled. The surface remains cool and, as soon as the connection is broken, the hob is switched off.

Kitchen goods

These include:

- ⇒ fridge;
- ⇒ freezer;
- ⇒ combined fridge/freezer;
- ⇒ dishwasher.

Fridge

A floor-standing, pull-out fridge is best. The door pulls out and so does each individual shelf. Alternately, if the user wants a standard built-in fridge, their range of reach should be assessed and the fridge installed into the housing unit so that they can reach what they consider to be the most important shelves in the fridge.

Freezer

There is no such thing as a pull-out freezer, as defrosting would start as soon as it was opened. Freezers in the past were considered luxury items; in fact this is usually an essential appliance for anyone who may not be able to shop regularly and may have meals prepared and frozen for them, ready to cook. The same considerations that apply to standard built-in fridges are relevant.

Combined fridge/freezer

It is unlikely that a combination unit would be satisfactory because of the limited reaching range of a person with a neuromuscular condition.

Dishwasher

This appliance may not be necessary because it may be easier to wash up in a sink than to bend down or reach to load and empty a dishwasher. However, it may be a very useful item for a helper.

Storage

The following should be considered:

- ⇒ types of kitchen units;
- ⇒ wall-mounted cupboards;
- ⇒ corner base unit with a carousel shelf;
- ⇒ cupboard with pull-out shelves;
- ⇒ drawer unit with three pull-out baskets;
- ⇒ drawer unit with pull-out surface over three pull-out baskets;
- ⇒ pull-out surface with bowl holes;
- ⇒ portable storage trolley unit.

Types of kitchen units

Most manufacturers only make standard-sized units; however, a few will make units and doors of any height, width or depth. This makes designing a suitable kitchen much easier. When designing a kitchen for a wheelchair user or someone with mobility difficulties, avoid cupboards with standard shelves as these are a hazard. Even for someone with good upper-body strength, reaching down and into the back of a base unit is virtually impossible. This is why as many units as possible, whether they are base or tall units, should be pull-outs. All drawers must be fitted with fully extendible, metal ball-bearing runners.

Drawers are easier to use than hinged doors with pull-out shelves or baskets because opening the door is an additional manoeuvre. Another advantage is that a drawer handle will be easier to reach than the front of a pull-out shelf. There is a huge range of internal systems for units.

Wall-mounted cupboards

Fixed wall units tend to be inaccessible and, although they can be fixed lower, they will still be beyond the reach of anyone with a neuromuscular condition. Alternatively, electrically-operated units can be used. If wall units are beyond the reach of the disabled person, although it may not be possible to dispense with the storage space they provide, it will be necessary to provide alternative storage space at a lower level.

When the doors of wall cupboards are open they should not protrude beyond the worktop line, as this can be a hazard. For a **500mm** unit, two **250mm** doors will avoid this problem. Storage units with pull-out baskets will enable someone with limited reach to bring items forward out of the unit and near enough to lift; however, this does require some arm strength.

Corner base unit with a carousel shelf

These are ideal if fitted with foldaway doors to make the best use of a corner and otherwise inaccessible storage space. They also take the weight of the worktop, which will usually have leg space at either side.

Cupboard with pull-out shelves

Storage units with pull-out shelves or baskets will enable someone with limited reach to bring the items forwards out of the unit and near enough to lift. However, a cupboard may not be as convenient as a drawer unit because two manoeuvres are needed – i.e. to open the door and to pull out the shelf.

Drawer unit with three pull-out baskets

Drawers have to be deep enough to store tall items. However, the number of items stored will influence the weight of the drawer and therefore the user's ability to pull it open. Three graduated, but shallow drawers will be more satisfactory than two.

Drawer unit with pull-out surface over three pull-out baskets

This will provide an additional surface that might be useful in a small kitchen.

Pull-out surface with bowl holes

This is an alternative to a plain surface and may be helpful to stabilise a bowl, at the same time providing a surface on which to lean.

Portable storage trolley unit

This may be useful to provide additional storage, with the opportunity of maintaining wheelchair access under the units when the trolley is not positioned under the surface.

Laundry

Is there a utility room or does the laundry equipment have to be accommodated in the kitchen? The equipment needed will be:

- ⇒ washing machine and tumble drier (or combined machine);
- ⇒ ironing board.

Washing machine and tumble drier (or combined machine)

These should be positioned at a suitable height for the user, if necessary, by installing them in a housing unit. Unless the tumble drier uses a condenser, it should be sited against an external wall to vent the steam out of the house.

Ironing board

Many disabled people find that ironing boards (and often an iron) are too heavy to lift and a helper may do their ironing. However, ironing boards that are wall-mounted may be useful. See Chapter 8a *Equipment for Adaptations*.

Panilet Tables

Electrics

- ⇒ 13amp sockets;
- ⇒ light switches.

13amp sockets

The position of power sockets must be considered carefully because of the difficulty of reaching. Sockets to be used with the equipment on the worktop will be easier to reach if they are fitted on to an angled plinth, as an alternative to installation in the wall.

Light switches

The height and position of switches has been discussed in Chapter 15 *Adaptation Specifications*.

Suppliers of specialist kitchens/services

There are a number of suppliers of specialist kitchens, accessories and appliances. A visit to a Disabled Living Centre will provide the opportunity to assess the huge range of items available. The address of your nearest centre is available from the Disabled Living Centres Council. See Chapter 18 *Addresses*.

Although the list below is not exhaustive, it gives suggestions of firms to contact. Their details can be found in Chapter 18 *Addresses*.

Astor-Bannerman (Medical) Ltd

Electric worktops.
Height-adjustable brackets.

Design Matters KBB Ltd

Professional design and assessment service by UK's only wheelchair-using kitchen designer is offered to architects, other designers, Housing Associations etc. *Design Matters* will also supply and fit purpose-made kitchens, including the *Access Matters* range, tailored to the individual, *Atag* appliances, *Hafele* and *Hettich* drawer parts, metalwork, runners and carousels. In addition, the firm provides a design consultancy service on a negotiated fee basis.

Independence Kitchens

Manufacturers of wall-hung kitchen furniture.

N & C Building Products Ltd/Phlexicare Division

Kitchens – fixed and height adjustable.

Panilet Tables

Ironing boards and tables.

Huntleigh Renray Ltd

Kitchens – fixed and height adjustable.

Scanflex Ltd

Kitchens – fixed and height adjustable.

Thomas Gideon Design

Electric height-adjustable trolleys.