

Clinical Task Instruction

SKILL SHARED TASK

S-MT05: Standing balance assessment

Scope and objectives of clinical task

This CTI will enable the health professional to:

- describe normal posture in sitting and standing and common deviations,
- assess static and dynamic standing balance using a standardised testing process and
- support team decision making with regard to standing safety and function and care planning.

VERSION CONTROL

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This Clinical Task Instruction (CTI) has been developed by the Allied Health Professions' Office of Queensland (AHPOQ) using information from locally developed clinical procedures, practicing clinicians, and published evidence where available and applicable.

This CTI should be used under a skill sharing framework implemented at the work unit level. The framework is available at:

<https://www.health.qld.gov.au/ahwac/html/calderdale-framework.asp>

Skill sharing can only be implemented in a health service that possesses robust clinical governance processes including an approved and documented scope of skill sharing within the service model, work-based training and competency assessment, ongoing supervision and collaborative practice between skill share-trained practitioners and health professional/s with expertise in the task. A health professional must complete work-based training including a supervised practice period and demonstrate competence prior to providing the task as part of his/her scope of practice. When trained, the skill share-trained health professional is independently responsible for implementing the CTI including determining when to deliver the task, safely and effectively performing task activities, interpreting outcomes and integrating information into the care plan. Competency in this skill shared task does not alter health professionals' responsibility to work within their scope of practice at all times, and to collaborate with or refer to other health professionals if the client's needs extend beyond that scope. Consequently, in a service model skill sharing can augment but not completely replace delivery of the task by profession/s with task expertise.

Please check <https://www.health.qld.gov.au/ahwac/html/clintaskinstructions.asp> for the latest version of this CTI.

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Local Implementation

This CTI uses history taking, observation and the Berg Balance Scale as the primary methods to assess standing balance. Health services may use other tools to complement this task e.g. activities-specific balance confidence scale, postural assessment scale for stroke patients, BOOMER, DEMMI, step test, etc. Where this is the case, the alternative test should be integrated into the training and competency assessment plan for the skill share trained practitioner and clearly recorded on the Performance Criteria Checklist.

Requisite training, knowledge, skills and experience

Training

- Mandatory training requirements relevant to Queensland Health/HHS clinical roles are assumed knowledge for this CTI.
- If not part of mandatory training requirements complete training in patient manual handling techniques, including the use of walk belts, and sit to stand transfers.

Clinical knowledge

To deliver this clinical task a health professional is required to possess the following theoretical knowledge:

- the basic elements of upright sitting and standing and common deviations e.g. uneven weight bearing, wide base of support, flexed/ stooped posture, hand support, increased postural sway etc.,
- potential causes for deviations from upright standing, including; pain, leg length discrepancy, muscle tightness/weakness, poor vision, poor proprioception, vestibular issues, etc.,
- standardised processes/tools to assess standing balance including, interpretation and limitations of any scores, specifically the Berg Balance Scale and including any other tools used by the local service,
- local falls risk screening and mitigation strategies, programs and/or processes.

The knowledge requirements will be met by the following activities:

- complete training program (as above),
- review the Learning Resource,
- receive instruction from the lead health professional in training phase.

Skills or experience

The following skills or experience are not specifically identified in the task procedure but support the safe and effective performance of the task or the efficiency of the training process and are required by a health professional in order to deliver this task:

- competence in measurement of clinical observations relevant to mobilising/exertion where this requirement is relevant to the healthcare setting and client group. This may include blood pressure, heart rate, pulse oximetry, pain scales, exertion scales, etc.

- competence in the use of mobile oxygen where this is relevant to the healthcare setting.

Indications and limitations for use of skill shared task

The skill share-trained health professional shall use their independent clinical judgement to determine the situations in which he/she delivers this clinical task. The following recommended indications and limitations are provided as a guide to the use of the CTI but the health professional is responsible for applying clinical reasoning and understanding of the potential risks and benefits of providing the task in each clinical situation.

Indications

- Client is identified as having standing balance issues. This may be via referral, subjective history (documented history/or client reports recent falls/near-falls, balance problems, worsening gait issues, lower limb injury or numbness etc.) or direct observation (looks unsteady/unsafe/shaky with movements in standing).
- The client is medically stable and there is no medical prohibition to two leg standing e.g. the medical record indicates that the client can be stood and vital signs are within normal limits, or the client is living in the community and is not acutely unwell.

Limitations

Precautions

If precautions are identified consider whether a standing balance assessment is necessary and safe for the client and staff. If risks are unclear, discuss with the physiotherapist.

Implementation of this skill share task may be appropriate for some minor impediments to weight bearing and movement control if the skill-shared trained health professional can adequately manage the risk (e.g. through seeking assistance of another staff member, managing the environment, regular rests etc.). Examples include:

- Mild pain. Confirm the pain has been appropriately investigated (e.g. expected part of admission due to surgery, recent fall and hip x-ray cleared, etc.). Assessment should be timed to coincide with analgesia. The client may require more frequent rests and regular checks to support pain management. Monitoring may be required throughout the task using a pain rating measure. Testing positions may be modified from the standard test protocol. Any adaptations require documentation to ensure reproducibility of test conditions.
- A weight bearing restriction of 'weight bearing as tolerated'. As the limitation relates to pain, assessment should be timed to coincide with analgesia. Monitoring may be required throughout the task using a pain rating measure. Testing positions may be modified from the standard test protocol. Any adaptations require documentation to ensure reproducibility of test conditions and interpretation of results.
- The client has had medical/surgery restrictions that may require the task to be adapted. Restrictions should be documented in protocols, theatre notes, or medical orders. Examples include: total hip replacement precautions; x-ray check prior to mobilisation; mobilise with range of movement brace only, increased clinical monitoring requirements etc. Determine if restrictions conflict with any aspect

of completing the task, if uncertain discuss with the treating medical team. Document any required adjustments or adaptations to the standardised testing protocol.

- Mild muscular weakness. Causes of mild muscular weakness may include: neurological injury such as stroke or traumatic brain injury, musculoskeletal injury, disuse atrophy following a period of immobilisation, or peripheral neuropathy/nerve injury.
Determine the extent of the lower limb weakness. Crude tests of lower limb weakness include the client lifting their bottom off the bed (bridging) in supine lying, or straightening knee(s) unassisted in sitting. Testing should not conflict with any medical restrictions e.g. weight-bearing restrictions, open chain prohibitions (extending the knee while foot is not in contact with the floor), hip precautions etc. Testing for upper limb weakness prior to the task if the client requires use of a walking aid. This includes determining the adequacy of grip strength to manipulate the walking aid e.g. squeeze health professionals hand, adopt the position required to hold/grip the hand piece of the device, hold the handle of the walking aid whilst in sitting. Determine the adequacy of weight bearing through arms, particularly elbow extension by requesting the client push down through their arms to lift their bottom off the bed/ chair whilst in sitting. Testing should not conflict with any medical restrictions e.g. sternotomy, protection of lines/implantable devices etc.
Test scores may differ in conditions with unilateral limb weakness.
Documentation is required of client preferences, or adaptations to allow reproducibility of test conditions e.g. left leg forward step standing versus right leg forward in step standing, inability to use right arm to reach due to hemiplegia etc.
- Mild limb deformity contributing to impaired limb movement. This may be associated with osteoarthritis or rheumatoid arthritis, or previous musculoskeletal trauma/injury. Clients may have existing orthoses to wear during walking e.g. foot orthotics, prosthetic legs, arm slings/supports, knee active range of motion brace, wrist brace etc. These should be applied at the beginning of the task. Ensure that the orthoses does not interfere with the task. If uncertain discuss with the physiotherapist. Document the wearing of the orthoses to ensure reproducibility of task.
- Mild movement disorders. The client may have observable tremors, freezing episodes, spasticity etc. that are transient or mild in nature and pre-existing/chronic such that the client has learned self-management technique e.g. neurological conditions such as Parkinson's Disease, or neurological ataxias. Encourage the client to use their self-management techniques and observe for effectiveness during the assessment. Note any cues/prompts provided as part of the standardisation of the testing protocol.
- Mild balance disorders including a history of balance problems, falls, dizziness or vestibular problems. The client should be able to identify the onset of symptoms that effect balance and be able to implement effective self-management strategies such as looking up and fixing gaze on a distant object, standing still or sitting down on a chair. If the client has had a recent fall or has previously been assessed as being at risk of falling, close supervision and monitoring is essential during the task and the health service falls risk mitigation procedures should be implemented. Example contributing conditions include neurological conditions or previous neurological trauma with residual deficits or syncope (blood pressure drop when changing position), diabetes or vestibular symptoms.
- Mild cognitive impairment. The client must, at a minimum, be able to follow single step instructions appropriately with some repetition and when given adequate time. Note any cues/prompts provided as part of the standardisation of the task.
- Visual or perceptual deficits, including low/no vision or hemianopia in one or both visual fields. Ensure the client is wearing the correct glasses if applicable (distance not reading glasses) and that the area is well lit, any equipment used has contrasting colour and is clearly visible during the task.

Have the client use their usual self-management techniques e.g. cane, scanning of the environment. Document any variations from the standardised testing process.

- Clients requiring supervision or light assistance with transfers or mobility. This may include supervision/ stand by assistance or light assistance x1. Assistance may be provided by: a staff member (allied health assistant, nurse); or by the client's usual care giver if the client is in a community environment and this is their usual method and it is appropriate and safe to do so.
- Client uses a walking stick or crutches to mobilise. These aids must be determined by the local health service as "in scope" for the skill share task and the health professional must have been trained and assessed as competent to prescribe, train and review these aids as using CTI S-MT02. Determine the reason for the use of the walking aid e.g. pain, weight bearing restriction, weakness etc. Ensure all restrictions are adhered to during the task.

Contraindications

The points below are contraindications for the delivery of this task by the skill shared trained health professional. If contraindications are identified, the risk of implementing a standing balance assessment as a skill share task is likely to outweigh the potential benefits. Consult with physiotherapist, for further assessment and comprehensive intervention planning if a contraindication is noted.

If the signs or symptoms arise during the implementation of the task, consult the medical team immediately.

- The client usually requires the use of a walking aid other than a walking stick or crutches i.e. hopper frame, 4 wheeled walker, forearm support frame.
- Client/staff report/medical notes identify the client requires moderate assistance or more than one person assistance for transfers/mobility.
- Client has medical/surgical restrictions that prohibit two leg standing e.g. weight bearing status (non, touch, partial), bed rest ordered for deep venous thrombosis, pulmonary embolus, unstable angina, pneumothorax etc. and the client has not been cleared to stand/mobilise.
- Client has a lower limb amputation/s and/or prosthesis.
- Moderate to severe pain or the client is unwilling to participate due to pain i.e. fails to consent to the intervention at this time. Causes may include arthritis, osteoporosis, recent surgery, inadequate pain relief, etc.
- Moderate to severe lower limb weakness, crude measures include an inability to move extended limbs against gravity when lying down/seated, an inability to bridge (lift bottom off the bed in supine lying position) or inability to stand up from sitting either independently or with light assistance. Testing should not conflict with any medical restrictions e.g. weight-bearing restrictions, open chain prohibitions (extending the knee while foot is not in contact with the floor), hip precautions etc.
- Moderate to severe upper limb weakness if the client usually uses a walking aid, particularly an inadequate grip strength to firmly grip the aid and apply brakes (if relevant), or manoeuvre the aid. Limb weakness may be associated with neurological injuries such as a stroke, traumatic brain injury, musculoskeletal injury, disuse atrophy following a period of immobilisation or peripheral nerve injury.
- Moderate to severe balance disorders including unexpected episodes of dizziness with a loss of balance and/or fall or an inability to safely sit independently or stand up with light assistance of one. Conditions effecting balance include neurological conditions or previous neurological trauma with residual balance deficits, syncope (blood pressure drop when changing position) or vestibular problems.

- Moderate to severe movement disorders including reported/observed frequent freezing episodes, tremor or increased tone that impacts movement control. Movement disorders are commonly associated with neurological conditions such as Parkinson's Disease, acquired brain injury or neurological ataxias.
- Moderate to severe cognitive impairment that limits the client's capacity to follow commands and/or respond appropriately to feedback. This may be associated with brain injury, dementia, or mental health conditions.
- Clinical observations not within normal or expected limits for the client prior to the task including low haemoglobin (Hb < 90g/L), increased respiratory rate (>20 breaths/minute), elevated temperature (>38°C), SpO2 >95%, pulse (<50bpm or >90 bpm), or systolic blood pressure <110 >159 mmHg, etc.

Safety & quality

Client

The skill share-trained health professional shall identify and monitor the following risks and precautions that are specifically relevant to this clinical task:

- As this task is being used to assess a client's balance and risk of falling, close supervision of the client is required at all times.
- Shoes may have an impact on a client's standing balance test outcomes. Where the testing procedure does not specify bare feet, shoes are to be worn. The wearing of shoes should be documented for standardisation of the testing protocol. Shoes should be enclosed, well-fitting and with good traction. If bare feet are specified this should be documented and appropriate safety measures considered including floor surface texture, temperature, etc.

Equipment, aids and appliances

- The client should be assessed using their usual mobility aid (walking stick and crutches only) and any other required devices e.g. ankle foot orthoses (AFO), knee brace etc. If the client does not have access to their equipment a similar trial/loan aid should be provided.
- Confirm that the height and safe working load of the chair used for the task is appropriate for the client.

Environment

- Ensure area is free from distractions trip hazards and obstacles and equipment positioned appropriately e.g. bed behind client, table/chair in front, clinician at client's side.
- For client safety the task may occur close to an external support for balance such as a wall, parallel bar or rail.

Performance of Clinical Task

1. Preparation

- Review the client's medical chart including current history and any reference to their capability to sit unsupported, transfer into standing, or stand, including any assistance required.
- Ensure the environment is set up to safely to undertake the task and all equipment required is available including:
 - stopwatch or watch/clock that counts seconds,
 - chair with arms,
 - table,
 - object to pick up from floor,
 - step/stool of average step height,
 - tape measure.

2. Introduce task and seek consent

- The health professional checks three forms of client identification: full name, date of birth plus one of the following: hospital UR number, Medicare number, or address.
- The health professional introduces the task and seeks informed consent according to the Queensland Health Guide to Informed Decision Making in Healthcare (2012).

3. Positioning

The client's position at commencement of the task should be:

- sitting comfortably in a supportive chair or on the side of the bed.

The health professional's position during the task should be:

- standing to the side of the client and slightly in front to monitor the client during the task and provide hands on assistance if required.

4. Task procedure

- The task comprises the following steps:
 1. Explain and demonstrate (where applicable) the task to the client.
 2. Check the client has understood the task and provide an opportunity to ask questions.
 3. Obtain or confirm information from the client (or carer) with regard to:
 - current physical capability/issues relevant to the task,
 - ability to stand, including their balance history i.e. falls history, ability to stand/mobilise, assistance required, aid used, medical/surgical restrictions etc.,
 - assistance required for sitting, sit to stand and standing.
 4. On the basis of information provided, determine if the task will progress to include observation of standing performance.

5. Observe the client in sitting. If the client is unable to sit unsupported cease the task e.g. cannot sit without back or arm support, or has excessive postural sway, leaning or listing. Document all observations and refer to a health professional with expertise in the area for further assessment.
6. Observe the client's performance of standing up from sitting. If required, provide assistance as per the local health service manual handling protocol. If the client requires more than one light assist cease the task, document the outcome and refer to a health professional with expertise in the area for further assessment.
7. In standing observe the client, noting their standing alignment and any adjustments or compensatory movements. If the client is observed to be stable and comfortable in a static standing position, introduce some minor challenges to balance including turning head to speak/look at the health professional, standing with eyes closed, standing with feet together, alternate stepping forward, marching or turning around on the spot, reaching for an object on a table to the side or in front of the client. Close stand-by assistance is required during the balance challenge activities.
8. If the client is able to maintain dynamic standing balance and there is a clinical indication that further testing and an objective measure of balance is required, implement the Berg Balance Scale (see protocol and information in the learning resource).
9. Instruct the client to undertake the task using the standardised tool instructions.
10. The health professional rates the performance using the defined parameters and scale, noting any variations from the testing protocol e.g. non-standard step height/chair height etc.
11. The health professional records general observations of performance during the task describing the client's posture in standing, balance responses during tasks and any compensatory strategies.
12. Based on information collected make a recommendation to the client and team (if relevant) regarding the client's standing balance and function and/or any further management plans required using the clinical reasoning tool in the learning resource e.g. referral for further assessment, supervision requirements when standing, environmental considerations etc.

5. Monitoring performance and tolerance during the task

- Common errors and compensation strategies to be monitored and corrected during task include:
 - ensuring the client has no contact between the back of their legs and the plinth/bed/chair in standing,
 - ensuring the client does not use the upper limbs for support during the task.
- Provide assistance as required for safety. This may include supervision, providing hands on support or assistance.
- Monitor for adverse reactions and implement appropriate mitigation strategies as outlined in the “Indications and limitations for the use of skill shared task” and “Safety and quality” sections above. This may include ceasing the test protocol prematurely based on client performance e.g. if the client requires more than light assistance on the Berg Balance Scale do not progress to items 6-14 as this is outside of the scope of this CTI, or an observational assessment if the client is unable to stand with feet apart with eyes open, the test would not progress to eyes closed etc.

6. Progression

- If the client scores within expectations and normal values, and no adverse reactions were evident on assessment, and if indicated by the client's functional goals, the standing assessment may be progressed to more challenging situations (refer to the guide for conducting a standing assessment in the learning resource). This may include additional standardised assessments or observation of the client in actual or simulated functional environments e.g. brushing teeth at the bathroom sink, putting shoes on, using a clothes line, etc.
- The client may require reassessment of standing balance if goals change or factors impacting balance improve or decline (e.g. a new fall, hospital admission, illness, surgery etc.).
- In all instances if the client's standing balance identifies them at risk of a fall the health professional will ensure any relevant hospital and health service manual handling and/or falls risk protocol and management plans are implemented.

7. Document

Document the outcomes of the task as part of the skill share-trained health professional's entry in the relevant clinical record, consistent with documentation standards and local procedures, commenting on:

- the test conditions including equipment and environment particularly if outside the clinic environment e.g. chair height and type, client's lounge room/bed room, etc. This allows standardisation of test conditions for comparison,
- standing balance assessment score and/or observation of performance and its interpretation for client care e.g. functional mobility assessment, walking aid, home modifications, etc.,
- the skill shared task should be identified in the documentation as "delivered by skill shared-trained (insert profession) implementing "CTI: S-MT05: Standing balance assessment" (or similar wording).

References and supporting documents

- Queensland Health. (2012). Guide to Informed Decision Making in Healthcare. <http://www.health.qld.gov.au/consent/default.asp>
- Local form to record standing balance observations and berg balance scale. Example forms are:
 - Physiotherapy Berg Balance Scale. V2.0 10/2016. Available at: <http://qheps.health.qld.gov.au/loganb/services/hims/clinical-forms/MR474.pdf>
 - Physiotherapy Rehabilitation Balance and Mobility Assessment. V1.00 – 12/2014. SW463. Available at: <http://qheps.health.qld.gov.au/cairns/docs/sw463.pdf>

Assessment: Performance Criteria Checklist

CTI: S-MT05: Standing balance assessment

Name:

Position:

Work Unit:

Performance Criteria	Knowledge acquired	Supervised task practice	Competency assessment
	Date and initials of Lead HP	Date and initials of Lead HP	Date and initials of Lead HP
Demonstrates knowledge of fundamental concepts required to undertake the task through observed performance and the clinical reasoning record.			
Identifies indications and safety considerations for task and makes appropriate decision to implement task, including any risk mitigation strategies, in accordance with the clinical reasoning record.			
Completes preparation for task including preparation of the environment and availability of equipment as required.			
Describes task and seeks informed consent.			
Prepares environment and positions self and client appropriately to ensure safety and effectiveness of task, including reflecting on risks and improvements in clinical reasoning record where relevant.			
<p>Delivers task effectively and safely as per CTI procedure, in accordance with the learning resource.</p> <p>a) Clearly explains and demonstrates task, checking client's understanding.</p> <p>b) Gains balance history from medical record and subjectively from the client/carer.</p> <p>c) Confirms client's capacity to participate (physical, cognitive etc.), including performance of required assessments (clinical observations, strength, general movement, balance, ability to follow instructions etc.).</p> <p>d) Assesses clients balance using the standardised assessment process/tool.</p> <p>e) Describes standing posture and observed standing balance abnormalities appropriately.</p> <p>During task, maintains a safe clinical environment and manages risks appropriately.</p>			
Monitors for performance errors and provides appropriate correction, feedback and/or adapts task to improve effectiveness, in accordance with the clinical reasoning record.			
Documents in clinical notes including reference to the task being delivered by the skill share-trained health professional and CTI used.			
Performance Criteria	Knowledge	Supervised	Competency

	acquired	task practice	assessment
If relevant, incorporates outcomes from the task into intervention plans e.g. plan for task progression, interprets findings in relation to care planning, or refers to other members of the healthcare team if required.			
Demonstrates appropriate clinical reasoning throughout task, in accordance with the learning resource.			
Notes on the scope of the competency for the health professional			
<p>The health professional has been trained and assessed as competent to deliver the following standing balance assessment tools:</p> <p><input type="checkbox"/> Berg Balance Scale</p> <p>A local health service can elect to add or substitute another standardised standing balance assessment tool. This decision requires appropriate consideration of the risk and training requirements associated with the alternative tool. Additional standing balance assessment tools that the health professional has been trained and assessed as competent to deliver include:</p> <p><input type="checkbox"/> _____</p> <p><input type="checkbox"/> _____</p> <p><input type="checkbox"/> _____</p>			
Notes on the service model on which the health professional will be performing the task:			
Comments:			

Large empty rectangular area for notes or assessment details.

Record of assessment of competence

Assessor name:	Assessor position:	Competence achieved:	/	/
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Scheduled review

Review date	/	/
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S-MT05: Standing balance assessment

Clinical Reasoning Record

The clinical reasoning record can be used:

- as a training resource, to be completed after each application of the skill shared task (or potential use of the task) in the training period and discussed in the supervision meeting,
- after training is completed for the purposes of periodic audit of competence, and
- after training is completed in the event of an adverse or sub-optimal outcome from the delivery of the clinical task, to aid reflection and performance review by the lead health professional.

The clinical reasoning record should be retained with the clinician's records of training and not be included in the client's clinical documentation.

Date skill shared task delivered: _____

1. Setting and context

- insert concise point/s outlining the setting and situation in which the task was performed, and their impact on the task

2. Client

Presenting condition and history relevant to task

- insert concise point/s on the client's presentation in relation to the task e.g. presenting condition, relevant past history, relevant assessment findings

General care plan

- insert concise point/s on the client's general and profession-specific / allied health care plan e.g. acute inpatient, discharge planned in 2/7

Functional considerations

- insert concise point/s of relevance to the task e.g. current functional status, functional needs in home environment or functional goals. If not relevant to task - omit.

Environmental considerations

- insert concise point/s of relevance to the task e.g. environment set-up/preparation for task, equipment available at home and home environment. If not relevant to task - omit.

Social considerations

- insert concise point/s of relevance to the task e.g. carer considerations, other supports, client's role within family, transport or financial issues impacting care plan. If not relevant to task - omit.

Other considerations

- insert concise point/s of relevance to the task not previously covered. If none, omit.

3. Task indications and precautions considered

- insert concise point/s on the indications present for the task, and any risks or precautions, and the decision taken to implement / not implement the task including risk management strategies.

4. Outcomes of task

- insert concise point/s on the outcomes of the task including difficulties encountered, unanticipated responses

5. Plan

- insert concise point/s on the plan for further use of the task with this client including progression plan (if relevant)

6. Overall reflection

- insert concise point/s on learnings from the use of the task including indications for further learning or discussion with the lead health professional

Skill share-trained health professional

Lead health professional (trainer)

Name:

Name:

Position:

Position:

Date this case was discussed in supervision: / /

Outcome of supervision discussion e.g. further training, progress to final competency assessment

S-MT05: Standing balance assessment: Learning Resource

For community dwelling adults balance problems can have a significant impact on quality of life. This includes both physical impacts due to falls related injuries, and also social impacts with a fear of falling and restricted activity leading to social isolation. Control of balance involves several key components: maintaining postural stability in sitting or standing, allowing voluntary movement to occur e.g. during transition between positions and reactions to recover balance with external perturbations. As clients will often present at a service with a decline in mobility and balance it is essential to assess a client's standing balance and implement strategies to facilitate safety in the home/community environment.

Assessment of balance is complex and can involve a range of objective measures including the use of computer technology, systems approach and functional balance assessments. Screening and assessment tools can assist to determine the level of falls risk of a client. There are a range of tools available. The assessment of standing balance, including the use of validated processes and tools, assists in providing a measure of the client's risk of falls and overall safety in the home/community environment, informing the teams care planning.

Required reading/viewing

- Alghwiri AA, Whitney SL. (2012). Chapter 18 Balance and Falls. In Guccione AA, Wong RA, Avers D (ed.), *Geriatric Physical Therapy* (3rd Ed). St Louis, Missouri, Elsevier. Available through CKN.
- Balance. Physiopedia. Available at: <http://www.physio-pedia.com/Balance>
- Berg Balance Scale: Rehabilitation Measures Database. Available at: <http://www.rehabmeasures.org/Lists/RehabMeasures/PrintView.aspx?ID=888>
- Huxham FE, Goldie PA, Patla AE (2001). Theoretical considerations in balance assessment. *Australian Journal of Physiotherapy*, 47: 89-100. Available at: <http://ajp.physiotherapy.asn.au/AJP/47-2/AustJPhysiother47i2Huxham.pdf>
- Mancini M, Horak F. (2010). The relevance of clinical balance assessment tools to differentiate balance deficits. *European Journal of Physical and Rehabilitation Medicine*, 46(2): 239-248. Available at: https://www.researchgate.net/profile/Fay_Horak/publication/44613980_The_relevance_of_clinical_balance_assessment_tool_to_differentiate_balance_deficits/links/5681a99008ae051f9aec570c.pdf
- Posture. Physiopedia. Available at: <http://www.physio-pedia.com/Posture>
- You tube video "Observation and Posture Analysis" Available at: https://www.youtube.com/watch?annotation_id=1a72dab1-ea36-4047-8a19-d97a317da704&feature=cards&src_vid=sLSjXGGpH0k&v=Zp5iC3loq7U

Optional reading/ resources

- Boomer balance outcome measure for elder rehabilitation: Rehabilitation Measures. Available at: <http://www.rehabmeasures.org/Lists/RehabMeasures/DispForm.aspx?ID=1236>
- Compendium of clinical measures for community rehabilitation. Prepared for Queensland Health. Prepared by Centre for Allied Health Evidence University of South Australia. Available at: https://www.health.qld.gov.au/_data/assets/pdf_file/0023/363443/clinical_measure.pdf
- DEMMI – de Morton Mobility Index. Instructional Handbook. Available at: <http://www.demmi.org.au/demmi/web/downloads/handbook.pdf>

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- Falls prevention in older adults. Assessment and management.(2012). *Australian Family Physician*. The elderly. 41(12): 930-935. Available at: <http://www.racgp.org.au/afp/2012/december/falls-prevention/>
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Clinical observation measurements

Normal adult clinical observations¹ (*Queensland Health, 2014*)

Blood pressure (systolic)	110 – 159 mmHg
Pulse/heart rate (HR)	50 – 99 beats/min
Temperature (oral)	36.1 °C – 37.9 °C
Respiratory rate (RR)	13 – 20 breaths/min
Oxygen saturation (SpO ₂)	above 95%
Pain score at rest	0 – none 1-3 – mild 4-6 – moderate 7-10 – severe
Functional Activity Scale (FAS) (perform during cough/ movement)	A – activity unlimited by pain B – activity mild to moderately limited by pain C – activity severely limited by pain

Note: For children clinical observations will be related to age and presenting condition. The health professional should liaise directly with the medical team to confirm the expected clinical observations.

** Other observations and scales required by the health service for the task delivery in a specific care setting will require specific training in administration and interpretation e.g. Borg perceived exertion scale, blood pressure readings, etc.

¹ Normal adult clinical observations are based on the Queensland Adult Deterioration Detection System (Q-ADDS) for Tertiary and Secondary Facilities. Normal ranges reflect the Q-ADDS Score 0. Recording sheet available at Queensland Adult Deterioration Detection System (Q-ADDS) For Day Surgery Units in Rural and Remote Facilities. (2016). Accessible at: <http://qheps.health.qld.gov.au/tville/cdsu/clinical-forms/docs/cf-q-adds-dsu-rural-remote.pdf>

Balance history – considerations

- Has the client suffered any falls in the past 12 months? If yes:
 - How many?
 - Where e.g. in the bathroom, on the stairs?
 - Were there any injuries sustained, for example bruising, fractures, lacerations, loss of consciousness?
 - What was the cause, e.g. syncope, dizziness?
 - Which direction did they fall i.e. forwards, backwards, to the side?
- When the client is moving around (standing up from sitting, walking, turning), does the client report/appear unsteady or at risk of losing their balance?
- Has the client has any change to their medications?
- Is the client currently mobilising with an aid?

Goal setting - considerations

- Identify client's functional requirements in the home/community environment including mobility, transfers, stairs and functional tasks.
- Consider how the client would like to achieve their goals, i.e. independently, with assistance, with equipment, etc.?
- What level of assistance is available to the client at home/in the community?
- What are the requirements that the carer/service need the client to meet to be safe at home/in the community?

Assessment of Standing Balance

Balance refers to an even distribution of weight enabling someone or something to remain upright and steady². The ability to maintain an upright posture involves many ongoing postural adjustments/movements to prevent 'unbalance'. In general, postural adjustments are automatic and occur both when standing still and when doing a task/moving e.g. looking up, reaching forward, turning etc.³.

Before commencing a standing balance assessment the clients sitting balance should be reviewed. In general clients who struggle to maintain sitting balance will demonstrate greater difficulty maintaining standing balance. Body alignment is more critical in standing than in sitting due to the smaller base of support. Balanced sitting or standing can be defined as the ability to sit (or stand) in good alignment, without using undue muscle activity, to move about in the posture, to perform a wide variety of motor tasks⁴.

Body alignment in both sitting and standing depends on a number of factors including:

- what one is sitting/standing on e.g. sitting on a firm chair, standing on a ramp, being on the deck of a boat,
- what one is doing, e.g. playing a board game, waiting in a line, hanging out clothes,
- client's general body posture and other factors, such as age and gender,

² English Oxford Living Dictionaries. Accessed 28/2/2017. Available at: <https://en.oxforddictionaries.com/definition/balance>

³ Carr JH, Shepherd RB (1987). Appendix 5: Adjustments to gravity. A motor relearning programme for stroke. Butterworth-Heinemann: Oxford.

⁴ Carr JH, Shepherd RB (1987). A motor relearning programme for stroke. Butterworth-Heinemann: Oxford.

Standing balance can be assessed using a variety of methodologies. These may differ between client groups, clinical settings and service models. Importantly the assessment of standing balance should:

- describe the clients abilities both static and dynamic,
- be reproducible between assessors to allow for monitoring of change,
- determine the clients risk of falling,
- assist with care planning.

Balanced sitting

The following information is adapted from Carr and Shepherd (1987), *Chapter 5: Balanced Sitting. A motor relearning programme for stroke* and describes the essential components to maintain upright sitting and common deviations observed.

The essential components of sitting alignment relate to sitting up straight:

- feet and knees close together,
- weight evenly distributed across the base of support i.e. feet and buttocks,
- hips flexed to ~90°, trunk straight/extended (i.e. shoulders over hips),
- shoulders level with head balanced.

The ability to make:

- postural adjustments in preparation/anticipation of movement,
- ongoing postural adjustments whilst performing a task.

The analysis of sitting consists of observation of the client's alignment in quiet sitting, followed by their ability to make postural adjustments when challenged e.g. closing eyes, when moving (e.g. deep breath, head/trunk turning, reaching), responding to the environment (e.g. timer, rocking of a boat etc.). Common compensatory strategies include:

- widen the base of support, i.e. feet and/or knees apart, use arms for support,
- voluntarily restricts movement, i.e. holds themselves stiffly, holds their breath,
- shuffling of feet instead of making postural adjustments to maintain balance,
- seeking hand support e.g. grabbing, this increases the base of support,
- leaning forward/backwards when the task requires body weight shift sideways due to poor lateral flexion control.

Balanced standing

The following information is adapted from Carr and Shepherd (1987), *Chapter 7: Balanced Standing. A motor relearning programme for stroke* and describes the essential components to maintain upright standing and common deviations observed.

The essential components of standing alignment are:

- feet a few inches apart,
- legs straight with hips in front of ankles,
- shoulders over hips,
- shoulders level with head balanced,
- trunk erect.

The ability to make:

- postural adjustments in preparation/anticipation of movement,
- ongoing postural adjustments whilst performing a task

The analysis of standing consists of observation of the client's alignment in quiet standing, followed by ability to make postural adjustments when challenged e.g. closing eyes, when moving (e.g. deep breath, head/trunk turning, reaching), responding to the environment (e.g. timer, rocking of a boat etc.). Common compensatory strategies include:

- wide base of support, i.e. feet too far apart or one turned out,
- voluntarily restricts movement, i.e. holds themselves stiffly, holds their breath,
- shuffling of feet instead of making postural adjustments to maintain balance,
- takes a step prematurely, i.e. as soon as the centre of gravity moves,
- flexes at hips/pokes bottom out instead of moving forward at the ankles in reaching forward,
- moves at trunk instead of weight shifting when reaching sideways,
- use of arms e.g. grabs for support, hold arms out sideways or forwards to counterbalance shifts in body weight.

Elements of a Standing Balance Assessment

- With client sitting on the edge of the bed or plinth, ask the client to stand.
- Ensure backs of the client's legs are not in contact with the bed/plinth when the client is in a standing position.
- Ask client to stand how they normally would (with feet apart, eyes open).
- Assess components of standing alignment when client standing with feet apart eyes open
 - feet and knees apart (approx. hip width apart),
 - hips and knees extended but not locked,
 - hips over feet,
 - weight evenly distributed between left and right leg,
 - shoulders level,
 - are there anticipatory and ongoing adjustments (e.g. small continual adjustments to environment) and are they controlled and effective?
- Assess components of static balance
 - Can they stand with their feet apart and eyes open?
 - Can they stand with their feet apart and eyes closed?
 - Can they stand with their feet together and eyes open?
 - Can they stand with their feet together and eyes closed?
 - Can they stand with their feet in tandem stance and eyes open?
 - Can they stand with their feet in tandem stance and eyes closed?
- Assess components of dynamic balance
 - Can they stand with feet apart and turn the head from side to side?
 - Can they stand with feet together and turn the head from side to side?
 - Can they maintain standing balance with feet apart and feet together while reaching outside the base of support?
 - Can they maintain standing balance while bending to pick something up off the floor?

- Observe the use of hip/knee/ankle strategies to maintain standing balance with gentle external perturbation (gentle pressure to the chest to displace the client's centre of balance).

Additionally:

- observe the client standing on a piece of foam or other floor surfaces,
- observe of the client in actual or simulated functional environments e.g. brushing teeth at the bathroom sink, reaching their feet, using the clothes line where the client simulates activities of concern. This may indicate cervical and/or vestibular issues.
- The use of standardised validated tools may be used as an adjunct. Common tools in Queensland Health environments include:
 - Berg Balance Scale
 - Postural Assessment Scale for Stroke Patients
 - Step Test
 - Boomer Balance Outcome Measure for Elder Rehabilitation
 - DEMMI – de Morton Mobility Index

The health professional must be trained and assessed as competent before using these validated tools in the local service.

Risk Management strategies to address standing balance deficits

- Ergonomic/engineering controls to make the task easier or the use of equipment (e.g. long handled equipment, rail, walking aid with basket) or home modifications.
- Rehabilitation program – this may include practice of standing balance in different environments, strengthening exercises, flexibility stretches, incorporation of cueing strategies, etc.
- Patient manual handling – teaching the staff/carer manual handling techniques including; verbal prompts to use arm rests, walk belts, etc.

Outcomes of a standing balance assessment

The observations and measurement of a client's standing balance needs to be collated to form a recommendation.

The assessment needs to document the observation of the client's posture and balance responses, both statically and dynamically, including assistance and limitations (narrow base of support, eyes open, reaching etc.).

The recommendation must then clearly state if the client is:

- safe to stand independently i.e. no changes/proposed intervention. This should include a statement that the client be re-referred should issues/concerns arise,
- safe for standing balance with restrictions. These may include:
 - within limited environments and/ or times (beside bed, during the day etc.),
 - with support (supervision, assistance etc.),
 - it must also include a plan to further reduce the risk of falls. This may include further assessment and/or intervention with a health professional. Review Alghwiri and Whitney (2012) - Table 18-2⁵.

⁵ Refer to Table 18-2. Fall risk factors and strategies a physical therapist should consider to ameliorate the risk factor and improve patient function. In Alghwiri AA, Whitney SL. (2012).Chapter 18 Balance and Falls. As part of required reading list.

- not safe for standing balance. This must include a plan to address the identified deficits/ issues. This may include further assessment with a health professional with expertise in the areas of:
 - standing balance,
 - balance/strength deficits, e.g. individual program, falls and balance class, muscle stretching and strengthening program etc.,
 - home modifications, e.g. shower/stair rail, etc.,
 - alternative housing/living environment options e.g. respite, residential care facility, etc.,
 - other e.g. re-assessment after a period of time (e.g. when medical/surgical restrictions are changed, medication regime is established, clinical observations are within normal or expected limits, etc.).