

# **GALS OR HOW TO PERFORM A RAPID AND RELIABLE MUSCULOSKELETAL SCREEN:**

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The GALS screening examination is a fast and effective way to assess the integrity of the MSK system. GALS is not a new concept, it was originally described by Doherty et al in 1992 (1) and its use has been validated by Beattie et al in 2008 (2), it has been taught and used throughout the world since the mid 1990s. There are several modified versions of the GALS screen used throughout the world, the one described here is yet another version of the original.

It is important to remember that GALS is **not** meant to be a complete diagnostic examination but a brief **screening examination** for significant abnormality of the MSK system. An assessment of the MSK system should always take place in the routine assessment of patients.

If during the GALS screen any abnormality is detected by the examining clinician or the patient then a more detailed and 'focused' history and regional examination should be performed.

It must be remembered that GALS is a screening tool, it gives the doctor an overall impression of the function of the MSK system and is designed to identify regional or global abnormalities or problems so as a more focused examination may take place of the anatomical region or regions involved.

Obviously, if a patient presents with a painful knee or an injured shoulder it may be more appropriate to initially proceed to the Focused History and Focused Examination for that particular

joint and leave performing the GALS screen until later in the consultation when an examination of the various 'systems' occurs.

## **SUMMARY OF GALS ASSESSMENT PROCEDURE**

It is essential at all times to ensure patient safety and privacy, although appropriate exposure of the patient must occur so as accurate observation and assessment are allowed. You must be able to clearly observe the region of the patient you are examining.

If at any time throughout the GALS screen the patient states they are unable to perform the task you have requested or demonstrates significant difficulty performing the task or appears they may compromise their safety, it is essential that you stop them from continuing with that particular task and identify **WHY** they are unable to perform the task, e.g. pain, paralysis, weakness, etc, this in itself will provide you with valuable information. Remember that the reason for performing a physical examination or physical screen is to identify any variance from what is normal for the patient, once identified the onus is then on the examiner to explain the reason for this difference.

It is important you give very clear instructions to the patient on the tasks you want them to perform so as consistency is maintained and confusion is minimised.

Active movements should in most circumstances be performed before passive.

Remember to **ALWAYS** observe the patient's face as well as the region you are examining, as facial expressions often provide valuable information about the region being examined.

### **Gait**

1. This part of the screen is the time when the maximum amount of appropriate exposure of the patient is requested. When assessing gait the patient's shoes should be removed.
2. Ask the patient to walk a few steps, turn briskly & walk back towards you.
3. Observe the patients gait for symmetry, smoothness and the ability to turn quickly.

4. With the patient in the anatomical position inspect from the posterior, lateral and anterior aspects.
5. Observe for any abnormalities in the muscles (e.g. reduced muscle bulk), spine (e.g. abnormal spinal curvature such as scoliosis), limbs or joints (e.g. a red swollen knee)

## Arms

When assessing arm movements it is important to always assess BOTH phases of the movement as each phase utilises different muscle groups and therefore provides different information. Do not allow the patient to abbreviate one or both phases of a set movement unless they are experiencing pain or discomfort.

When a movement is performed it is also important to inspect the movement from all angles, which may mean having the patient repeat the movement so as you can observe the movement from the anterior, lateral and posterior aspects.

1. Shoulder
  - a. The dominant shoulder is often noted to sit lower than the non dominant; this is a normal finding and does not necessarily reflect pathology.
  - b. Ask the patient to place their hands behind their head with their elbows pulled back.  
This movement assesses abduction, external rotation of the shoulder and elbow flexion.
2. Elbow
  - a. With the patient's palms facing up request that they flex their elbows and place their finger tips on each corresponding shoulder, ensure the wrists are flexed and the elbows are elevated, this reflects elbow function and wrist flexion as well as partial forward flexion of the glenohumeral joint.
3. Forearm and wrist:

- a. Ask the patient to flex their elbows to 90° and “lock” their elbows against their torso, this position minimises the humeral component of the next motion. Whilst in this position ask the patient to fully supinate then pronate their hands, this movement assesses range of movement at the proximal radioulna joint predominantly and also distal radioulna joint.
4. Hands/fingers
    - a. Whilst still in the same position, observe the hands for any joint swelling or deformities
    - b. Grip strength:
      - i. Ask the patient to make a fist. Observe the hand and finger movements
      - ii. Ask the patient to grip your fingers and assess the degree of grip strength
      - iii. Precision pinch
        1. Ask the patient in turn to bring each finger in turn to meet the thumb
      - iv. Metacarpophalangeal squeeze test
        1. Squeeze across the metacarpophalangeal joints (tenderness here may indicate synovitis of metacarpophalangeal joints)

## Leg

1. Knee
  - a. The patient’s shoes should be removed prior to examining the leg.
  - b. If the patient is physically able, have them perform repeated “half squats” (30° flexion of the knees), this is a good reflection of patellofemoral function.
  - c. Ask the patient perform “full squats” which is a good assessment of knee joint pathology (osteoarthritis, meniscal damage). If the patient is able, have them squat as far down as possible. It is safe practice to hold the patients hands whilst they perform the squats so as to provide stability, this position should be held for 5-10 seconds, at all times ensure patient stability and safety. It is important to note that the patient may find full squats easier and possibly less painful than half squats as different structures are assessed with each movement. The full squat should initially be performed with the patient raising

their heels off the floor; this position stresses the posterior ankle, forefoot and metatarsophalangeal joints. Then ask the patient to lower their heels onto the floor just prior to standing up as this will test for any degree of anterior ankle impingement.

d. If the patient is unable to perform steps 'a', 'b' or 'c' above you should initially identify why they are unable to perform the tasks requested and then request that the patient lie on the examination couch to assess lower limb function further. Each of the following movements should always be patient initiated (active movement); this gives a better reflection of function and strength and avoids causing unnecessary pain for the patient.

i. Knee:

1. With your hands placed gently on each of the patient's knees ask the patient to actively slide each heel to their buttock:
  - a. check for amount of flexion
  - b. Palpate the knee for crepitus
  - c. Examine the patellar region
  - d. Check for evidence of effusion
  - e. Check for patellofemoral tenderness
2. Ask the patient to then straighten their legs and push both knees into the bed which will determine amount of extension.

ii. Hip

1. With the patient's legs straight, ask them to roll each leg inwards (hip internal rotation) and then outwards (hip external rotation) as far as they can, this will only give a very basic estimation of hip internal and external rotation.

A better assessment is to ask the patient to flex one hip to 90° and the corresponding knee to 90° whilst the examiner helps to support the knee

and hip in this position, the patient is asked to rotate the foot of the flexed hip and knee towards the contralateral shoulder.

This will assess EXTERNAL rotation of the hip (think which way the femoral head is moving with respect to the acetabulum). The examiner should also provide a little overpressure into external rotation to further assess hip integrity and movement. Hip INTERNAL rotation (think which way the femoral head is moving with respect to the acetabulum) is assessed by rotating the hip in the opposite direction towards the ipsilateral shoulder; again the examiner provides a little overpressure. Limited or painful internal rotation of the hip is suggestive of hip joint pathology.

- e. Feet
  - i. Inspect the feet for any swelling, deformity or any callosities
  - ii. Ask the patient to invert and evert each ankle
  - iii. Ask the patient to plantarflex and dorsiflex each ankle
  - iv. Request that they then splay their toes and then flex or “scrunch” their toes.
  - v. Metatarsophalangeal squeeze test
    - 1. Squeeze across the metatarsophalangeal joints for any tenderness

## Spine

- 1. Inspection
  - a. Inspect the spine for any abnormalities including abnormal kyphosis, scoliosis or loss of lordosis.
  - b. Cervical spine
    - i. Flexion/extension/rotation/sideways flexion
    - ii. It is important that the patient only pivots using the cervical spine movements and doesn't “cheat” by rotating their shoulders for neck rotation or raising their shoulders for sideways flexion

- c. Lumbar spine
  - i. Ask the patient to bend forward and touch their toes. During this movement the patient may depend partly on good hip and knee flexion to bend forwards, so as to try and isolate lumbar spine flexion stress to the patient they must keep their knees straight, place your fingers over the lumbosacral joint and ask patient to only flex from this point.
  - ii. Ask the patient, whilst keeping their knees straight; to extend backwards, pivoting from their lower spine not hips, again only extending from the lumbosacral joint where your fingers are resting.

This completes the GALS screen. By performing the GALS systematically you, the patient or both should be able to identify areas of potential pathology. Once these have been identified a more focused history and examination are performed.

## DOCUMENTATION OF GALS IN PATIENT RECORDS:

Documentation of clinical findings is always an essential responsibility of the examining clinician. The documentation must be clear and concise and be easily understood by any other clinician who may review the patient records. GALS findings must also be documented clearly, the following is an example of how the findings may be documented:

	<u>Normal</u>	<u>Abnormal</u>	<u>Comments on findings</u>
<u>G</u>			
<u>A</u>			
<u>L</u>			
<u>S</u>			

A simple table is formulated with two tick box columns to signify either 'normal' or 'abnormal' findings within each region identified, the 'A' and 'L' columns may be further sub classified into 'right'

and 'left' if desired. The 'Comments on findings' column is left blank if all findings are within normal limits, if an abnormality is identified then clarification is required in this column. Abnormal findings are descriptive and listed as found using anatomical planes and terminology, subsequently a sound knowledge of anatomy is essential.

Some examples of comments made from abnormal GALS findings may include:

1. "Pain left knee with half squats"
2. "Inability to extend right elbow fully"
3. "Weak grip strength right hand"
4. "Limping on left side" (a better description may be: "Left sided antalgic gait")
5. "Pain left shoulder with external rotation"
6. "Pain left anterior ankle with full squats"

As can be seen, it is far more useful to provide some extra anatomical detail in your findings, such as where in the left ankle the patient experiences pain.

A Focused History and Focused Examination must then be performed on the regions identified as having dysfunction and the findings clearly documented. It is during the documentation of the Focused History and Examination that clear and descriptive anatomical terms must be used.

## REFERENCES:

1. Doherty M, Dacre J, Dieppe P, Snaith M. *The 'GALS' Locomotor Screen*. Ann Rheum Dis; 1992 Oct;51(10):1165-9.
2. Beattie KA, Bobba R, Bayoumi I, Chan D et al. *Validation of the GALS musculoskeletal screening exam for use in primary care: a pilot study*. BMC Musculoskelet Disord. 2008; 9: 115.