

The motor system

Examination of the motor system should include assessment of the following:

- **muscle bulk** (amount of muscle tissue). Look for signs of **wasting** (muscle atrophy)
- **muscle tone** (amount of tension in a muscle when it is relaxed). Tone can be increased (**spasticity**), or decreased (**flaccidity**)
- **muscle power** (strength)
- **coordination** (the ability to use several muscles at the same time to perform complex actions)
- **gait** (the manner of walking)
- **reflexes** (as discussed below)
- **involuntary** movements, for example a **tic** or a **tremor**

Here is an extract from a case report about a patient with a tremor.

Case 80
On examination, her face showed a little or no expression . There was a tremor affecting mainly her right hand. She had generally increased muscle tone. Power, reflexes, coordination and sensation were within normal limits . Examination of her gait showed that she was slow to start walking and had difficulty stopping and turning.

Tendon Reflexes

Examination of the nervous system normally includes testing the **tendon reflexes**, for example the **knee jerks**, with a **tendon hammer** (also known as a **reflex hammer**). The reflexes may be **absent** (0), **diminished** (-), **normal** (+) or **brisk** (+++). The **plantar reflexes** are also checked. The normal plantar response is a **downgoing** ↓ movement (plantar flexion) of the big toe. An **upgoing** ↑ toe (extensor or **Babinski** response) is abnormal.

Coma

Coma is unconsciousness with a reduced response to external stimuli.

Doctors say: “The patient is **in a coma**.”

“The patient is **comatose**.”

The **Glasgow Coma Scale (GCS)** score is calculated as follows:

Eye Opening	Verbal Response	Motor Response
Spontaneous	4 Oriented	5 Obeys
To speech	3 Confused	4 Localizes
To pain	2 Inappropriate	3 Withdraws
None	1 Incomprehensible	2 Flexion
	None	1 Extension
		None

Complete the table with words from the above text.

Noun	Adjective
absence	
diminution	
	flaccid
	spastic
	wasted

A doctor is giving instructions to a patient during examination of the motor system. Identify what the doctor is assessing in each case.

- 1 I'd like you to relax. I'm just going to move your arm up and down.
- 2 Can I see your hands?
- 3 Now, I'm going to straighten your arm out. Try to stop me.
- 4 Can you touch my finger with yours and then touch your nose? Good. Now do it again with your eyes closed.

Complete the sentences. Look at the above text to help you.

- 1 A _____ hand droops limply to form a right angle with the wrist.
- 2 _____ reflexes are reflexes that are stronger than normal.
- 3 Muscle _____ means the muscle is reduced in bulk.
- 4 A tic is a form of _____ movement.
- 5 A key is often used to test the _____ response.
- 6 His _____ was poor: he could not perform rapid alternating movements.
- 7 A _____ is used to test reflexes.
- 8 When something is _____, it is less than normal.

A patient is brought to A & E in coma. When her name is spoken, she opens her eyes but she does not answer questions, or obey instructions. What is her GCS score?

Express your idea.

Can you name six tendon reflexes?

What is your diagnosis for the patient in Case 80, above?