Babinski reflex (Extensor plantar reflex)

Definition
- Dorsiflexion of the big toe and hyperextension of other toes in response to a noxious stimulus applied to the lower extremity

Indications
- Neurological assessment

Technique
1. Grasp the patients ankle with one hand
2. Stroke the sole of the foot, beginning at the heel and proceeding up the lateral aspect and then across the metatarsal heads toward the big toe (do not touch the toes)

Results
- Positive: dorsiflexion of the big toe and hyperextension of other toes
- Negative (normal in adults): brisk plantar flexion; often associated with dorsiflexion of the foot at the ankle
- False-positive: rapid withdrawl flexion at the hip and knee, dorsiflexion of the foot, and sometimes dorsiflexion of all the toes (no toe fanning)
    - Can be produced by "tickling" the patients foot – avoid this by stroking the lateral/outer aspect of the foot and not the ticklish part of the sole
    - To help get an accurate assessment, advise the patient that the test is unpleasant and is likely to tickle and that they should try very hard not to withdrawl their foot

Pearls
- This reflex is normal in children up to 2 years of age (can disappear as early as 12 months)
- As the nervous system matures, the toes often curl down instead of up in response to stimuli
- A Babinski sign that persists past 2 years of age denotes dysfunction of the brain or nervous system including:
    - Amyotrophic lateral sclerosis (Lou Gehrig disease)
    - Brain tumor or injury
    - Meningitis
    - Multiple sclerosis
    - Spinal cord injury, defect, or tumor
    - Stroke

References
1. Griggs RC, Jozefowicz RF, Aminoff MJ. Approach to the patient with neurologic disease. In: Goldman L, Schafer AI, eds. Goldman's Cecil Medicine. 24th ed. Philadelphia, PA: Elsevier Saunders; 2011:chap 403.