

Rehabilitation Medicine Tone Management

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tone management

SPASTICITY

- Motor disorder that is defined as velocity dependent increase in tonic stretch reflexes (Cuccurullo, 2015)
- Graded typically using the Modified Ashworth Scale

COMPLICATIONS OF SPASTICITY

- Interfere with function and hygiene
- Lead to contractures, fractures, heterotrophic ossification, joint subluxation, pain, skin breakdown



<https://m.facebook.com/orthobullets/photos/a-lateral-radiograph-of-an-elbow-showing-extensive-heterotopic-ossification-with/10161516409720468/>

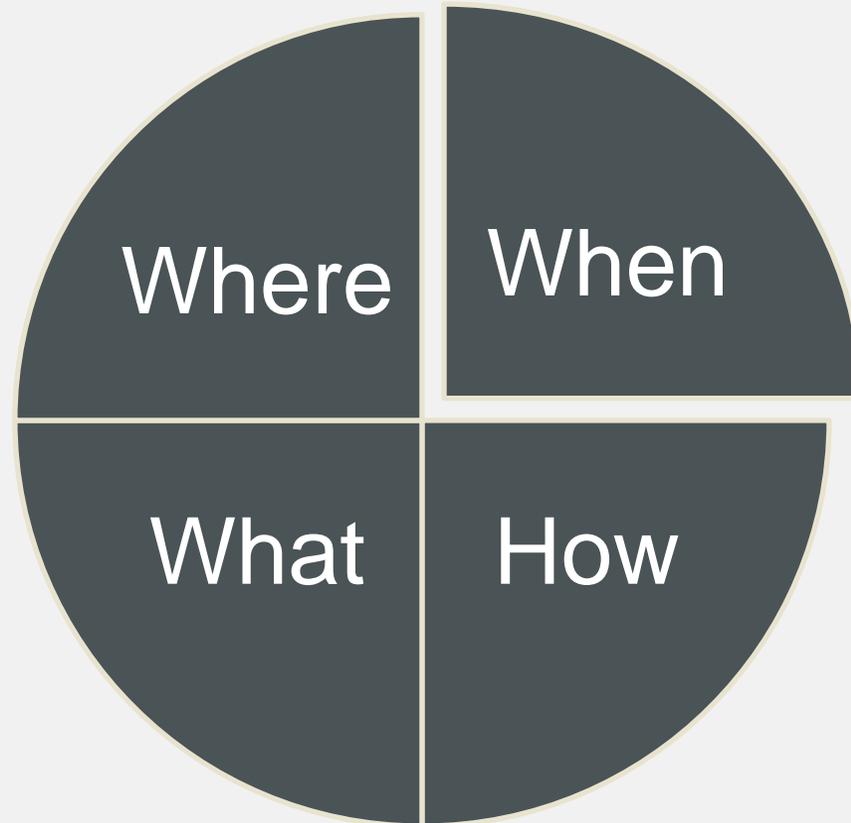
BENEFITS OF SPASTICITY

- Help with transfers, standing, gait
- Maintenance of muscle bulk
- Prevention of deep vein thrombosis and osteoporosis



<https://dailycaring.com/how-to-use-a-walker-safely-and-comfortably/>

EVALUATION OF SPASTICITY



EVALUATION OF SPASTICITY

- Physical
 - Passive and active range of motion
 - Modified Ashworth Scale
 - Manual muscle testing
 - Fine motor movements

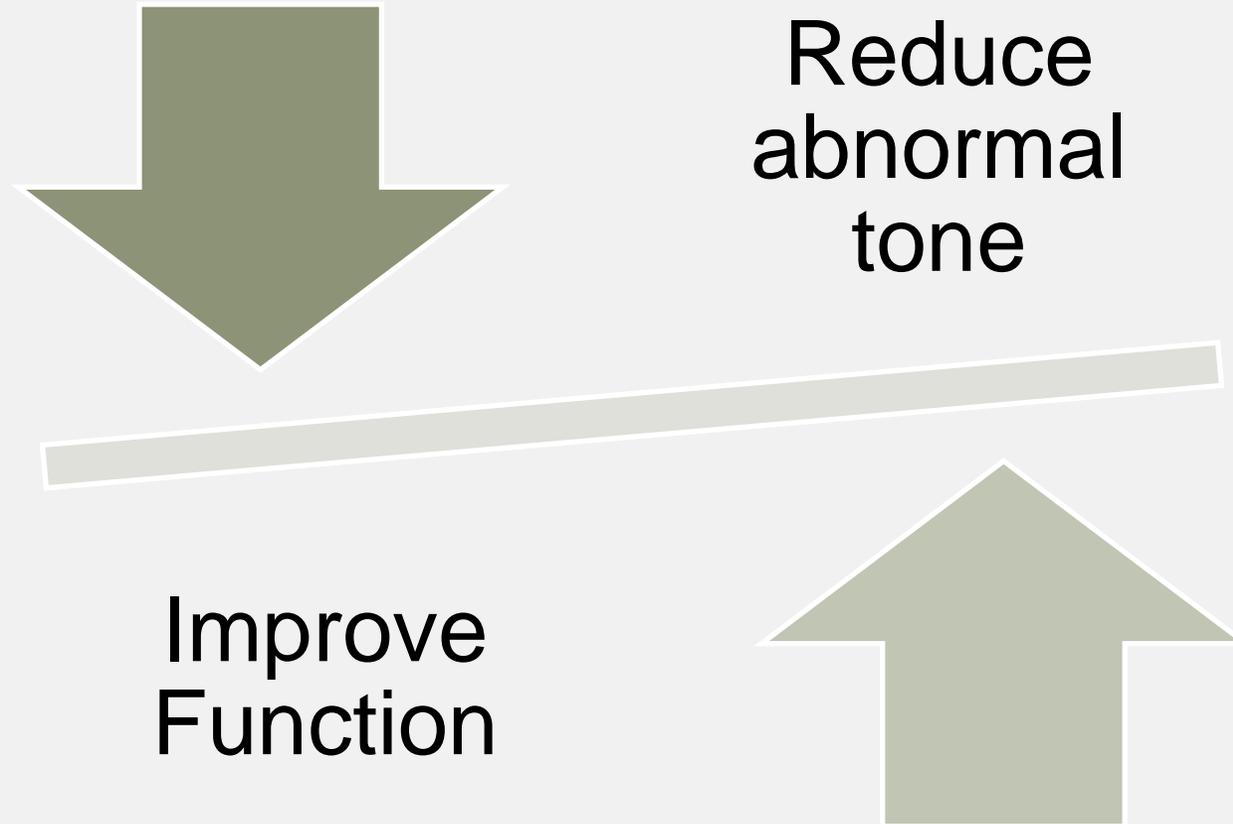


EVALUATION OF SPASTICITY

- Physical
 - Reflexes
 - Gait
 - Activities of daily living



MANAGEMENT OF SPASTICITY



NON PHARMACOLOGIC TREATMENT

- Avoid noxious stimuli
- Stretch
- Serial casting
- Splint



<https://www.orthoproactive.com/serial-casting>

NON PHARMACOLOGIC TREATMENT

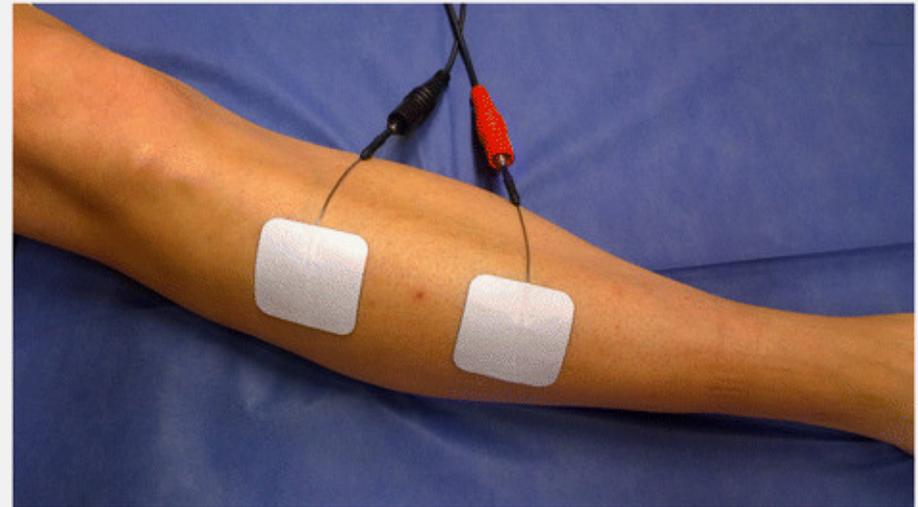
- Derotational straps



<https://surestep.net/products/de-rotation-straps/>

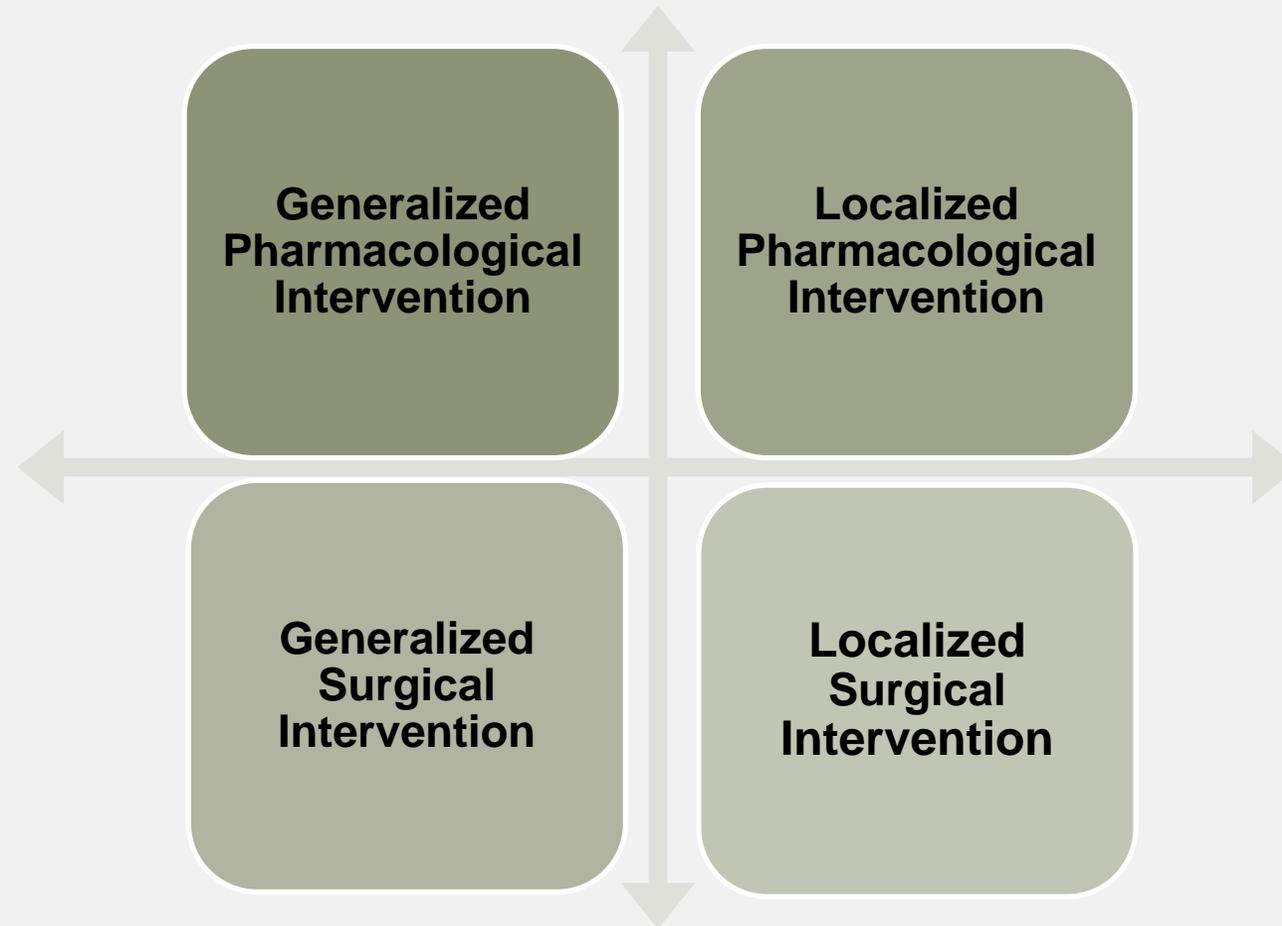
NON PHARMACOLOGIC TREATMENT

- Modalities
 - Cold and heat
 - Electrical stimulation
 - Vibration



https://www.researchgate.net/figure/Stimulation-of-the-tibialis-anterior-muscle-TA-Positioning-of-electrodes-in-bipolar_fig1_277840702

MANAGEMENT OF SPASTICITY



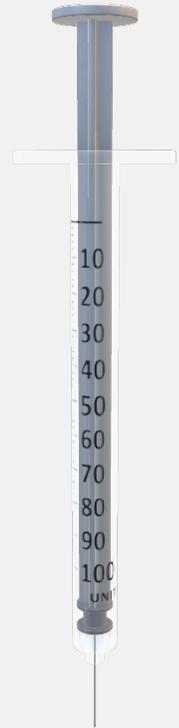
GENERALIZED PHARMACOLOGICAL INTERVENTION

- Baclofen
- Dantrolene
- Tizanidine
- Benzodiazepines
- Gabapentin



LOCALIZED PHARMACOLOGICAL INTERVENTION

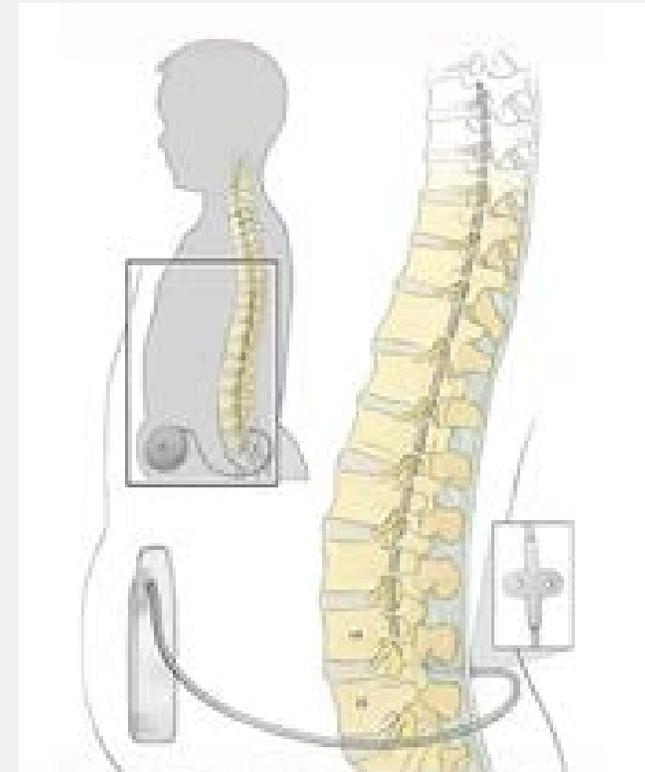
- Chemodeneration with botulinum toxin
- Chemoneurolysis with phenol or ethyl alcohol



GENERALIZED SURGICAL INTERVENTION

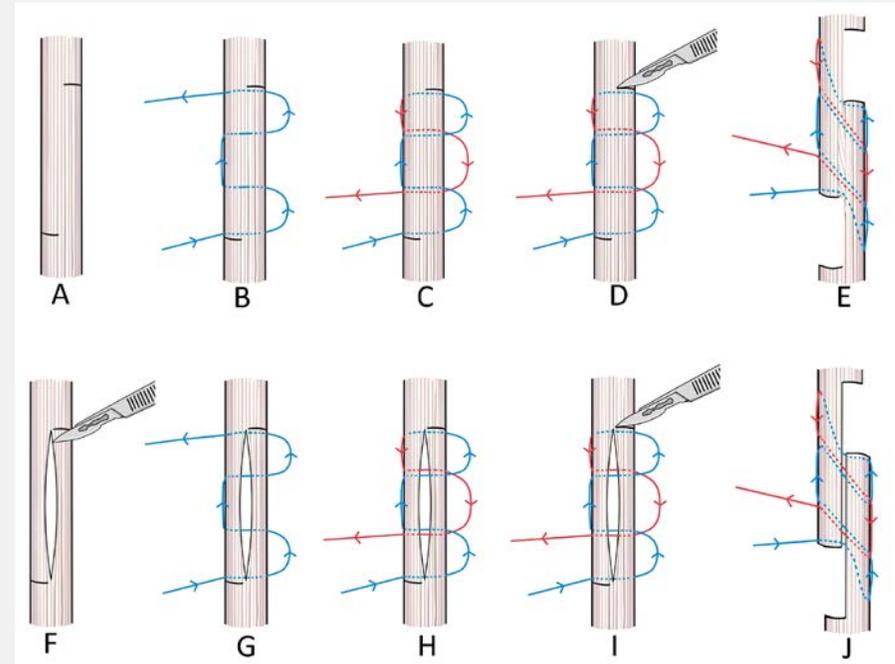
Intrathecal baclofen pump

- Trial through lumbar puncture catheter with pre and post evaluation
- Routine follow up for pump refill required



LOCALIZED SURGICAL INTERVENTION

- Tendon lengthening and transfers
 - Multiple techniques with differing precautions post operatively
 - Followed by therapies and splinting



<https://www.cureus.com/articles/47016-in-vivo-evaluation-of-the-mechanical-strength-of-a-slide-lengthening-technique-with-a-locking-mechanism-using-a-rabbit-model>

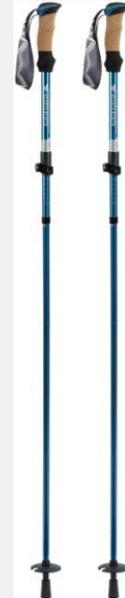
SYMPTOMS AND MANAGEMENT

FUNCTION

- Mobility – Home, stairs, community
- Endurance
- Falls
- ADLs – Toileting, showers, dressing, cooking

FUNCTION

- Shoes, shoe insert
- Daytime vs night time bracing through orthotist
- Assistive device
 - Cane
 - Walking sticks
 - Walker



https://www.rei.com/product/167696/mountainsmith-halite-7075-trekking-poles-pair?sku=1676960001&store=62&cm_mmc=PLA_Bing%7C2170000001700551_1676960001%7C92700061984795680%7CBA%7C71700000081208627&gclid=9a2780cc5f451c89208de21b46238087&gclsrc=3p.ds&msclkid=9a2780cc5f451c89208de21b46238087

FUNCTION

- Chair through Seating Clinic
 - Transport chair
 - Wheelchair
 - Manual
 - Manual with power assist
 - Power chair



<https://www.numotion.com/products-services/adults/manual/power-assist-add-on>

FUNCTION

- Commode
- Bath/shower
- Grab bar



https://www.supportplus.com/cgi-bin/hazel.cgi?ACTION=DETAIL&ITEM=FJ9202&webservice=SPBING74&source_code=SPBING74&msclkid=4b4a3608e6951999c1ed54dfc2900c0&utm_source=bing&utm_medium=cpc&utm_campaign=Shopping%20-%20Catch-All&utm_term=4580840326769077&utm_content=All%20Products

FUNCTION

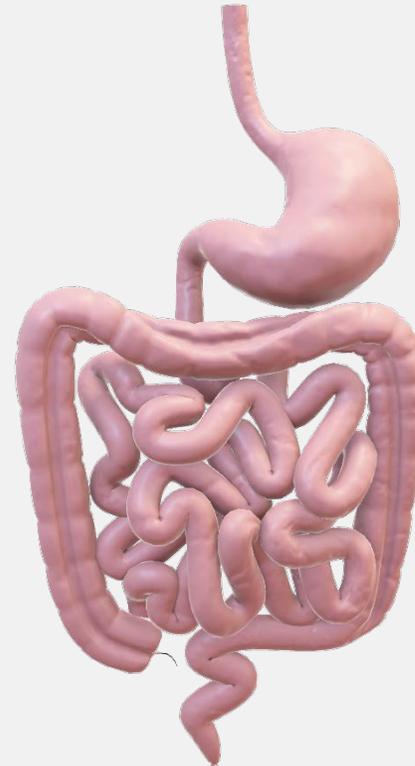
- Driving – Getting foot on and off of pedals, recent near/accidents
- Driving evaluation with a specialized occupational therapist



<https://www.vehicleadaptions.co.nz/car-modifications.html>

PAIN

- Visceral (Organs)
 - Bowel
 - Bladder



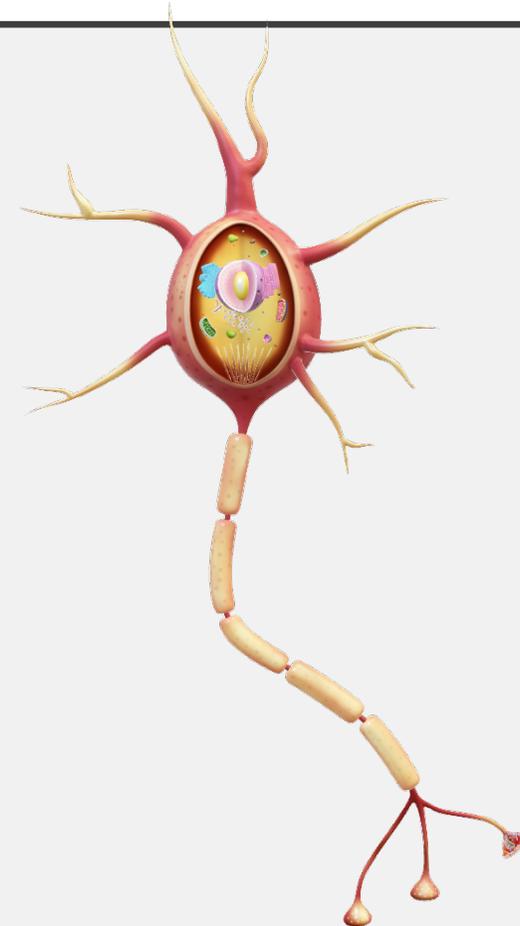
PAIN

- Somatic (Skin, joints, muscle, bone)
 - Wounds
 - Musculoskeletal



PAIN

- Neuropathic
 - Spinal cord
 - Peripheral nerves



PAIN

- Multimodal treatment
 - Modalities
 - Therapies
 - Medication
 - Referral to Interventional pain or Orthopedics

SLEEP

- Sleep initiation
- Overnight awakening
 - Nocturia
 - Spasms/Pain
- Poor sleep quality
 - Restless leg
 - Apnea
- Daytime naps



SLEEP

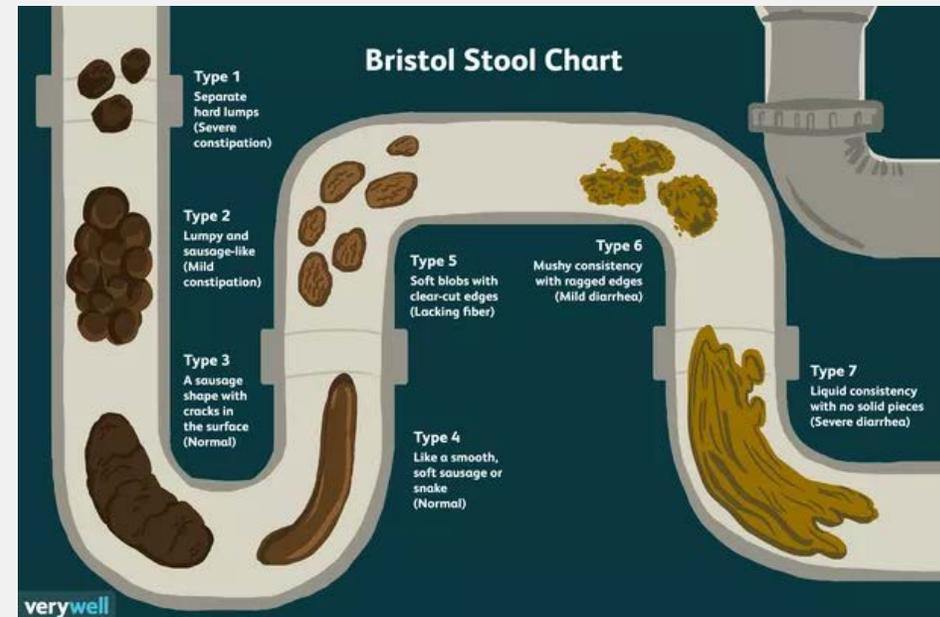
- Sleep hygiene
- Labs
- Medications
- Sleep study

BOWEL

- Constipation
- Loose stools due to hard stool ball
- Due to
 - Impaired innervation
 - Decreased mobility
 - Decreased water intake

BOWEL

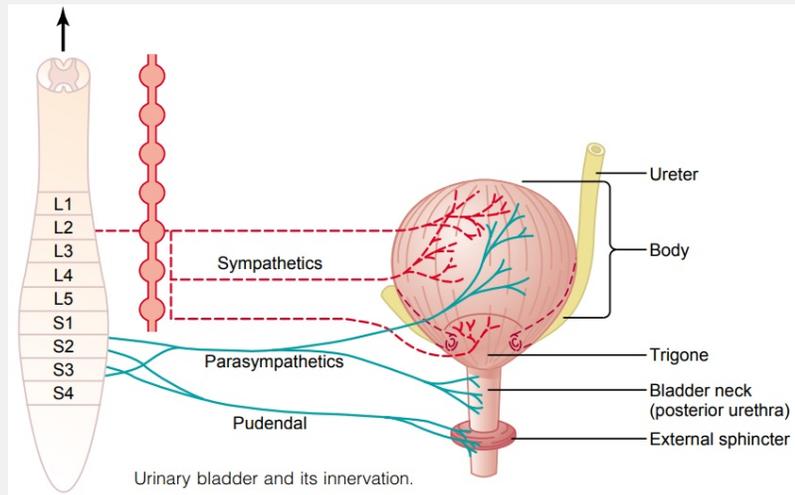
- Stool softeners
- Stimulant
- Osmotic
- Suppository
- Enema
- Clean out



<https://www.verywellhealth.com/bristol-stool-chart-4174964>

BLADDER

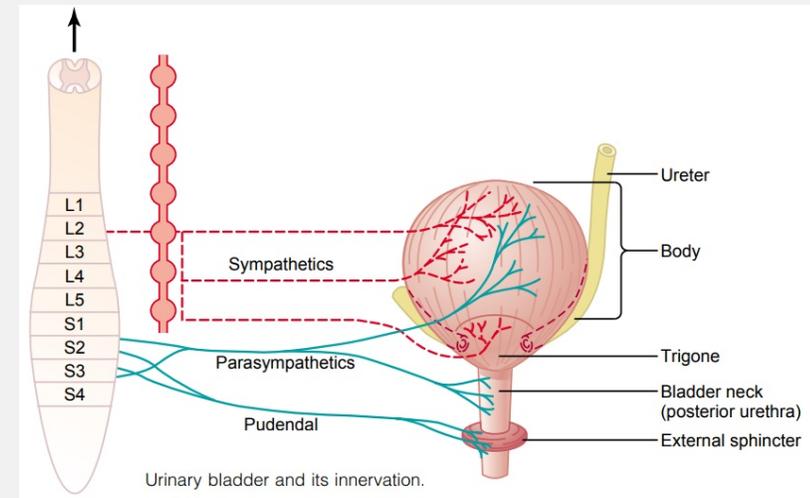
- Frequency, urgency, incontinence, retention



- Due to
 - Impaired innervation
- Worsened by
 - Constipation
 - Urinary tract infection

BLADDER

- Urodynamic study
- Urology
 - Medication
 - Intermittent cathing

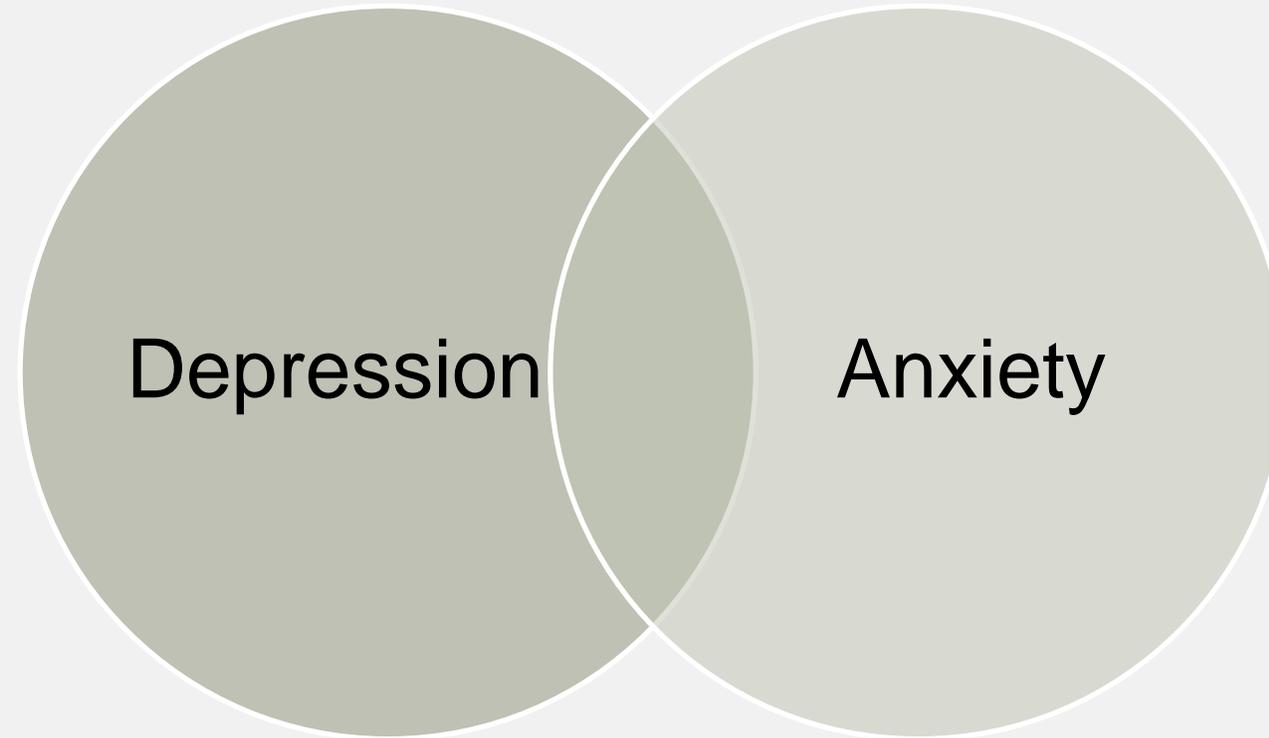


https://www.brainkart.com/article/Physiologic-Anatomy-and-Nervous-Connections-of-the-Bladder_19393/

BLADDER

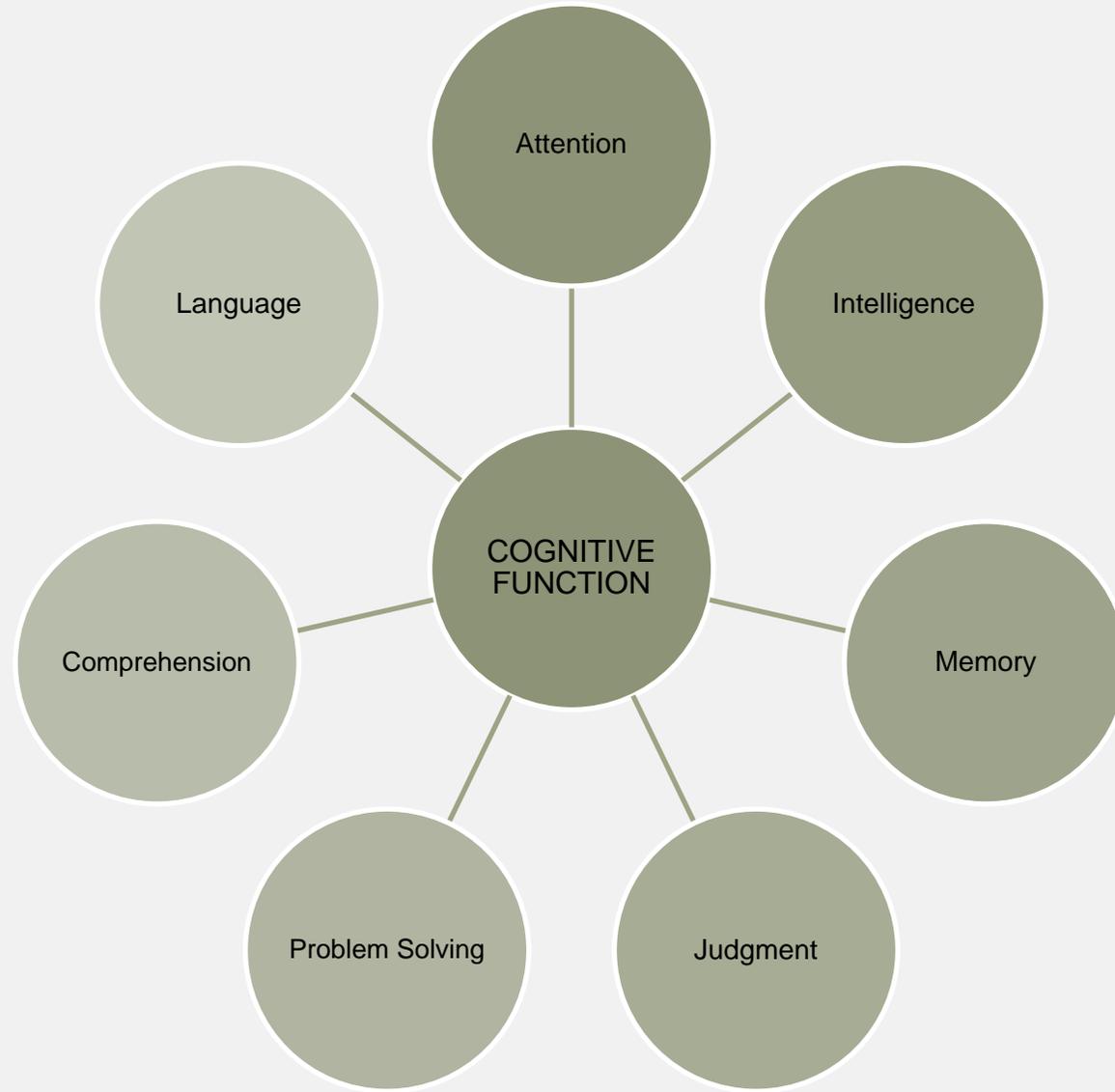
- Nocturia
- Due to
 - Impaired innervation
 - Return of fluids from lower extremities
 - Increased fluid intake in the evenings
 - Urinary tract infection

MOOD



MOOD

- Social work
- Psychology
- Psychiatry
- Other supports



COGNITIVE FUNCTION

- Neuropsychology for testing
- Education



QUESTIONS OR COMMENTS

THANK YOU!