

# Ideas for challenging PTA student critical thinking

*This lists a series of prompts that may be useful in quizzing students about strength so that they might better apply "textbook" knowledge to clinical experiences.*

**Physical Strength.** By definition it is the ability of muscles to move objects. It is influenced by genetics, anatomy, conditioning, pathology, psychology and environment. In physical therapy we commonly default to considering MMT as the assessment of strength and resistance training as the intervention for strengthening. Beyond that, though, prompt your student to think about and discuss the following items as they relate to the **ASSESSMENT** of strength and the **INTERVENTIONS** used for increasing strength for given patients in your caseload.



**Assessments of Strength** ... are there applications we could use for this patient based on:

- manual muscle test
- use of a strength testing device (dynamometer, isokinetic testing, etc)
- quantitative or qualitative observation of motion (amt of assist required, amt of time pt can hold position, % of time pt successful/ unsuccessful with motion)
- muscle girth measurement
- wellness measure of strength (reps/lbs)
- special test (drop arm, trendelenburg, etc)
- improvement in safety, speed or independence with gait, transfer, ADL, etc.. (TUG, Tinetti, etc..)
- patient subjective report of improved function (SIP, etc.)
- sport or activity specific performance measure

**Interventions for Strengthening** ... how do the following concepts apply to patients in our caseload who need strengthening?

- targeting strength vs endurance vs power vs coordination
- isotonic vs isometric options
- simple to complex (part task to whole task)
- strengthening in shortened position, midposition, lengthened position
- open and closed chain options
- straight plane vs multiplanar (multi-angle) applications
- avoiding active insufficiency of targeted muscle or using active insufficiency to target another prime mover
- use of PNF elements, patterns or

techniques

- adding or removing segments of the extremity "chain"
- speed of contraction (based on targeted fiber type, functional need, or PT goal)
- level of motor control (stability? Skill?)
- change sensory input
- use of e-stim as adjunct to exercise
- monitoring of movement quality (substitutions, biomechanics, etc..)
- addressing posture or ADL contributing factors to muscle weakness
- "alternative" exercise options (yoga, pilates, etc.)

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