www.HandLab.com
support@HandLab.com
2609 Atlantic Ave., Suite 213
Raleigh, NC 27604
USA

Complex made Simple...clinically relevant education by Judy C. Colditz, OT/L, CHT, FAOTA

June 2017

ClinicalPearls

No. 45

THE MILLION DOLLAR "GLASS" TUBE

Trying too hard often backfires when a patient attempts movement against the resistance of stiffness. The patient's intuitive response to stiffness is to pull with maximum force. Unfortunately, this maximum effort frequently activates too many muscles, some of which are counterproductive! Due to the complex balance of intrinsic and extrinsic muscles in the fingers, this maladaptive pattern is often seen in patients working to increase finger flexion.

One vivid example of this phenomenon was a young male patient referred ten weeks following a crush injury which resulted in amputation of his little finger. His active range of finger flexion



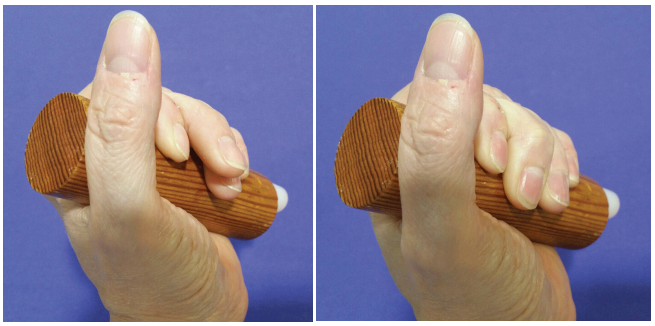
(shown) was limited, especially in the ring finger. He was very dedicated to performing active finger flexion exercises as he wanted full motion, but was not making progress. When he actively flexed his fingers, he appeared to contract every muscle distal to the elbow! His finger MP joint flexion dominated and in the ring finger there was no active flexor digitorum profundus motion at the DIP joint although active DIP flexion was present with the PIP blocked (and passive flexion was normal). He strongly flexed his wrist while flexing his fingers and he also held his thumb rigidly when flexing his fingers. Our therapy time consisted primarily of helping him focus on pulling "gently"—a maneuver which often seems counterintuitive to the patient.

Below are a few clinical suggestions that may help with these patients who are trying too hard. Find a tube/cylinder (made of anything) which is a diameter that the patient can almost, but not fully, wrap his/her fingers around. Explain that this pretend "glass" cylinder is worth a million dollars: if you drop it you lose the million dollars, or if you break the fragile glass, you also lose the million dollars!



There are a number of ways this million dollar glass tube concept can be used:

- Perhaps start with the patient simply holding



© HandLab; 2017 all rights reserved

Disclaimer: HandLab Clinical Pearls are intended to be an informal sharing of practical clinical ideas; not formal evidence-based conclusions of fact.

www.HandLab.com
support@HandLab.com
2609 Atlantic Ave., Suite 213
Raleigh, NC 27604
USA

Complex made Simple...clinically relevant education by Judy C. Colditz, OT/L, CHT, FAOTA

June 2017 ClinicalPearls No. 45

THE MILLION DOLLAR "GLASS" TUBE (continued)

the tube with the goal being that the pulps of the fingertips touch the tube—without "breaking" it! This requires gentle but focused extrinsic finger flexion. Be sure the patient integrates the thumb for a full gross grasp pattern.

I often put a dot in the middle of the fingertip pulp and ask the patient to be sure that the dot touches the cylinder to assure flexor digitorum profundus participation. When/If you observe the patient trying too hard, your comment can be "You broke the glass—try again!"



- The next step might be to attach a marker to the cylinder (or wrap padding around a marker) and have the patient draw/write on a very large piece of paper (newspaper). Putting the paper on the wall may be the best way to begin. Cue the patient to watch the control of the wrist (not flexing) and keep the fingertip dots on the cylinder. Frequent verbal reminders "don't break the glass!" helps the patient concentrate on controlling the writing but not co-contracting the muscles.
- Finally, when the patient has the idea of using the right muscles and strengthening is appropriate, resistance can be introduced. Place exercise putty on the table top and ask the patient to hold the "glass" tube enough so it does not slip while pressing the tube into the putty to make a pattern. As always, be sure the fingertips stay on the tube, but the squeezing of the tube is not excessive.

Most importantly, during all of these activities, make sure the tube size is repeatedly reduced as the patient improves in the range of flexion. Holding the "glass" tube should require effort beyond what is spontaneous. Assuring that the fingertips are always touching the tube/cylinder guarantees FDP participation.

It is important to remember that this technique will not be successful unless existing lumbrical and/or interosseous muscle shortness is addressed and reduced. See HandLab Clinical Pearls 19-22.

Thanks to Emily Altman PT, DPT, CHT for editorial assistance and photos!.

© HandLab; 2017 all rights reserved

Disclaimer: HandLab Clinical Pearls are intended to be an informal sharing of practical clinical ideas; not formal evidence-based conclusions of fact.