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Practice Forum

Incorporating different learning styles into a home exercise program

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Therapists can use VARK (Visual, Aural, Read/ write, Kinaesthetic) tools when providing home program education. When the therapist uses creative instructional techniques it may help enrich the rehabilitation process and improve patient adherence. — Kristin Valdes *OTD, OT, CHT*, Practice Forum Editor, Journal of Hand Therapy

Introduction

Exercise dosage is determined by many variables. Examples include pathology, stage of healing, hand dominance, and motor control abilities.[1] Fundamental to the successful delivery of a home exercise program is the teaching methods a therapist use to demonstrate the program. These methods should be diverse to optimize the varying learning styles people prefer to assimilate information.[2]

VARK (Visual, Aural, Read/write, Kinesthetic) is a validated tool used in education to help identify a student's learning styles.[3] VARK describes visual learners as those who benefit from graphs and illustrations. They draw images and flowcharts to help understand and retain information. Aural learners gain more from listening to the words of the teacher, whereas the read/write learners gain most from reading text. Kinesthetic learners benefit from "hands-on" experience.

Incorporating a variety of learning styles into a home exercise program not only addresses the different methods by which individuals process information but also helps teach patients complex concepts that the therapist may take for granted.

Materials and methods

- Felt-tip pens
- Sheet of paper
- Basin of water

Dynamic stability program

The dynamic stability program for osteoarthritis of the carpometacarpal joint has reported benefits in improving pain and function.[4] It is necessary for therapists to have an in-depth knowledge of thumb biomechanics to understand the principles of this treatment approach. In general, patients will not have this degree of knowledge; therefore, it is the therapist's role as teacher

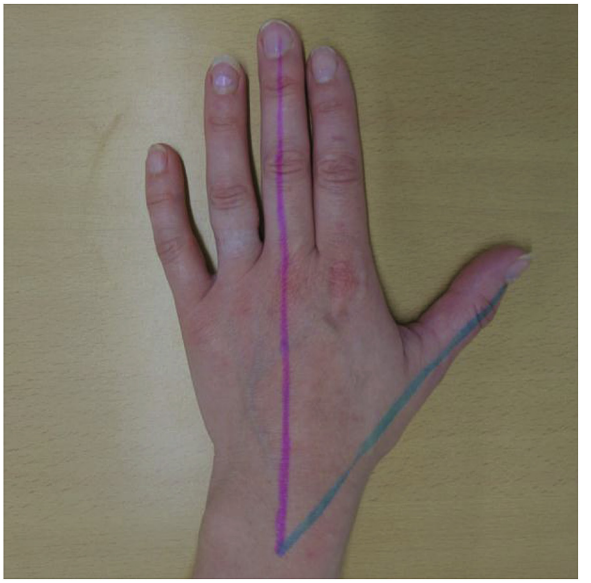

Fig. 1. Two lines are drawn from Lister's tubercle to resemble clock hands.

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to ensure patients can perform these exercises independently and avoid contraindicated postures (eg, metacarpophalangeal hyperextension of the thumb).

Radial abduction of the thumb

Providing an exercise with a nickname is an effective method (aural) of instilling it into the patient's long-term memory. An established example is the intrinsic-plus posture that is commonly known as the "table-top" or "duck bill." For radial abduction of the thumb, the nickname of "clock hands" could be applied. When performing this exercise as part of the dynamic stability program, a felt-tip pen can be used by the therapist to demonstrate how the thumb interphalangeal and metacarpophalangeal joints should remain straight but as large an angle as possible should be the goal. The short hand of the clock should be drawn from Lister's tubercle to the dorsal aspect of the interphalangeal joint of the thumb and the long hand from Lister's tubercle to the tip of the middle finger (Fig. 1). If the lines curve at all, the therapist must stop the patient and alert them to this. When written and verbal instructions are provided and the patient has been demonstrated and given the chance to perform this exercise then the 4 learning styles of VARK will have been incorporated.

Thumb loading

The ideal loading posture of the thumb requires harmonious muscle activity of the first dorsal interossei and the intrinsic and extrinsic muscles of the thumb.[5] This is initially taught as a place-and-hold exercise before progressing to a loading activity. To help the patient visualize the ideal posture, the therapist can draw into the first web space. Again applying a nickname to the exercise can help with memorizing. Either "The Shocked Emojii" or "Munch's The Scream" can be chosen (whichever is most culturally relevant to the patient) to help visualize thumb loading where the web space is open with the interphalangeal joint and the metacarpophalangeal joint both slightly flexed (Fig. 2).

The Colditz Tear Test[6] can be used as a goal-orientated task to measure how many times the patient can tear layers of paper before the thumb posture collapses. This could further be graded up to folding a page that requires the thumb to slide across paper

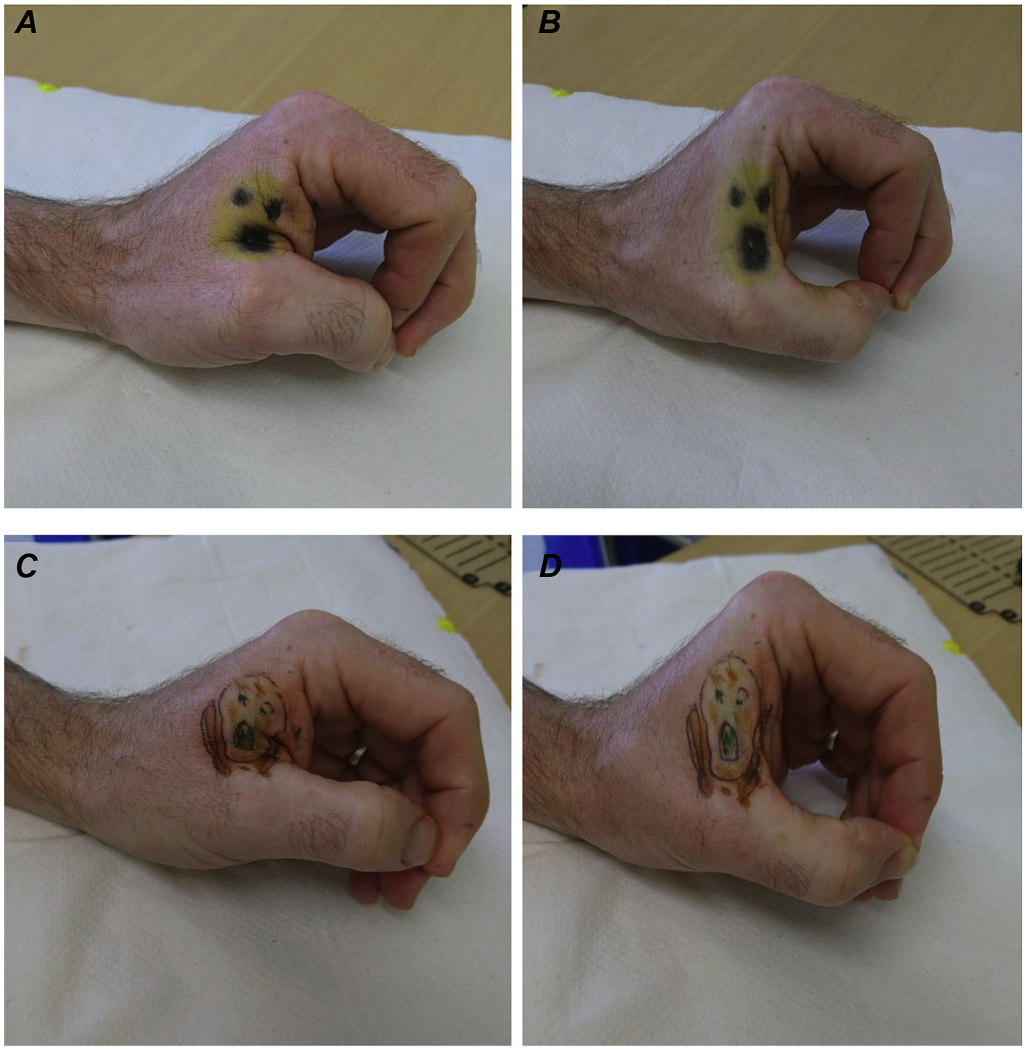

Fig. 2. (A) The thumb is positioned with the Emojii mouth relaxed. (B) The Emojii mouth is on full tension giving the appearance of being shocked. This posture encourages opening of the first web space. The patient is instructed to maintain slight flexion of the metacarpophalangeal joint and interphalangeal joint of the thumb. (C and D) An alternative illustration of Munch's "The Scream" is used.

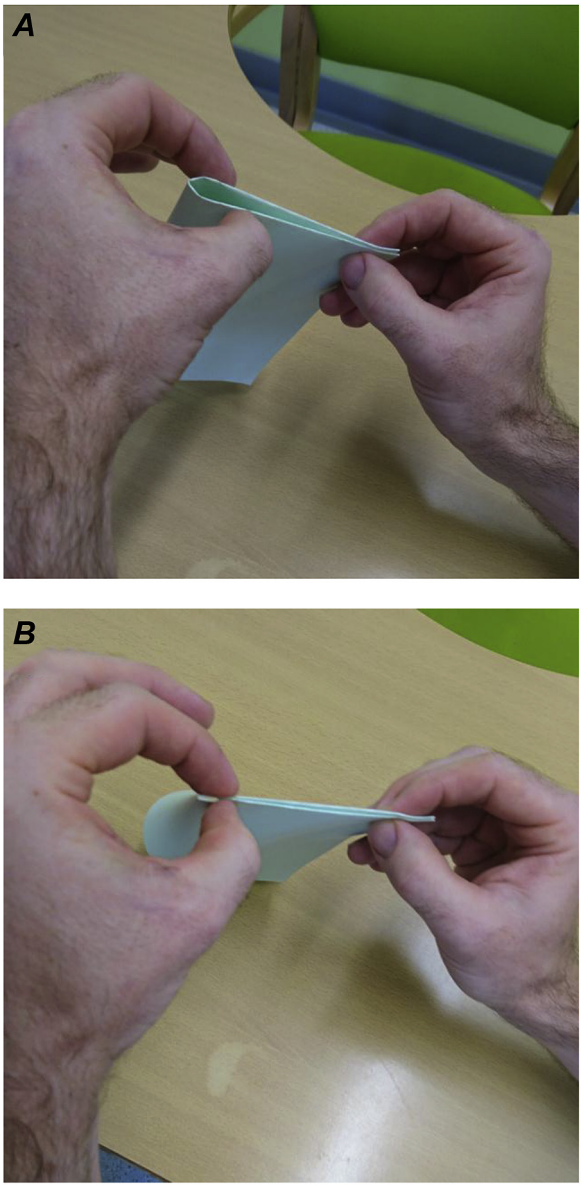

Fig. 3. (A and B) A page is repeated folded in half while maintaining the ideal thumb-loading posture.

at the fold while maintaining the ideal posture (Fig. 3). In 2002, a formula was devised on how many times a piece of paper can be folded based on its dimensions.[7] This sets an upper limit of folds by which the patient can be advised to perform, although caution should be noted when tearing or folding paper, that thumb posture should not be sacrificed to achieve a high number of folds or tears. While VARK principles can aid the teaching of exercises, the use of occupation-based hand therapy can further enrich rehabilitation.[8] As such, as the patient begins to understand the biomechanics in thumb loading, this could be applied into meaningful activities such as origami or other interests specific to the patient.

Tenodesis effect

The tenodesis effect can be used to encourage coordination between the antagonist and agonist muscles in the hand and wrist. The unaffected side (if applicable) can be used for the kinesthetic sensation of this maneuver. Asking the patient to place their fingertips into a basin of water performs "water drops." They are then instructed to flick the water of their fingertips. This should produce the tenodesis effect. Observe the maneuver produced on the unaffected side to ascertain if it is being performed correctly (Fig. 4).

Composite fists

Flexor poles are commonly used for goal-orientated composite finger flexion when the patient struggles to actively touch the palm with their affected finger or fingers. The clinician may observe at times the patient who can achieve finger pulp to palm but flexion of the distal interphalangeal joint is limited. A progression on from a flexion pole can be made using felt-tip pens. The therapist draws on the palm to set goals and mark progress. The therapist can also mark the end goal with reference to where the unaffected digits achieve full flexion (Fig. 5).

Conclusion

Therapists typically prescribe exercises with written and verbal instructions along with demonstration and practice. Having an awareness of VARK principles raises awareness of how each patient's learning styles will differ. This should direct therapists to seek creative approaches to teaching exercises, particularly complex exercises or where the therapist anticipates barriers to learning. When the therapist introduces exercises to a patient, the use of visual props, descriptive words, phrasing, intonation of voice, simple and engaging written instructions, illustrations, and hands-on practice may help enrich the

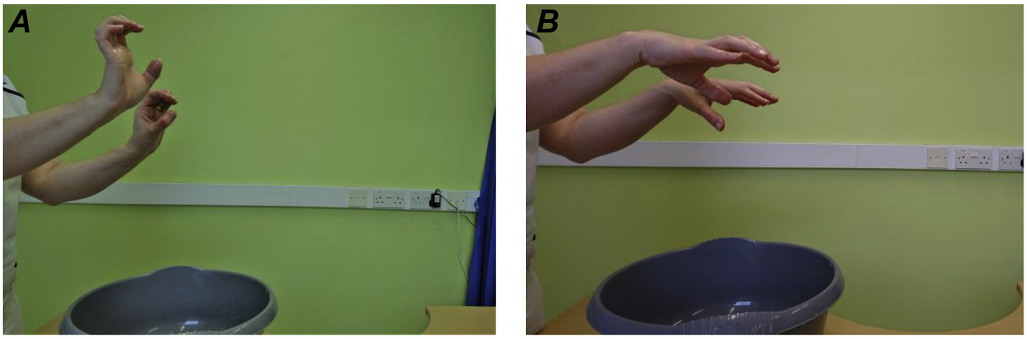

Fig. 4. (A) After dipping the fingertips in a basin of water, the patient is instructed to flick the water droplets of the fingers. This encourages the tenodesis effect with the wrist moving into extension while the fingers flex and then (B) the wrist moves into flexion and the fingers extend as the water is forced of the fingertips.

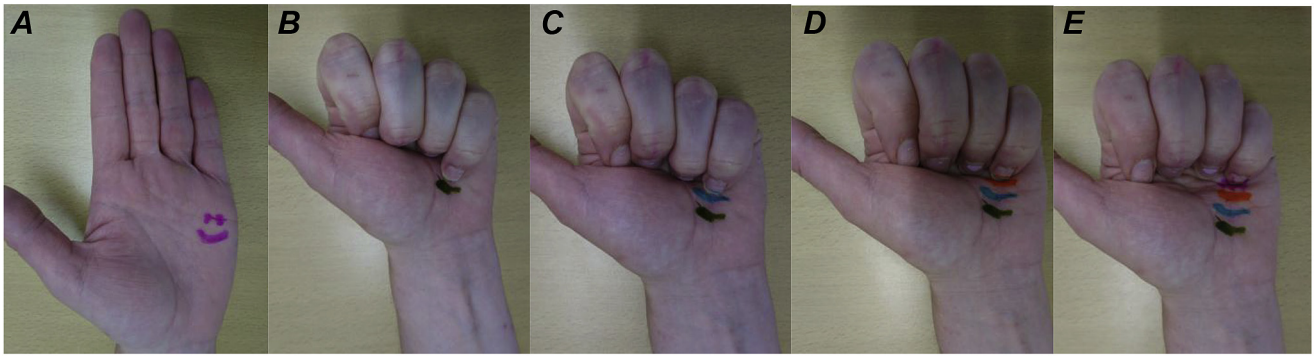

Fig. 5. (A) Full distal phalanx tuck is gauged using the other fingers as a reference. The drawn smile indicates goal range of movement. (B-E) As the patient progresses, markings are made to help the patient visualize their progress.

rehabilitation process. This may help improve adherence to home programs and independent practice.

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Quiz: # 601

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1. It accepted that
   a. everyone learns from similar cues
   b. learning styles vary greatly between individuals
   c. instructing patients is notoriously poorly performed
   d. therapists are better instructors than surgeons
2. The most effective method is
   a. Aural
   b. Visual
   c. Kinesthetic
   d. dependent on the patient
3. The acronym VARK refers to
   a. various reading levels
   b. various knowledge bases
   c. a variety of learning styles
   d. a variety of teaching styles
4. Providing a nickname appeals to the patient's _____ sense
   a. kinesthetic
   b. aural
   c. visual
   d. read/write
5. The article implies that utilizing these creative techniques when instructing patients in home exercise programs may enhance patients' compliance to the programs
   a. true
   b. false

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