



KINESIOPHOBIA

CLINICAL IMPLICATIONS FROM A THERAPIST AND SURGEON PERSPECTIVE

RICHARD BARTH MD

SARAH DOERRER PhD, OTR/L, CHT, CLT

DISCLOSURE

Richard Barth MD

Sarah Doerrer PhD, OTR/L, CHT, CLT

Washington Orthopedics and Sports Medicine

Washington DC

- We have no financial relationships to disclose within the past 12 months relevant to my presentation.

LEARNING OBJECTIVES



Attendee will understand what kinesiophobia is and how it can impact functional outcomes in individuals with upper extremity injuries.



Attendee will be able to interpret the Tampa Scale of Kinesiophobia and understand its use in clinical practice.



Attendee will be able to describe interventions for individuals with kinesiophobia

PSYCHOLOGICAL CONSTRUCTS



KINESIOPHOBIA



CATASTROPHIC
THINKING



Fear Avoidance

KINESIOPHOBIA

- Defined as a irrational, weakening and devastating fear of movement and activity stemming from the belief of fragility and susceptibility to injury (Kori, Miller, & Todd, 1990). Your patient may say " I don't want to move my fingers because it is going to hurt" or "If I move my wrist I am going to re-injure it"



CATASTROPHIC THINKING

Is defined as an excessive and negative orientation toward pain. (Osman et al., 2000). A patient with catastrophic thinking may exhibit

magnification ("I become afraid that pain may get worse"), helplessness ("It is awful and I feel that it overwhelms me"), and rumination ("I can't seem to keep it out of my mind")



This Photo by Unknown Author is licensed under [CC BY-SA](#)

FEAR AVOIDANCE

Is defined as avoidance of movements and activities based on fear of pain (Vlaeyen, Kole-Snijders, Boeren, & Van Eek, 1995;

Vlaeyen, Kole-Snijders, Rotteveel, Ruesink, & Heuts, 1995; Vlaeyen & Linton, 2000).

These patients may be avoiding participating in ADLs or social events in fear that those activities may cause them pain. This construct has been studied most often in the low back pain population.



illustration: [This Photo](#) by Unknown Author is licensed under [CC BY-NC-ND](#)

TAMPA SCALE OF KINESIOPHOBIA

The TSK is a 17 item questionnaire used to quantify fear of movement/(re)injury. The individual answers each question and the sum of all answers is calculated. The higher the total score the more severe the kinesiophobia.

Tampa Scale for Kinesiophobia
(Miller , Kori and Todd 1991)

1 = strongly disagree
2 = disagree
3 = agree
4 = strongly agree

1. I'm afraid that I might injury myself if I exercise	1	2	3	4
2. If I were to try to overcome it, my pain would increase	1	2	3	4
3. My body is telling me I have something dangerously wrong	1	2	3	4
4. My pain would probably be relieved if I were to exercise	1	2	3	4
5. People aren't taking my medical condition seriously enough	1	2	3	4
6. My accident has put my body at risk for the rest of my life	1	2	3	4
7. Pain always means I have injured my body	1	2	3	4
8. Just because something aggravates my pain does not mean it is dangerous	1	2	3	4
9. I am afraid that I might injure myself accidentally	1	2	3	4
10. Simply being careful that I do not make any unnecessary movements is the safest thing I can do to prevent my pain from worsening	1	2	3	4
11. I wouldn't have this much pain if there weren't something potentially dangerous going on in my body	1	2	3	4
12. Although my condition is painful, I would be better off if I were physically active	1	2	3	4
13. Pain lets me know when to stop exercising so that I don't injure myself	1	2	3	4
14. It's really not safe for a person with a condition like mine to be physically active	1	2	3	4
15. I can't do all the things normal people do because it's too easy for me to get injured	1	2	3	4
16. Even though something is causing me a lot of pain, I don't think it's actually dangerous	1	2	3	4
17. No one should have to exercise when he/she is in pain	1	2	3	4

Reprinted from:
Pain, Fear of movement/(re) injury in chronic low back pain and its relation to behavioral performance, 62, Vlaeyen, J., Kole-Snijders A., Boeren R., van Eek H., 371.
Copyright (1995) with permission from International Association for the Study of Pain.

TAMPA SCALE OF KINESIOPHOBIA

- Studies have shown that the TSK is a valid and reliable tool to use with patients post DRF (Lövgren, & Hellström, 2012) and with shoulder pain (Mintken, Cleland, Whitman, & George, 2010).
- A shortened version of the TSK, called the TSK-11, is both reliable and valid (Hapidou et al., 2012; Tkachuk, & Harris, 2012; Woby, Roach, Urmston, & Watson, 2005).
- Most commonly used to measure the construct of catastrophic thinking is the Pain Catastrophizing Scale (Hapidou et al., 2012).
- Fear avoidance beliefs questionnaire can be used to measure the construct of fear avoidance (Waddell et al., 1993).

WHAT DOES THE EVIDENCE SAY? KINESIOPHOBIA.....

Many studies have shown that kinesiophobia is a predictor of disability in patients with low back pain (Crombez Vlaeyen, Heuts, & Lysens, 1999; Thomas et al., 2010; Verbunt et al., 2005), musculoskeletal injury (Lundberg, Larsson, Ostlund, & Styf, 2006; Parr et al., 2012; Söderlund & Åsenlöf, 2010), acute upper extremity injury (Das De, Vranceanu, & Ring 2013; Lövgren, & Hellström, 2012; Parr et al., 2012; Söderlund & Åsenlöf, 2010), and DRF (Das De, Vranceanu, & Ring 2013; Lövgren, & Hellström, 2012; Söderlund & Åsenlöf, 2010) •

In 74 subjects with musculoskeletal injuries including 11 wrist fractures and 13 wrist sprains. Fear of movement was a strong predictor of higher pain intensity (Söderlund & Åsenlöf, 2010).

WHAT DOES THE EVIDENCE SAY? CATASTROPHIC THINKING.....

- Kinesiophobia and catastrophic thinking have been found to be predictors of upper extremity disability, (Das De, Vranceanu, & Ring, 2013; Parr et al., 2012) and pain intensity (Parr et al., 2012) in patients with acute upper extremity injury.
- Catastrophic thinking has been specifically examined in the population that has experienced a DRF (Golkari, Teunis, Ring, & Vranceanu, 2015; Roh et al., 2014b; Teunis, Bot, Thornton, & Ring, 2015) ; and has been shown to be a predictor of finger stiffness (Teunis, Bot, Thornton, & Ring, 2015), and poorer functional outcomes (Roh et al., 2014b) .
- Further, two studies found that symptoms of catastrophic thinking improve over the course of recovery after a DRF (Golkari, Teunis, Ring, & Vranceanu, 2015; Roh et al., 2014b) .

WHAT DOES THE EVIDENCE SAY? FEAR AVOIDANCE.....

- evidence supports that pain-related fear is associated with avoidance of activity which leads to poor ADL performance and decreased overall function (Vlaeyen & Linton, 2000) .
- Fear avoidance behaviors may also develop in the acute pain stage of an injury (Turk & Monarch; 2002) .
- Pain-related fear could be responsible for worsened physical condition and the occurrence of guarded movement patterns (Vlaeyen & Linton, 2000) .

OUR RESEARCH: DISTAL RADIUS FRACTURE CONCURRENT WITH SHOULDER PATHOLOGY

- Patients with shoulder pathology concurrent with a DRF who have high pain intensity may also present with more kinesiophobia, worse function, more use of compensatory mechanisms.
- Based on qualitative interviews, patients with shoulder pathology concurrent with a DRF describe psychosocial elements such as kinesiophobia and feelings of loss.
- It is important to educate our patients so they know what they can and can not do after a DRF. (under theme 3 fear and uncertainty) Another reason to use occupation in hand therapy interventions.

RELATIONSHIP BETWEEN PSYCHOLOGICAL DISORDERS AND OUTCOMES AFTER HAND SURGERY

- The importance of evaluating emotional health before orthopedic surgery is underscored in the literature (Ayers, Franklin, and Ring, 2013).
- Better emotional health is related to better functional improvement after surgery (Ayers, Franklin, and Ring, 2013).
- Surgeons may want to identify patients with poor emotional health prior to performing surgery so they may place them in a different postoperative pathway (Ayers, Franklin, and Ring, 2013).
- Validated measures to screen for depression, pain catastrophizing, and anxiety disorders can be used at initial examination with a hand surgeon (Vranceanu & Ring, 2008)

RELATIONSHIP BETWEEN PSYCHOLOGICAL DISORDERS AND OUTCOMES AFTER HAND SURGERY

- There is substantial variability in pain and disability among patients with the same extent of demonstrable pathophysiology and impairment. Much interindividual variability can be explained by psychological distress, psychopathology, and ineffective coping strategies. (Ring, Barth, Barsky, 2010)
- Assessment of the psychosocial aspects of illness is particularly important for patients with nonspecific, medically unexplained, or idiopathic pain, for whom surgery is likely to offer only potential harm and placebo effect (Vranceanu & Ring, 2008).
- More collaboration between surgeon and psychologist is advocated by some surgeons (Ring, Barth, Barsky, 2010).

INTERVENTIONS FOR KINESIOPHOBIA

Collaboration between therapist and surgeon

For individuals with high levels of kinesiophobia and activity limitation, treatment should be focused on decreasing the kinesiophobia (Lüning Bergsten, Lundberg, Lindberg, & Elfving, 2012)

Pain Management (Perrot et al., 2018)

Patient Education on Pain Neuroscience (Fletcher, Braithwaite, Woodhouse, MacInnes, & Stanton, 2019)

Rehabilitation (Lüning Bergsten, Lundberg, Lindberg, & Elfving, 2012)

Discourage use of slings and orthosis when cleared by the treating physician

Use of Occupation based activities in the hand clinic

An abstract graphic on the left side of the slide, featuring a vibrant red background with flowing, translucent green and yellow shapes that create a sense of movement and depth.

CASE STUDY

"Sharron" is a left-handed 45 year old mother of five who was injured by a client in a adult group home. She suffered a left mid shaft ulna fracture that was mistreated for 5 months with multiple casts. She is now one month post op for an left ORIF of her ulna shaft. She is referred by her surgeon for ROM, pain management, and ADL training.

An abstract graphic on the left side of the slide, featuring a vibrant red background with flowing, organic shapes in shades of red and a hint of green at the top.

CASE STUDY

On "Sharron's" first visit she reports pain intensity at 9/10. She has her left side positioned in a protective position with her shoulder in scapular protraction, internal rotation, elbow in flexion near her chest. She reports that her pain is constant and due to her pain she is unable to sleep. She also reports that she does not use her upper extremity for any activities of daily living. She has recently given up driving and sold the family's car. Sharron explains that her family has recently immigrated from Cameroon and it has been difficult for her to fulfill her role in the home. She has not been able to work since her accident over six months ago. Her husband is working but is unable to drive therefore transportation has been difficult for the entire family.

An abstract graphic on the left side of the slide, featuring a vibrant red background with flowing, translucent green and yellow shapes that create a sense of movement and depth.

INITIAL OUTCOME MEASURES- CASE STUDY

- Pain Intensity (VAS) 9/10
- FOTO elbow, wrist, and hand -30
- Tampa Scale of Kinesiophobia-53

CASE STUDY



CASE STUDY



CASE STUDY





QUESTION

- In the case of “Sharron” what interventions would be appropriate?

CASE STUDY 5 MONTHS LATER



CASE STUDY 5 MONTHS LATER



An abstract graphic on the left side of the slide, featuring a vibrant red background with flowing, translucent green and yellow shapes that create a sense of movement and depth.

OUTCOME MEASURES- CASE STUDY- 5 MONTHS LATER

- Pain Intensity (VAS) 7/10
- FOTO elbow, wrist, and hand -38 (change score 8)
- Tampa Scale of Kinesiophobia-49 (change score 5)

What happened to "Sharron"? After 5 months of rehabilitation for the left upper extremity she was referred to work hardening.

REFERENCES

- Ayers, D. C., Franklin, P. D., & Ring, D. C. (2013). The role of emotional health in functional outcomes after orthopaedic surgery: extending the biopsychosocial model to orthopaedics: AOA critical issues. *The Journal of bone and joint surgery. American volume*, 95(21).
- Crombez, G., Vlaeyen, J. W., Heuts, P. H., & Lysens, R. (1999). Pain-related fear is more disabling than pain itself: Evidence on the role of pain-related fear in chronic back pain disability. *Pain*, 80(1), 329-339. Retrieved from: <http://meta.wkhealth.com/pt/pt-core/template-journal/lwwgateway/media/landingpage.htm?issn=0304-3959&volume=80&issue=1&spage=329>
- Das De, S. D., Vranceanu, A. M., & Ring, D. C. (2013). Contribution of kinesiophobia and catastrophic thinking to upper-extremity-specific disability. *Journal of Bone and Joint Surgery (American Volume)*, 95(1), 76-81. Retrieved from: <http://dx.doi.org/10.2106/JBJS.L.00064>
- Fletcher, R., Braithwaite, F. A., Woodhouse, M., MacInnes, A., & Stanton, T. R. (2019). Does readiness to change influence pain-related outcomes after an educational intervention for people with chronic pain? A pragmatic, preliminary study. *Physiotherapy theory and practice*, 1-12.
- George, S. Z., Dover, G. C., & Fillingim, R. B. (2007). Fear of pain influences outcomes after exercise-induced delayed onset muscle soreness at the shoulder. *The Clinical Journal of Pain*, 23(1), 76-84. doi: 10.1097/01.cjp.0000210949.19429.34
- Golkari, S., Teunis, T., Ring, D., & Vranceanu, A. M. (2015). Changes in depression, health anxiety, and pain catastrophizing between enrollment and 1 month after a radius fracture. *Psychosomatics*, 56(6), 652-657. doi: 10.1016/j.psych.2015.03.008.
- Hapidou, E. G., O'Brien, M. A., Pierrynowski, M. R., de las Heras, E., Patel, M., & Patla, T. (2012). Fear and avoidance of movement in people with chronic pain: Psychometric properties of the 11-item Tampa Scale for Kinesiophobia (TSK-11). *Physiotherapy Canada*, 64(3), 235-241. doi: 10.3138/ptc.2011-10.

REFERENCES

- Kori, S. H., Miller, R. P., & Todd, D. D. (1990). Kinesiophobia: a new view of chronic pain behavior. *Pain management*, 3(1), 35-43. doi: 10.2478/v10078-011-0019-8
- Lövgren, A., & Hellström, K. (2012). Reliability and validity of measurement and associations between disability and behavioural factors in patients with Colles' fracture. *Physiotherapy Theory and Practice*, 28(3), 188-197. doi:10.3109/09593985.2011.583174
- Lundberg, M., Larsson, M., Ostlund, H., & Styf, J. (2006). Kinesiophobia among patients with musculoskeletal pain in primary healthcare. *Journal of Rehabilitation Medicine*, 38(1), 37-43. doi: 10.1080/16501970510041253.
- Luning Bergsten, C., Lundberg, M., Lindberg, P., & Elfving, B. (2012). Change in kinesiophobia and its relation to activity limitation after multidisciplinary rehabilitation in patients with chronic back pain. *Disability and rehabilitation*, 34(10), 852-858.
- Mintken, P. E., Cleland, J. A., Whitman, J. M., & George, S. Z. (2010). Psychometric properties of the Fear-Avoidance Beliefs Questionnaire and Tampa Scale of Kinesiophobia in patients with shoulder pain. *Archives of Physical Medicine and Rehabilitation*, 91(7), 1128-1136. doi: 10.1016/j.apmr.2010.04.009.
- Roh, Y. H., Lee, B. K., Noh, J. H., Oh, J. H., Gong, H. S., & Baek, G. H. (2014). Effect of anxiety and catastrophic pain ideation on early recovery after surgery for distal radius fractures. *The Journal of Hand Surgery*, 39(11), 2258-2264. doi: 10.1016/j.jhsa.2014.08.007.
- Osman, A., Barrios, F. X., Gutierrez, P. M., Kopper, B. A., Merrifield, T., & Grittmann, L. (2000). The Pain Catastrophizing Scale: further psychometric evaluation with adult samples. *Journal of Behavioral Medicine*, 23(4), 351-365. doi: 10.1023/A:1005548801037

REFERENCES

- Parr, J. J., Borsa, P. A., Fillingim, R. B., Tillman, M. D., Manini, T. M., Gregory, C. M., & George, S. Z. (2012). Pain-related fear and catastrophizing predict pain intensity and disability independently using an induced muscle injury model. *The Journal of Pain*, 13(4), 370-378. doi: 10.1016/j.jpain.2011.12.011.
- Perrot, S., Trouvin, A. P., Rondeau, V., Chartier, I., Arnaud, R., Milon, J. Y., & Pouchain, D. (2018). Kinesiophobia and physical therapy-related pain in musculoskeletal pain: A national multicenter cohort study on patients and their general physicians. *Joint Bone Spine*, 85(1), 101-107.
- Ring, D., Barth, R., & Barsky, A. (2010). Evidence-based medicine: disproportionate pain and disability. *Journal of Hand Surgery*, 35(8), 1345-1347.
- Söderlund, A., & Åsenlöf, P. (2010). The mediating role of self-efficacy expectations and fear of movement and (re) injury beliefs in two samples of acute pain. *Disability and Rehabilitation*, 32(25), 2118-2126. doi: 10.3109/09638288.2010.483036
- Teunis, T., Bot, A. G., Thornton, E. R., & Ring, D. (2015). Catastrophic thinking is associated with finger stiffness after distal radius fracture surgery. *Journal of Orthopaedic Trauma*, 29(10), e414-e420. doi: 10.1097/BOT.0000000000000342.
- Thomas, E. N., Pers, Y. M., Mercier, G., Cambiere, J. P., Frasson, N., Ster, F., ... & Blotman, F. (2010). The importance of fear, beliefs, catastrophizing and kinesiophobia in chronic low back pain rehabilitation. *Annals of Physical and Rehabilitation Medicine*, 53(1), 3-14. doi: 10.1016/j.rehab.2009.11.002.
- Tkachuk, G. A., & Harris, C. A. (2012). Psychometric properties of the Tampa Scale for Kinesiophobia-11 (TSK-11). *The Journal of Pain*, 13(10), 970-977. doi: 10.1016/j.jpain.2012.07.001.
- Turk, D. C., & Monarch, E. S. (2002). Biopsychosocial perspective on chronic pain. In D. C. Turk & R. J. Gatchel (Eds.), *Psychological approaches to pain management: A practitioner's handbook* (pp. 3-29). New York, NY: Guilford Publications.

REFERENCES

- Waddell, Gordon, et al. "A Fear-Avoidance Beliefs Questionnaire (FABQ) and the role of fear-avoidance beliefs in chronic low back pain and disability." *Pain* 52.2 (1993): 157-168.
- Woby, S. R., Roach, N. K., Urmston, M., & Watson, P. J. (2005). Psychometric properties of the TSK-11: a shortened version of the Tampa Scale for Kinesiophobia. *Pain*, 117(1), 137-144. doi: 10.1016/j.pain.2005.05.029
- Verbunt, J. A., Sieben, J. M., Seelen, H. A., Vlaeyen, J. W., Bousema, E. J., Heijden, G. J., & Knottnerus, J. A. (2005). Decline in physical activity, disability and pain-related fear in sub-acute low back pain. *European Journal of Pain*, 9(4), 417-417. doi: 10.1016/j.ejpain.2004.09.011
- Vlaeyen, J. W., Kole-Snijders, A. M., Boeren, R. G., & Van Eek, H. (1995). Fear of movement/(re) injury in chronic low back pain and its relation to behavioral performance. *Pain*, 62(3), 363-372. doi:10.1016/0304-3959(94)00279-N
- Vlaeyen, J. W., Kole-Snijders, A. M., Rotteveel, A. M., Ruesink, R., & Heuts, P. H. (1995). The role of fear of movement/(re) injury in pain disability. *Journal of Occupational Rehabilitation*, 5(4), 235-252. doi:10.1007/BF02109988
- Vlaeyen, J. W., & Linton, S. J. (2000). Fear-avoidance and its consequences in chronic musculoskeletal pain: A state of the art. *Pain*, 85(3), 317-332. doi: 10.1016/S0304-3959(99)00242-0
- Vranceanu, A. M., Jupiter, J. B., Mudgal, C. S., & Ring, D. (2010). Predictors of pain intensity and disability after minor hand surgery. *The Journal of hand surgery*, 35(6), 956-960.
- Vranceanu, A. M., & Ring, D. (2008). Value of psychological evaluation of the hand surgical patient. *Journal of Hand Surgery*, 33(6), 985-987.