Functional Improvement Measures (FIM) of Gottlieb for Low Back Pain

Overview:

Gottlieb et al developed a functional improvement measure for patients with low back pain who were undergoing rehabilitation. This can help identify the level of change associated with the therapy. The authors are from Case Colina Hospital for Rehabilitative Medicine in Pomona California.

Measures:

(1) medication reduction (not included at follow-up)

(2) walking distance (unassisted in 30 minutes)

(3) sitting tolerance

(4) hamstring range

(5) strength (submeasures: sit-ups back extension knee extension)

(6) flexibility (submeasures: toe touch lateral bend)

(7) pain behavior (wincing moaning overly cautious moveement pain complaint)

(8) assertiveness

(9) comprehension of model of program

(10) comprehension of pain/anxiety relationship

where:

- The final 4 measures are the basis of the Clinical Assessment Objectives (see under pain below).

Measure	Finding	Points
medication reduction	opiates sedatives and.or tranquilizers at or above maximal prescribed dose	1
	opiates sedatives and.or tranquilizers at or below 50% of prescribed maximum (significant self-managed reduction)	2
	routinely taking NSAID with only intermittent doses of opiate-level analgesics	3
	none or occasional NSAID use	4
walking distance	minimal function less than 400 meters)	1
	fair 401 800 meters	2
	good 801 to 1600 meters	3

	maximal > 1600 meters	4
sitting tolerance	minimal (15 minutes)	1
	fair (30 minutes)	2
	good (45 minutes)	3
	maximal (60 minutes)	4
hamstring range	minimal (< 30°)	1
	fair (30 – 59°)	2
	good (60 – 89°)	3
	maximal (>= 90°)	4
strength sit-ups	able to do 2 sit-ups	1
	able to do 5 sit-ups	2
	able to do 10 sit-ups	3
	able to do 20 sit-ups	4
strength back extension	poor (chest-up less than 5 cm)	1
	fair (chest-up 5 – 10 cm)	2
	good (chest-up 10.1 – 15.24 cm)	3
	normal (chest-up >= 15.25 cm)	4
strength knee extension	poor (1 deep knee bend)	1
	fair (4 deep knee bends)	2
	good (8 deep knee bends)	3
	normal (>= 15 deep knee bends)	4
flexibility toe touch (finger tip to floor)	gap between finger tip and floor >= 30cm	1
	gap between finger tip and floor 15 – 20 cm	2
	gap between finger tip and floor 7.5 – 14 cm	3
	finger tip to floor (0 cm gap)	4
flexibility lateral bend (finger tips to head of fibula)	poor (gap >= 15 cm)	1
	fair (gap 7.5 – 14 cm)	2

	good (2.5 to 7 cm)	3
	normal (0 cm gap)	4
pain behavior	severe	1
	moderate	2
	mild	3
	negligible	4
assertiveness	low	1
	sometimes assertive	2
	frequently assertive	3
	highly assertive	4
comprehension of model of program	poor understanding	1
	fair to good understanding	2
	good understanding	3
	excellent understanding	4
comprehension of pain/anxiety relationship	poor understanding no ability to apply	1
	fair to good understanding initial application attempts	2
	good understanding some application	3
	excellent understanding frequent and early applications	4

where:

- Scoring is somewhat difficult because of the gaps in the grading intervals. For example knee extensions show 1 4 8 or 15 bends while medication use also is not a continuum. One view is that these are levels and you grade the best level reached. Alternatively the intervals could be given fractional points.

- The only non-opiate pain medication specified was acetaminophen. Today a broader range of NSAIDs are available.

points for strength = AVERAGE(3 submeasures)

points for flexibility = AVERAGE(2 submeasures)

total initial score = SUM(all 10 parameters)

total follow-up score = SUM(9 parameters not including medication)

Interpretation:

• minimal initial score: 10

• minimal followup score: 9

• maximal intial score: 40

• maximal followup score: 36

• The higher the score the better the patient's performance.

Limitations:

• As long as things all move together then the score should be informative. However masking can occur.

References:

Gottlieb H Strite LC et al. Comprehensive rehabilitation of patients having chronic low back pain. Arch Phys Med Rehabil. 1977; 58: 101-108 (Table 1 page 103).