

Scale from Kumbhare and Basmajian to Grade an Ankle Sprain

Overview:

Kumbhare and Basmajian included a scale for grading the severity of an ankle sprain based on the physical examination. This can be used to evaluate the patient initially and to monitor healing and the response to interventions.

Parameters in scale:

- (1) pain
- (2) swelling
- (3) contusion and/or discoloration (I assume this involves the diameter of the discolored area)
- (4) soft tissue tenderness
- (5) bone tenderness
- (6) squeeze test (compressing distal fibula and tibia)
- (7) range of motion for plantar flexion
- (8) range of motion for dorsiflexion
- (9) range of motion for inversion
- (10) range of motion for eversion compared to unaffected side
- (11) power during inversion compared to unaffected side
- (12) power during eversion compared to unaffected side
- (13) anterior drawer test compared to unaffected side
- (14) talar tilt compared to unaffected side
- (15) ability to bear weight on injured foot
- (16) flamingo stance on injured foot (standing on injured foot with opposite knee fully flexed and eyes closed)

Method for measuring the ability to bear weight on the injured ankle:

- (1) The person's weight is measured using a bathroom scale.
- (2) With the injured foot on the scale and the uninjured foot on the floor (probably better if elevated to same level as top of the scale plate) have the person bear as much weight as possible on the injured foot.
- (3) Record the scale reading where the person is unable to bear more weight on the injured foot.
- (4) Divide the weight beared on the injured ankle by the person's body weight.

Parameter	Finding	Points
pain	none	0
	minimal	1
	moderate	2
	severe	3
	exquisite	4
	unbearable	5
swelling	none	0
	trace	1
	localized minimal	2
	localized moderate	3
	generalized with no effusion	4
	generalized with ankle effusion	5
contusion/ discoloration	none	0
	trace	1
	< 5 cm	2
	5 – 10 cm	3
	> 10 cm	4
	involves toes whole foot	5
soft tissue tenderness	none	0
	trace	1
	localized minimal	2
	localized moderate	3
	generalized moderate	4
	generalized severe	5
bone tenderness	none	0
	trace	1
	localized minimal	2

	localized moderate	3
	generalized moderate	4
	generalized severe	5
squeeze test	none	0
	trace	1
	localized minimal	2
	localized moderate	3
	generalized moderate	4
	generalized severe	5
range of motion for plantar flexion	full	0
	75-99%	1
	50-74%	2
	25-49%	3
	1-24%	4
	0% (no movement)	5
range of motion for dorsiflexion	full	0
	75-99%	1
	50-74%	2
	25-49%	3
	1-24%	4
	0% (no movement)	5
range of motion for inversion	full	0
	75-99%	1
	50-74%	2
	25-49%	3
	1-24%	4
	0% (no movement)	5

range of motion for eversion	full	0
	75-99%	1
	50-74%	2
	25-49%	3
	1-24%	4
	0% (no movement)	5
power during inversion	grade 5	0
	grade 4+	1
	grade 4	2
	grade 4-minus	3
	grade 3	4
	grade 2 or less	5
power during eversion	grade 5	0
	grade 4+	1
	grade 4	2
	grade 4-minus	3
	grade 3	4
	grade 2 or less	5
anterior drawer test	0 – 2 mm	0
	3 – 5 mm	1
	6 – 7 mm	2
	8 – 10 mm	3
	11 – 15 mm	4
	> 15 mm	5
talar tilt	0 – 5 degrees	0
	6 – 10 degrees	1
	11-15 degrees	2
	16 – 20 degrees	3

	21 – 30 degrees	4
	> 30 degrees	5
ability to bear weight on injured foot	full	0
	75-99%	1
	50-74%	2
	25-49%	3
	1-24%	4
	0%	5
flamingo stance on injured foot	> 30 seconds	0
	21 – 30 seconds	1
	11 – 20 seconds	2
	6 – 10 seconds	3
	1-5 seconds	4
	unable to perform	5

where:

- For swelling the table was ambiguous at "generalized with ankle effusion toe involvement". Either the toe involvement was a 7th item or else included with the ankle effusion. The former would have required a maximum of 6 points which would have increased the cumulative total to 81 points.
- For several of the tests there was overlap in ranges at the endpoints. I adjusted the ranges so that they would not be overlapping.

score = SUM(points for all 16 parameters)

Interpretation:

- minimum score: 0
- maximum score: 80
- The higher the score the more severe the sprain.

References:

Kumbhare DA Basmajian JV. Chapter 11: Appraisal of alternative treatment methods in sports medicine rehabilitation pages 173-189 (Table 11-1 pages 181-182). IN: Kumbhare DA Basmajian JV. Decision Making and Outcomes in Sports Rehabilitation. Churchill-Livingstone. 2000.