

MDF Form submission; How to BEST prepare reports/documents/photos to facilitate preparation for classification

Eligible Impairments	Examples of Medical Diagnosis/Health Condition	Example documents to support the diagnosis	Specifics of reports or photos
Impaired Power	Spinal Cord Injury SCI Muscular Dystrophy Spina Bifida	<ul style="list-style-type: none"> • Rehabilitation specialist report • ASIA scale • Electromyography • MRI • X- rays/X-ray reports • Biopsy results 	<ul style="list-style-type: none"> • Clear onset or cause of diagnosis and/or diagnostic tests • Report needs to indicate level of SCI. • ASIA scale form filled in completely and dated (needs to be recent) • If loss of power in non-SCI athlete- clear table with power test results
Impaired Passive Range of Motion	Arthrogryposis Joint Contractures Trauma	<ul style="list-style-type: none"> • Medical Report • X- rays • Photographs • Goniometric Measures of joints 	<ul style="list-style-type: none"> • Photo to include where possible goniometer measure so we can read measurements of affected elbow/arm
Ataxia, Athetosis	Cerebral Palsy Traumatic Brain Injury Brain Tumor Stroke	<ul style="list-style-type: none"> • Neurologist report or Rehabilitation specialist report • ASAS scale¹ measures for all limbs for athletes with hypertonia or spasticity only • SARA scale² for athletes with ataxia only • Dyskinesia impairment scale- DIS or Unified Dystonia Rating scale- UDRS³ for athletes with 	<ul style="list-style-type: none"> • Brain scans if available • Report; Include Tendon jerk reflexes and info on abnormal reflexes such as Babinski and Tremor, Clonus

¹ See ASAS scale further in document

² See SARA scale further down in document

³ See UDRS form further down in document

		dystonia or athetosis only	
Hypertonia	Cerebral Palsy Traumatic Brain Injury Brain Tumor Stroke	<ul style="list-style-type: none"> • Neurologist report or Rehabilitation specialist report • ASAS scale⁴ measures for all limbs • 	<ul style="list-style-type: none"> • Brain scans if available • Report; Include Tendon jerk reflexes and info on abnormal reflexes such as Babinski and Tremor, Clonus
Short Stature	Achondroplasia Osteogenesis Imperfecta Growth Hormone Dysfunction	<ul style="list-style-type: none"> • Medical report including height • X rays • Photograph 	<ul style="list-style-type: none"> • Photo's of athlete in standing feet and top of head clearly in photo. Preferred photo to include clear measurements for example stadiometer reading behind head.
Limb Deficiency	Dysmelia Traumatic Amputation Bone Cancer	<ul style="list-style-type: none"> • Medical report • X rays • photographs 	<ul style="list-style-type: none"> • Photos of athlete in sport singlet or sports top with shoulders and full clearly visible from front and both sides. • Athlete in anatomical position⁵ if possible. • Athlete to have landmarks⁶ (Acromion and wrist /end of radius) marked clearly for measurements on affected and non-affected limb.

⁴ See ASAS scale further down in document

⁵ See definition of Anatomical position t

⁶ See specific detail on landmarks further down in document

Muscle Grading Scale for impaired/loss of power

For the grading in Para-Taekwondo the following scale is used besides Daniels and Worthingham (2007 version)

0	Total lack of voluntary contraction
1	Faint contraction without any movement of the limb
2	Contraction with very weak movement through full range of motion when gravity is eliminated.
	<i>In Para Taekwondo</i> ; active movement against gravity but not through full available range.
3	Contraction with movement through full or available range of motion against gravity.
4	Contraction with movement through full or available range of motion against gravity and some resistance.
5	Contraction of normal strength through full range or available range of motion against full resistance.

Example of power grading table

Muscle group/joint movement	Left /power grade	Right/power grade
Shoulder flexion		
Shoulder abduction		
Shoulder extension		
Elbow flexion		
Elbow extension		
Wrist extension		
Wrist flexion		
Finger flexion		
Finger extension		

Athletes with loss of power-for athlete with Spinal Cord Injury Only;

ASIA		INTERNATIONAL STANDARDS FOR NEUROLOGICAL CLASSIFICATION OF SPINAL CORD INJURY (ISNCSCI)		ISCOS	
Patient Name _____				Date/Time of Exam _____	
Examiner Name _____				Signature _____	

RIGHT			LEFT		
MOTOR KEY MUSCLES	SENSORY KEY SENSORY POINTS Light Touch (LTR) Pin Prick (PPR)	SENSORY KEY SENSORY POINTS Light Touch (LTL) Pin Prick (PPL)	MOTOR KEY MUSCLES	SENSORY KEY SENSORY POINTS Light Touch (LTL) Pin Prick (PPL)	SENSORY KEY SENSORY POINTS Light Touch (LTR) Pin Prick (PPR)
UER (Upper Extremity Right)	C2 C3 C4 C5 Elbow flexors C6 Wrist extensors C7 Elbow extensors C8 Finger flexors T1 Finger abductors (pin finger)				
LER (Lower Extremity Right)	L2 Hip flexors L3 Knee extensors L4 Ankle dorsiflexors L5 Long toe extensors S1 Ankle plantar flexors				
RIGHT TOTALS (MAXIMUM) (50) (56) (56)			LEFT TOTALS (MAXIMUM) (50) (56) (56)		
MOTOR SUBSCORES UER <input type="checkbox"/> + UEL <input type="checkbox"/> = UEMS TOTAL <input type="checkbox"/> MAX (25) (25)			SENSORY SUBSCORES LTR <input type="checkbox"/> + LTL <input type="checkbox"/> = LT TOTAL <input type="checkbox"/> MAX (56) (56)		
NEUROLOGICAL LEVELS 1. SENSORY <input type="checkbox"/> <input type="checkbox"/> 2. MOTOR <input type="checkbox"/> <input type="checkbox"/>			NEUROLOGICAL LEVEL OF INJURY (NLI) <input type="checkbox"/>		
4. COMPLETE OR INCOMPLETE? Incomplete = Any sensory or motor function to S4-5 <input type="checkbox"/>			5. ASIA IMPAIRMENT SCALE (AIS) <input type="checkbox"/>		
ZONE OF PARTIAL PRESERVATION Most caudal level with any preservation <input type="checkbox"/>			SENSORY MOTOR <input type="checkbox"/> <input type="checkbox"/>		

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Muscle Function Grading

- 0 = total paralysis
 1 = palpable or visible contraction
 2 = active movement, full range of motion (ROM) with gravity eliminated
 3 = active movement, full ROM against gravity
 4 = active movement, full ROM against gravity and moderate resistance in a muscle specific position
 5 = (normal) active movement, full ROM against gravity and full resistance in a functional muscle position expected from an otherwise unimpaired person
 5* = (normal) active movement, full ROM against gravity and sufficient resistance to be considered normal if identified inhibiting factors (i.e. pain, disease) were not present
 NT = not testable (i.e. due to immobilization, severe pain such that the patient cannot be graded, amputation of limb, or contracture of > 50% of the normal ROM)

Sensory Grading

- 0 = Absent
 1 = Absent, either decreased/impaired sensation or hypersensitivity
 2 = Normal
 NT = Not testable

When to Test Non-Key Muscles:

In a patient with an apparent AIS B classification, non-key muscle functions more than 3 levels below the motor level on each side should be tested to most accurately classify the injury (differentiate between AIS B and C).

Movement	Root level
Shoulder: Flexion, extension, abduction, adduction, internal and external rotation	C5
Elbow: Supination	
Elbow: Pronation	C6
Wrist: Flexion	
Finger: Flexion at proximal joint, extension	C7
Thumb: Flexion, extension and abduction in plane of thumb	
Finger: Flexion at MCP joint	C8
Thumb: Opposition, adduction and abduction perpendicular to palm	
Finger: Abduction of the index finger	T1
Hip: Adduction	L2
Hip: External rotation	L3
Hip: Extension, abduction, internal rotation	L4
Knee: Flexion	
Ankle: Inversion and eversion	
Toe: MP and IP extension	
Heel and Toe: DIP and PP flexion and abduction	L5
Heel: Adduction	S1

ASIA Impairment Scale (AIS)

A = Complete. No sensory or motor function is preserved in the sacral segments S4-S5.

B = Sensory incomplete. Sensory but not motor function is preserved below the neurological level and includes the sacral segments S4-S5 (light touch or pin prick at S4-S5 or deep anal pressure) AND no motor function is preserved more than three levels below the motor level on either side of the body.

C = Motor incomplete. Motor function is preserved at the most caudal sacral segments for voluntary anal contraction (VAC) OR the patient meets the criteria for sensory incomplete status (sensory function preserved at the most caudal sacral segments (S4-S5) by IT, PP or DAP), and has some sparing of motor function more than three levels below the isolated motor level on either side of the body. (This includes key or non-key muscle functions to determine motor incomplete status.) For AIS C – less than half of key muscle functions below the single NJL have a muscle grade ≥ 3 .

D = Motor incomplete. Motor incomplete status as defined above, with at least half (half or more) of key muscle functions below the single NJL having a muscle grade ≥ 3 .

E = Normal. If sensation and motor function as tested with the ISNCSCI are graded as normal in all segments, and the patient had prior deficits, then the AIS grade is E. Someone without an initial SCI does not receive an AIS grade.

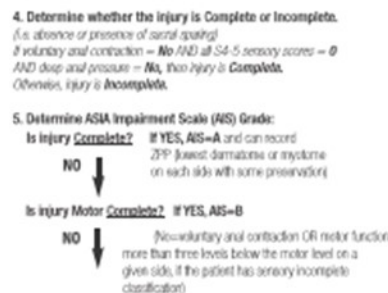
Using ND: To document the sensory, motor and NJL levels, the ASIA Impairment Scale grade, and/or the Zone of partial preservation (ZPP) when they are unable to be determined based on the examination results.



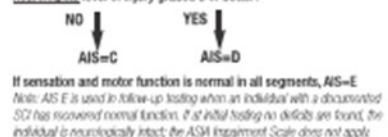
Steps in Classification

The following order is recommended for determining the classification of individuals with SCI.

- Determine sensory levels for right and left sides.**
 The sensory level is the most caudal, intact dermatome for both pin prick and light touch sensation.
- Determine motor levels for right and left sides.**
 Defined by the lowest key muscle function that has a grade of at least 3 (on supine testing), providing the key muscle functions represented by segments above that level are judged to be intact (graded as a 5).
 Note: in regions where there is no myelome to test, the motor level is presumed to be the same as the sensory level. If testable motor function above that level is also normal.
- Determine the neurological level of injury (NJL)**
 This refers to the most caudal segment of the cord with intact sensation and antigravity (3 or more) muscle function strengths, provided that there is normal (intact) sensory and motor function rostrally respectively.
 The NJL is the most cephalad of the sensory and motor levels determined in steps 1 and 2.
- Determine whether the injury is Complete or Incomplete.**
 (i.e. absence or presence of sacral sparing)
 If voluntary anal contraction = **No** AND all S4-S5 sensory scores = **0** AND deep anal pressure = **No**, then injury is **Complete**.
 Otherwise, injury is **Incomplete**.
- Determine ASIA Impairment Scale (AIS) Grade:**



Are at least half (half or more) of the key muscles below the neurological level of injury graded 3 or better?



ASAS for impaired muscle tone/ athlete with Spasticity ONLY

Australian Spasticity Assessment Scale (ASAS)

Love SC, Gibson N, Blair E

- 0** No catch on rapid passive movement (RPM) (no spasticity).
- 1** Catch on RPM followed by release. There is no resistance to RPM throughout rest of range.
- 2** Catch occurs in second half of available range (after halfway point) during RPM and is followed by resistance throughout remaining range.
- 3** Catch occurs in first half of available range (up to and including the halfway point) during RPM and is followed by resistance throughout remaining range.
- 4** When attempting RPM, the body part appears fixed but moves on slow passive movement.

NB Contractures do not need to be recorded on this form.

Ataxia- athletes with balance and coordination problems from cerebellar origin- ATAXIA

Writer: _____ Date: _____ Patient: _____

Scale for the assessment and rating of ataxia (SARA)

<p>1) Gait Proband is asked (1) to walk at a safe distance parallel to a wall including a half-turn (turn around to face the opposite direction of gait) and (2) to walk in tandem (heels to toes) without support.</p> <p>0 Normal, no difficulties in walking, turning and walking tandem (up to one misstep allowed)</p> <p>1 Slight difficulties, only visible when walking 10 consecutive steps in tandem</p> <p>2 Clearly abnormal, tandem walking >10 steps not possible</p> <p>3 Considerable staggering, difficulties in half-turn, but without support</p> <p>4 Marked staggering, intermittent support of the wall required</p> <p>5 Severe staggering, permanent support of one stick or light support by one arm required</p> <p>6 Walking > 10 m only with strong support (two special sticks or stroller or accompanying person)</p> <p>7 Walking < 10 m only with strong support (two special sticks or stroller or accompanying person)</p> <p>8 Unable to walk, even supported</p>	<p>2) Stance Proband is asked to stand (1) in natural position, (2) with feet together in parallel (big toes touching each other) and (3) in tandem (both feet on one line, no space between heel and toe). Proband does not wear shoes, eyes are open. For each condition, three trials are allowed. Best trial is rated.</p> <p>0 Normal, able to stand in tandem for > 10 s</p> <p>1 Able to stand with feet together without sway, but not in tandem for > 10s</p> <p>2 Able to stand with feet together for > 10 s, but only with sway</p> <p>3 Able to stand for > 10 s without support in natural position, but not with feet together</p> <p>4 Able to stand for >10 s in natural position only with intermittent support</p> <p>5 Able to stand >10 s in natural position only with constant support of one arm</p> <p>6 Unable to stand for >10 s even with constant support of one arm</p>
<p>Score</p>	<p>Score</p>
<p>3) Sitting Proband is asked to sit on an examination bed without support of feet, eyes open and arms outstretched to the front.</p> <p>0 Normal, no difficulties sitting >10 sec</p> <p>1 Slight difficulties, intermittent sway</p> <p>2 Constant sway, but able to sit > 10 s without support</p> <p>3 Able to sit for > 10 s only with intermittent support</p> <p>4 Unable to sit for >10 s without continuous support</p>	<p>4) Speech disturbance Speech is assessed during normal conversation.</p> <p>0 Normal</p> <p>1 Suggestion of speech disturbance</p> <p>2 Impaired speech, but easy to understand</p> <p>3 Occasional words difficult to understand</p> <p>4 Many words difficult to understand</p> <p>5 Only single words understandable</p> <p>6 Speech unintelligible / anarthria</p>
<p>Score</p>	<p>Score</p>

Rate: _____ date: _____ patient: _____

5) Finger chase Rated separately for each side Proband sits comfortably. If necessary, support of foot and trunk is allowed. Examiner sits in front of proband and performs 5 consecutive sudden and fast pointing movements in unpredictable directions in a frontal plane, at about 50 % of proband's reach. Movements have an amplitude of 30 cm and a frequency of 1 movement every 2 s. Proband is asked to follow the movements with his index finger, as fast and precisely as possible. Average performance of last 3 movements is rated.			6) Nose-finger test Rated separately for each side Proband sits comfortably. If necessary, support of foot and trunk is allowed. Proband is asked to point repeatedly with his index finger from his nose to examiner's finger which is in front of the proband at about 90 % of proband's reach. Movements are performed at moderate speed. Average performance of movements is rated according to the amplitude of the kinetic tremor.		
0 No dysmetria 1 Dysmetria, under/ overshooting target < 5 cm 2 Dysmetria, under/ overshooting target < 15 cm 3 Dysmetria, under/ overshooting target > 15 cm 4 Unable to perform 5 pointing movements			0 No tremor 1 Tremor with an amplitude < 2 cm 2 Tremor with an amplitude < 5 cm 3 Tremor with an amplitude > 5 cm 4 Unable to perform 5 pointing movements		
Score	Right	Left	Score	Right	Left
mean of both sides (R+L)/2			mean of both sides (R+L)/2		
7) Fast alternating hand movements Rated separately for each side Proband sits comfortably. If necessary, support of foot and trunk is allowed. Proband is asked to perform 10 cycles of repetitive alternation of pro- and supinations of the hand on his/her thigh as fast and as precise as possible. Movement is demonstrated by examiner at a speed of approx. 10 cycles within 7 s. Exact times for movement execution have to be taken.			8) Heel-shin slide Rated separately for each side Proband lies on examination bed, without sight of his legs. Proband is asked to lift one leg, point with the heel to the opposite knee, slide down along the shin to the ankle, and lay the leg back on the examination bed. The task is performed 3 times. Slide-down movements should be performed within 1 s. If proband slides down without contact to shin in all three trials, rate 4.		
0 Normal, no irregularities (performs <10s) 1 Slightly irregular (performs <10s) 2 Clearly irregular, single movements difficult to distinguish or relevant interruptions, but performs <10s 3 Very irregular, single movements difficult to distinguish or relevant interruptions, performs >10s 4 Unable to complete 10 cycles			0 Normal 1 Slightly abnormal, contact to shin maintained during 3 cycles 2 Clearly abnormal, goes off shin up to 3 times during 3 cycles 3 Severely abnormal, goes off shin 4 or more times during 3 cycles 4 Unable to perform the task		
Score	Right	Left	Score	Right	Left
mean of both sides (R+L)/2			mean of both sides (R+L) / 2		

Guide to describe dyskinesia or dystonia for Athletes with dyskinesia or dystonia ONLY

Unified Dystonia Rating Scale (UDRS) Revised	
I. Duration Factor 0 none 0.5 occasional (< 25% of the time); predominantly submaximal 1.0 occasional (< 25% of the time); predominantly maximal 1.5 Intermittent (25-50% of the time); predominantly submaximal 2.0 Intermittent (25-50% of the time); predominantly maximal 2.5 Frequent (50-75% of the time); predominantly submaximal 3.0 Frequent (50-75% of the time); predominantly maximal 3.5 Constant (> 75% of the time); predominantly submaximal 4.0 Constant (> 75% of the time); predominantly maximal	LARYNX 0 none 1 mild: barely detectable hoarseness and/or choked voice and/or occasional voice breaks 2 moderate: obvious hoarseness and/or choked voice and/or frequent voice breaks 3 severe: marked hoarseness and/or choked voice and/or continuous voice breaks 4 extreme: unable to vocalize NECK 0 none 1 mild: movement of head from neutral position \leq 25% of possible normal range 2 moderate: movement of head from neutral position > 25% but \leq 50% of possible normal range 3 severe: movement of head from neutral position > 50% but \leq 75% of possible normal range 4 extreme: movement of head from neutral position > 75% of possible normal range SHOULDER AND PROXIMAL ARM (Right and Left) 0 none 1 mild: movement of shoulder or upper arm \leq 25% of possible normal range 2 moderate: movement of shoulder or upper arm 25% but \leq 50% of possible normal range 3 severe: movement of shoulder or upper arm 50% but \leq 75% of possible normal range 4 extreme: movement of shoulder or upper arm 75% of possible normal range DISTAL ARM AND HAND INCLUDING ELBOW (Right and Left) 0 none 1 mild: movement of distal arm or hand \leq 25% of possible normal range 2 moderate: movement of distal arm or hand 25% but \leq 50% of possible normal range 3 severe: movement of distal arm or hand 50% but \leq 75% of possible normal range 4 extreme: movement of distal arm or hand 75% of possible normal range PELVIS AND PROXIMAL LEG (Right and Left) 0 none 1 mild: tilting of pelvis or movement of proximal leg or hip \leq 25% of possible normal range 2 moderate: tilting of pelvis or movement of proximal leg or hip 25% but \leq 50% of possible normal range 3 severe: tilting of pelvis or movement of proximal leg or hip 50% but \leq 75% of possible normal range 4 extreme: tilting of pelvis or movement of proximal leg or hip 75% of possible normal range DISTAL LEG AND FOOT INCLUDING KNEE (Right and Left) 0 none 1 mild: movements of distal leg or foot \leq 25% of possible normal range 2 moderate: movements of distal leg or foot 25% but \leq 50% of possible normal range 3 severe: movements of distal leg or foot 50% but \leq 75% of possible normal range 4 extreme: movements of distal leg or foot 75% of possible normal range TRUNK 0 none 1 mild: bending of trunk \leq 25% of possible normal range 2 moderate: bending of trunk 25% but \leq 50% of possible normal range 3 severe: bending of trunk > 50% but \leq 75% of possible normal range 4 extreme: bending of trunk > 75% of possible normal range
2. Motor Severity Factor EYES AND UPPER FACE 0 none 1 mild: increased blinking and/or slight forehead wrinkling (\leq 25% maximal intensity) 2 moderate: eye closure without squeezing and/or pronounced forehead wrinkling (> 25% but \leq 50% maximal intensity) 3 severe: eye closure with squeezing, able to open eyes within 10 seconds and/or marked forehead wrinkling (> 50% but \leq 75% maximal intensity) 4 eye closure with squeezing, unable to open eyes within 10 seconds and/or intense forehead wrinkling (> 75% maximal intensity) LOWER FACE 0 none 1 mild: grimacing of lower face with minimal distortion of mouth (\leq 25% maximal) 2 moderate: grimacing of lower face with moderate distortion of mouth (> 25% but \leq 50% maximal) 3 severe: marked grimacing with severe distortion of mouth (> 50% but \leq 75% maximal) 4 extreme: intense grimacing with extreme distortion of mouth (> 75% maximal) JAW AND TONGUE 0 none 1 mild: jaw opening and/or tongue protrusion \leq 25% of possible range or forced jaw clenching without bruxism 2 moderate: jaw opening and/or tongue protrusion > 25% but \leq 50% of possible range or forced jaw clenching with mild bruxism secondary to dystonia 3 severe: jaw opening and/or tongue protrusion > 50% but \leq 75% of possible range or forced jaw clenching with pronounced bruxism secondary to dystonia 4 extreme: jaw opening and/or tongue protrusion > 75% of possible range or forced jaw clenching with inability to open mouth	

Loss of limb- athletes with amputation or dysmelia of upper limb ONLY

Measurements are taken in anatomical position- please include photos in this position as well!

Anatomical Position is defined as;

The erect position of the body with the face directed forwards, the arms at the side, elbows extended, and forearms supinated with the **palms of the hands facing forwards**.




Upper limb


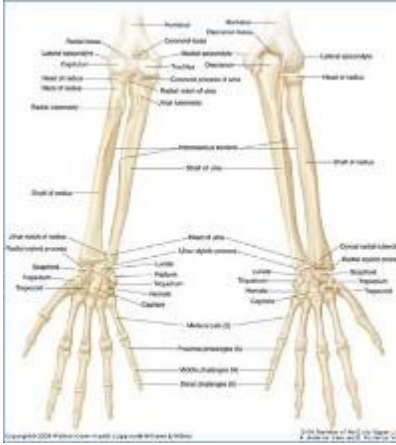

For measuring;


Upper arm length; acromion to superior head of radius

Arm length to wrist; acromion to radial styloid


Arm length to tip longest finger

Landmark	Definition	Locating the landmark	
Lateral edge of the acromion process (standing)	Most superior lateral-point of the acromion process. The point at the superior and lateral border of the acromion process midway between anterior and posterior borders of the deltoid muscle when viewed from the side.	Athlete is in the anatomical position. Palpate along the superior spine of the scapula and along the superior aspect of the clavicle. Where they meet is the AC joint. Go laterally from here between the anterior and	



		posterior aspect of the deltoid.	 <p>You can also watch; https://www.youtube.com/watch?v=x4yo76qXHks</p>
Use a eye-pencil for amrking the skin prior to marking, or use thumb nail to make a small indent in skin to measure from. Will be pratised in training session!			
Superior head of radius	<p>The radius lies on the lateral (thumb) side of the forearm. Proximally, the radial head articulates with the capitulum of the humerus. Distally, the radius articulates with the scaphoid and lunate</p>	<p>Athlete is in the anatomical position. The head of the radius can be palpated posteriorly just below the lateral epicondyle and rotates during pronation and supination.</p>	 <p>Also watch end of clip on youtube; https://www.youtube.com/watch?v=JigeZfk9t94</p>
Radial styloid	See above	<p>Palpate along the lateral side/thumb side of the arm along the shaft of the radius towards the wrist. The styloid process can be palpated on the lateral aspect of the wrist. Proximal in the 'snuffbox' e.g. between</p>	

		<p>extensor pollicis brevis and longus.</p> <p>https://www.youtube.com/watch?v=EX1YM9P6800</p>	
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If athlete has arm dysmelia include photo in anatomical position if possible). of both arms (need to see full length of both arms.

Acromion to tip of longest finger			
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If athlete has no fingers or part hand missing please include photo of hand and X-ray to show loss of carpal bones to meet MIC.

Carpal bones		
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