

MSDs

**BELOW THE WAIST**

# Management (relief) of Musculo-skeletal Pain Disorders (MSDs) without drugs or surgery

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MSDs

**BELOW THE WAIST**

The Difference Is Simple Ergonomics!

"Aarrggg" "SAM"

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**"Pain"**  
is a  
**SYMPTOM**  
not a  
**DIAGNOSIS**

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## Pain Symptoms

SHOULD be REMOVED (TREATED) by:

**Elimination of the causes**

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**BELOW THE WAIST**

# BELOW THE WAIST

COMMON OCCURRING AXIAL

# MSD PAIN CONDITIONS

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## Muscles

**Axial + Extremity**

**LOW BACK**

- Quatus lumborum
- Ilio-costalis
- Pyiriformis
- Ilio-psoas
- Gluts-min, mid, max
- Multifidi

**HIP, LEG, GROIN**

- Pyiriformis
- Tensor fascia lata
- Gluteus min, mid, max
- Ilio-psoas

**FACET**

- Thoracic
- Lumbar
- Cervical

**Extremity (non-Axial)**

- Thigh - Adductors
- Sartorius - Hamstring
- Tensor fascia lata
- Popliteal
- Tibial - tunnel
- Achilles

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**A** **BELOW THE WAIST** **COMMON MSD DIAGNOSES**

**Structure pathology** 5%

- Specific nerve-cord pressure
- Structural instability/damage

**Jolting - episodic - traumas**

- Ilio-psoas muscle strain
- Facet Dysfunction 35%
- SI joint strain/ dysfunction 90%
- Postural muscle strains - DEFAULT

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**MSDs**

**Symptoms**

**A B C**

**1° MANAGEMENT = Elimination of the causes**

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**A** **BELOW THE WAIST** **ANATOMICAL DIAGNOSIS**

- SYMPTOMS** – identify and detail
- SUBJECTIVE ANATOMICAL LOCATION** – identify effected areas, both direct, related and remote
- OBJECTIVE PHYSICAL FINDINGS - ANATOMY** – where and how the anatomy relays the symptoms

**Specific Anatomical Diagnoses**

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**A** **BELOW THE WAIST** **PRELIMINARY EXAM**

**START WITH OVERVIEW → 12**

EXAMINATION IS ALWAYS BILATERAL – GOOD SIDE FIRST

- 1) Facets & Spines, ROM, C-T-L-spines, (CV & CC joints);
- 2) S-I joint, sacrum, coccyx;
- 3) Arm-length, elbow height;
- 4) Functional leg-length, hemi-pelvis heights;
- 5) Scapular, Rhomboid, Serratus mm;
- 6) Quadratus lumborum; Ilio-costalis;
- 7) Gluteals, TFL mm: esp. for radiculitis - (also, ABDOMINALIS) ;
- 8) Piriformis & sciatic nerve;
- 9) Ilio-psoas: esp. above the I-I lgt. & on the lesser troch.;
- 10) Knee: medial and lateral entrapments ;
- 11) Achilles tendon, foot, arch: weighted vs. unweighted
- 12) Ankle-foot: entrapments under maleoli & dorsum foot-10

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**A** **BELOW THE WAIST** **OBSERVATIONS**

**PRIOR TO AND DURING THE EXAM**

- Sitting twisted to one side or the other?
- Protective posturing of the shoulder, arm, or wrist?
- Large backpack, large briefcase, motorcycle helmet, a large purse, or a large bosom?
- Sitting off one buttock?
- Wiggling all over?
- Anatomy symmetry: long-waist, short-leg / -hemi-pelvis?
- Shoes/ footwear stepped out or deformed?
- Splinting with breathing?
- Persistent sniffing?

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**B** **BELOW THE WAIST** **BEGINNING**

**Bolstering, Bothering**

- TIME** – and details of beginning symptoms
- LOCATIONS** – related to ongoing symptoms  
Occupation, 2<sup>nd</sup> Occupation, Hobbies, Recreation, Exercise hobbies.
- ADLs** – related to beginning, worsening  
Sleeping, standing, sitting, driving, etc.

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**C** **TRANSPARENT POSTURAL FACTORS** **BELOW THE WAIST**

**Behavior / mechanics**

- Sleep position
- Loss of arch height
- Wallet in the back pocket
- Stick-shift vehicle

**Anatomical shape**

- Short upper-arm length
- Leg length difference
- Short hemi-pelvis

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**BELOW THE WAIST**

**EXPLORE THE 95%**

**BELOW THE WAIST**

**COMMON OCCURRING AXIAL**

**MSD PAIN CONDITIONS**

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**A** **COMMON MSD DIAGNOSES** **BELOW THE WAIST**

**Structure pathology**

- Specific nerve-cord pressure
- Structural instability/damage

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**Jolting - episodic - traumas**

- Ilio-psoas muscle strain
- Facet Dysfunction
- SI joint strain/ dysfunction

Postural muscle strains - **DEFAULT**

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MSDs

**Symptoms**

**A B C**

**DIAGNOSTICS**

**Elimination of the causes**

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**ABOVE THE WAIST**

MSDs

**Symptoms**

**Anatomical Diagnosis**

**Beginning**

**Causes - Continuers**

**Diagnostics - confirmation**

**E → Management**

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**BELOW THE WAIST**

**Structure pathology** **5%**

- S-1 Specific nerve-cord pressure
- S-2 Structural instability/damage

**Play a role in < 15%**

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**Specific nerve-cord pressure**

**Symptoms:**

- A** 1) Symptoms ; 2) Sub. Anatomy ; 3) Objective Anat.  
Back-groin pain, numb leg // Diffuse back – groin // Less-troch & LQ-Abd
- B** 1) Onset ; 2) Worsen ; 3) Activity  
Morning after // AM – Prolonged sit, drive // Flexed hip
- C** 1) Behavior ; 2) Posture ; 3) Environment  
Sleep knee-up, Sit // Leg-l, Hemi-p // ...
- D** 1) Physical Tests ; 2) Radiographic/ electrodiag  
Sit leg-lift; Pressure I-I Lgt // None
- E** 1) Behavior ; 2) Posture ; 3) P.M. ; 4) Equipment  
Sleep Knee Posit, Car, Wallet, Arch // Balance L-L, H-P, S-A //  
; HEP, ART – all // Knee Immob

**BELOW THE WAIST** Specific nerve, cord pressure: **S 1**

**Specific nerve-cord pressure**

**Symptoms:**

- A** 1) Symptoms ; 2) Sub. Anatomy ; 3) Objective Anat.  
Back-groin pain, numb leg // Diffuse back – groin // Less-troch & LQ-Abd
- B** 1) Onset ; 2) Worsen ; 3) Activity  
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Sleep Knee Posit, Car, Wallet, Arch // Balance L-L, H-P, S-A //  
; HEP, ART – all // Knee Immob

**BELOW THE WAIST** Structural stability/ damage: **S 2**

**Structure compression fractures**

Elizabeth  
5'6" → 4'6"

**BELOW THE WAIST** Structural stability/ damage: **S 2**

**spondylolysis/ Spondylolisthesis**

Karl

Spondylolisthesis, Grade II

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**Jolting - episodic**

Play a role in 35% +

35%

- J-1 Ilio-psoas muscle strain**
- J-2 Facet dysfunction (Thoracic-lumbar)**
- J-3 SI joint strain/ dysfunction**

**J-1 Ilio-psoas muscle strain**

**Symptoms:**

**A** 1) Symptoms ; 2) Sub. Anatomy ; 3) Objective Anat.  
Back-groin pain, numb leg // Diffuse back – groin // Less-troch & LQ-Abd

**B** 1) Onset ; 2) Worsen ; 3) Activity  
Morning after // AM – Prolonged sit, drive // Flexed hip

**C** 1) Behavior ; 2) Posture ; 3) Environment  
Sleep knee-up, Sit // Leg-l, Hemi-p // ...

**D** 1) Physical Tests ; 2) Radiographic/ electrodiag  
Sit leg-lift; Pressure I-I Lgt // None

**E** 1) Behavior ; 2) Posture ; 3) P.M. ; 4) Equipment  
Sleep Knee Posit, Car, Wallet, Arch // Balance L-L, H-P, S-A //  
; HEP, ART – all // Knee Immob

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**J-1 Ilio-psoas muscle strain**

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**Sudden, acute strain may become chronic**

**Jolting - episodic**

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**Ilio poas strain: J 1**

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**Related Neuropathies "unstable"**

**Ilio poas strain: J 1**

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**% of AccMed back injuries**

**First onset is Jolting Trauma**

**Ilio poas strain: J 1**

**Jerking catch**  
Auto collision  
Fall  
Bike  
Digging

**Can turn chronic – 35+% chronic disabling "idiopathic" back problems**

**- groin pains -**  
**- totally numb leg -**

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**Ilio poas strain: J 1**

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**Ilio poas strain: J 1**

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**Ilio poas strain: J 1**

**Diagnosis → Treatment**

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**J-2 Facet dysfunction (Thoracic, lumbar strain)**

**Symptoms:**

**A** 1) Symptoms ; 2) Sub. Anatomy ; 3) Objective Anat.  
Acute pain with move, Pain in back area, Specific costo-vertebral pain

**B** 1) Time ; 2) Location ; 3) Activity  
Sudden onset; Recurrent; Random simple activity twist or bend

**C** 1) Behavior ; 2) Posture ; 3) Environment  
Wallet, Sleep, Stick ; Leg-l, Hemi-p, Short-arm ;

**D** 1) Physical Tests ; 2) Radiographic/ electrodiag  
Twist-click ; Bone scan

**E** 1) Behavior ; 2) Posture ; 3) P.M. ; 4) Equipment  
Sleep, Car, Wallet, Arch // Balance L-L & H-P, S-A // Chiro, DO, PT //

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**J-2 Facet dysfunction**

**Jolting sudden**

**"Thoracic strain"**

**THORACIC FACET SD**

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**Thoracic strain**

**THORACIC FACET SD**

**Facet Dysfunction: J 2**

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**Facet Dysfunction: J 2**

**Recurring / chronic**

5+ % chronic disabling "idiopathic" mid-back problems

-Low back, mid back, shoulder, neck, arm...

**"Costochondritis"**

**"Idiopathic" neuropathy of the upper extremity**

Twist & reach  
Fall  
Jerk arm  
Sleep wrong  
Fall, hit chest  
Overhead pull

20 +% of acute OccMed back injuries

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**J-3 SI joint strain/ dysfunction**

**Symptoms:**

- A** 1) Symptoms ; 2) Sub. Anatomy ; 3) Objective Anat.  
Back-groin pain, numb leg // Diffuse back – groin // Less-troch & LQ-Abd
- B** 1) Onset ; 2) Worsen ; 3) Activity  
Morning after // AM – Prolonged sit, drive // Flexed hip
- C** 1) Behavior ; 2) Posture ; 3) Environment  
Sleep knee-up, Sit // Leg-l, Hemi-p // ...
- D** 1) Physical Tests ; 2) Radiographic/ electrodiag  
Sit leg-lift; Pressure I-I Lgt // None
- E** 1) Behavior ; 2) Posture ; 3) P.M. ; 4) Equipment  
Sleep Knee Posit, Car, Wallet, Arch // Balance L-L, H-P, S-A //  
; HEP, ART – all // Knee Immob

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**J-3 SI joint strain/ dysfunction**

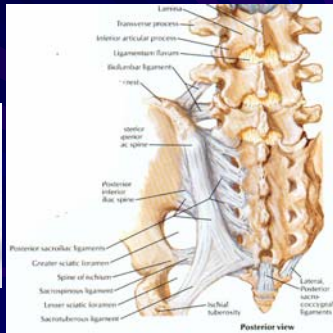
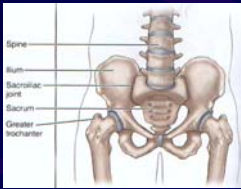
**Jolting - episodic**



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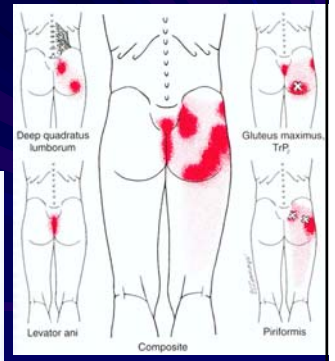
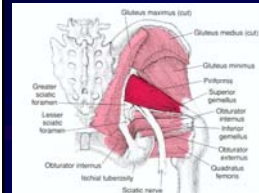
**SI Joint Dysfunction: J 3**

**Fall on hip  
Blow to pelvis  
Slide over bump**



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**SI Joint Dysfunction: J 3**



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**Postural muscle strains - DEFAULT**

90%

**LOW BACK**  
Quatrus lumborum\*  
Ilio-costalis\*  
Pyriformis\*  
(Ilio-psyas)  
Gluts-min, mid, max\*  
Multifidi

**HIP, LEG, GROIN**  
Pyriformis  
Tensor fascia lata  
Gluteus min, mid, max  
(Ilio-psyas)

Rarely alone – usually in multiples

**Postural muscle strains -**

**Symptoms:**

- A** 1) Symptoms ; 2) Sub. Anatomy ; 3) Objective Anat.  
Back-hip pain, +/- tingling // Diffuse back =+/- one-side // TTPs, specific
- B** 1) Onset ; 2) Worsen ; 3) Activity  
With episode or chronic // AM, sleep, drive, stand sit; // Torso move
- C** 1) Behavior ; 2) Posture ; 3) Environment  
Sleep, wallet, arch, drivet // Leg-l, Hemi-p, S-A // normal-activity
- D** 1) Physical Tests ; 2) Radiographic/ electrodiag  
Cross-chest stretch, Balance, TTPs,; Pressure I-I Lgt // N/A
- E** 1) Behavior ; 2) Posture ; 3) P.M. ; 4) Equipment  
Sleep, Car, Wallet, Arch // Balance L-L, H-P, S-A support  
elbows // HEP, Mobility – all // Activity

**BELOW THE WAIST**

Postural muscle strains -

**90%**

**LOW BACK**  
 Quatus lumborum\*  
 Ilio-costalis\*  
 Multifidi

**HIP, LEG, GROIN**  
 Pyriformis  
 Tensor fascia lata  
 Gluteus min, mid, max

May have sudden trauma onset  
 Often caused by  
 Always aggravated and maintained by

**7 - FACTORS**

**4 - BEHAVIORS & 3 - POSTURES**

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**C**

**MSDs**

**7**

**TRANSPARENT**

**CAUSES**

Aggravators- - Maintainers

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**C**

**TRANSPARENT POSTURAL FACTORS**

**7**

**Behavior / mechanics**

- Sleep position
- Loss of arch height
- Wallet in the back pocket
- Stick-shift vehicle

**Anatomical shape**

- Short upper-arm length
- Leg length difference
- Short hemi-pelvis

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**Behaviors / costume / mechanics**

Play a role in 85%+

- B-1** Sleep position
- B-2** - Loss of arch height
- B-3** - Wallet in the back pocket
- B-4** - Stick-shift vehicle

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**BELOW THE WAIST**

**B-1** Sleep position

**Behaviors / mechanics**



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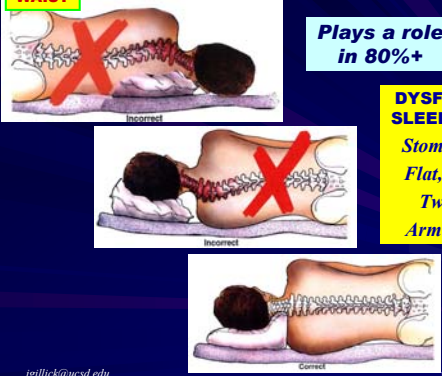
**Sleep Position: B**

Back, shoulders, arms, hands, upper back, low back...

Plays a role in 80%+

**DYSFUNCTIONAL SLEEP POSITIONS**

- Stomach sleeping
- Flat, flat on back
- Twisted / side
- Arm(s) overhead



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**Sleep Position: B 1**

ilocostalis lumborum  
Longissimus thoracis

1  
2  
Superficial

Deep

Quadratus lumborum  
Longissimus thoracis  
Ilocostalis lumborum

**back, also mid-back, shoulders, neck, arms and jaw**

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**B-2 - Loss of arch height**

**Low Back Pain "Radicular" pain**

Lateral Abdominals

**Lateral Abdominals**

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**Uncorrected loss of arch height: B 2**

**Prevalence (> 85%)**

**Back pain, ache with prolonged standing/ walking**

**Plays a role in > 70 % LBP**

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**B-3 - Wallet in the back pocket**

**Behaviors / mechanics**

**Plays a role in > 70 % of males**

**"Radicular pain" from butt to the back of knee**

M-1

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**Wallet in the back pocket: B 3**

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**Wallet in the back pocket: B 3**

**Deep**  
**Deep**  
**Superficial**

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**B-4 - Stick-shift vehicle**

**Behavior**  
/ mechanics

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**Stick shift vehicle: B-3**

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**BELOW THE WAIST**

**Stick shift vehicle: B-3**

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**BELOW THE WAIST**

**Behaviors**

Play a role in > 85%  
Chronic – Recurring  
Low Back Pain

- B-1** Sleep
- B-2** Arch-loss
- B-3** Wallet
- B-4** Stick-shift

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**POSTURES**

**Anatomical shapes**

Plays a role in 70% +

- A-1** Leg length difference
- A-2** Short hemi-pelvis
- A-3** Short upper-arm length

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**A-1 Leg length difference**

**Anatomy**

(leg length + hemi-pelvis = effective leg length)

Detectable difference in 70%+

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Functionally present with standing in 70% +

Leg length difference: **A 1**

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Leg length difference: **A 1**

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Leg length difference: **A 1**

**Functional + Short hemi p̄vis: A 2**

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Leg length difference: **A 1**

**Functional scoliosis**

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Leg length difference: **A 1**

**Anatomy**

Same effect with sitting as leg-length w/ standing

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**A 2 Short hemi p̄vis**

Functionally present with sitting, also with standing; half with leg-length difference → 35% +

A-1  
86  
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**Leg length difference: A 1**

**Short hemi pelvis: A-2**

Compensation by "S" curve

Compensation by "C" curve

**Functional scoliosis:**  
The brain commands: the eyes to be level and the nose to be midline

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**Leg length difference: A 1**

**Short hemi pelvis: A 2**

POTENTIAL for Multiple myofascial strains

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**A 3 Short upper arm length**

**Anatomy**

**"long-waisted"**  
**"long-necked"**  
**"can't sit still"**  
**"shirt sleeves too-long"**

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**Short upper arm syndrome: A 3**

>50% can't reach chair arms.  
Slender body is worse

**"long waisted"**

If elbows are >8 1/2" above the chair seat, chair arms fit only with slouching --

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**BELOW THE WAIST**

**Short upper arm syndrome: A 3**

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**Short upper arm syndrome: A 3**

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**Anatomical shape**

Play a role in 70% +

A-1. Leg length difference  
 A-2. Short hemi-pelvis  
 A-3. Short upper-arm length

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**12 = 5 -Specific Diagnoses + 7 -Ergonomic aggravators**

**5 - Specific Diagnoses - (Trauma)**

- Specific nerve-cord pressure 2
- Structural instability/ damage .5
- Ileo-psosas muscle strain 20
- Facet dysfunction (Thoracic strain) 15
- SI joint strain/ dysfunction 2

**2 Structure pathology**

**3 Jolting - episodic**

**Postural muscle strains - DEFAULT 45**

**7 - CONTRIBUTORS**  
 day to day stuff

- Sleep position 85
- Loss of arch height 75
- Wallet in the back pocket 60
- Stick-shift vehicle 35

**4 Behavior / costume**

- Short upper-arm length 55
- Leg length difference 50
- Short hemi-pelvis 30

**3 Anatomical shape**

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**BELOW THE WAIST**

The Difference Is Simple Ergonomics!

"Aarrggg" "SAM"

UCSD Healthcare, University of California, San Diego

**UCSDHealthcare**

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