

# 戦略会議

## 頸髄損傷のリハビリテーション

Dr : 乾  
PT : 岩崎  
OT : 松原

# 頸髄損傷の疫学

**World: 25-50万/year**

# 頸髄損傷の疫学

**World: 25-50万/year**

**SMC : 45/2014年**

**67/2015年**

**76/2016年**

手術



薬物



リハビリテーション



リハビリリテーション

# リハビリリテーション

- 筋量を維持

*Houle et al, 1999*

- 運動・感覚機能の再獲得

*Hutchison,2004. Sandraw-Feinberg, 2009*

- シナプス間の再形成を誘導

*Vaynman, 2003*

- 脊髄・筋組織内のNeurotrophic factorの濃度上昇

*Gomez-Pinilla,2002. Ying,2005. Cote, 2011*

- 損傷部位周囲の炎症緩和

*Sandraw-Feinberg, 2009*

“リノヒビリは早く”

# Immobilisation@ICU

- 48時間以降に atrophy が始まる
- 1日あたり 1.0%-5.5% の筋力低下
- 最初の 1w で 40% までの筋力低下が起こる
- PVC での ventilation による横隔筋の筋力低下

*Cameron S, et al. Journal of Critical Care 30: 664–672 . 2015*



**W Early physical and occupational therapy in mechanically ventilated, critically ill patients: a randomised controlled trial**

*William D Schweickert, Mark C Pohlman, Anne S Pohlman, Celerina Nigos, Amy J Pawlik, Cheryl L Esbrook, Linda Spears, Megan Miller, Mietka Franczyk, Deanna Deprizio, Gregory A Schmidt, Amy Bowman, Rhonda Barr, Kathryn E McCallister, Jesse B Hall, John P Kress*

*Lancet 2009; 373: 1874–82*

24時間以内の介入

せん妄期間短縮

Med 2.0 vs 4.0 日

IQR (0.0-6.0) (2.0-8.0)

ベンチレーターフリー期間の増加

Med 23.5 vs 21.1 日

IQR (7.4-25.6) (0.0-23.8)

# SCIのリハビリのタイミング

## **Systematic review:**

リハビリテーションの介入は早期が望ましい

*Labruyere R. Spine 35:s259-s262.2010*

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Table 6. Evidentiary table – timing of rehabilitation

First Author	Year	Design (total no. of subjects)	Grading	Conclusion
Deng <sup>1</sup>	2004	Retrospective cohort (92)	Low	Immediate admission to SCI rehab group had improved BI, FIM scores and motor recovery compared to delayed admission group
Sumida <sup>28</sup>	2001	Retrospective cohort (123)	Low	Admission to SCI rehab within 2 weeks resulted in improved motor recovery rate and FIM scores compared to 2 weeks to 6 months group and greater than 6 months group.
Scivoletto <sup>29</sup>	2005	Retrospective cohort (150)	Low	Matched cohorts grouped as admission < 30 days, 30-60 days, >60 days. Early group had better BI improvements, without confounding improved motor recovery

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# SCIのリハビリのタイミング

## Systematic review:

リハビリテーションの介入は早期が望ましい

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介入日は不明、中国語やし

2週間以内

30日以内

SCI rehabilitation@ICU

未知の領域



# 先駆者に学ぶ



和歌山県立  
医科大学附属病院

来院駐車場 正面玄関  
P  
1階 100円  
24時間営業  
構内通行

和歌山県立  
医科大学附属病院

IN ←

禁止





和歌山県立医科大学リハビリテーション科  
講師 西村 行秀 先生

# “寝かせな!!”



和歌山県立医科大学リハビリテーション科  
講師 西村 行秀 先生

## 臥床させる

- 心臓に戻ってくる血液が増える
- 生体は血液が多すぎると判断
- 循環血液量減る
- 立つと下肢に静脈血液がおき、静脈還流量が減る
- 立位時血圧が保てず寝てしまう
- ますます循環血液量がへる
- 起き上がれなくなる



臥床させる

- 心臓に戻ってくる血液が増える
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- 立位時血圧が保てず寝てしまう
- ますます循環血液量がへる
- 起き上がれなくなる



**Stand UP!!**



# Stand UP!!



現状

# 入院からリハ開始までの日数

**4日 (3-8)**

**2013.4.1-2015.5.18**

Med (IQR)

# 2015.5.18 脊損チーム結成

**Dr**



**PT**





# 入院からリハ開始までの日数

**4日 (3-8)**

**2013.4.1-2015.5.18**

Med (IQR)

**2015.5.18-2016.8.31**

# 入院からリハ開始までの日数

**2013.4.1-2015.5.18**

**4日 (3-8)**

Med (IQR)

**2015.5.18-2016.8.31**

**3日 (2-3)**

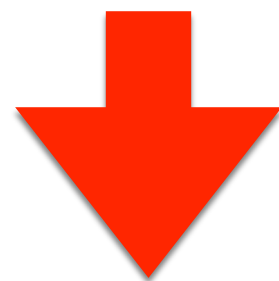
Med (IQR)

イマココ



# 仮説

なるべく早くから  
立位・歩行を重要視したりハビリテーションを行う



## 神経学的予後改善

評價

# 患者を評価する@ICU

現在

# 患者を評価する@ICU

現在

Patient Name \_\_\_\_\_  
Examiner Name \_\_\_\_\_ Date/Time of Exam \_\_\_\_\_

**ASIA** AMERICAN SPINAL INJURY ASSOCIATION **STANDARD NEUROLOGICAL CLASSIFICATION OF SPINAL CORD INJURY** **ISCS**

**MOTOR**  
KEY MUSCLES (scoring on reverse side)

	R	L	
C5	<input type="checkbox"/>	<input type="checkbox"/>	Elbow flexors
C6	<input type="checkbox"/>	<input type="checkbox"/>	Wrist extensors
C7	<input type="checkbox"/>	<input type="checkbox"/>	Elbow extensors
C8	<input type="checkbox"/>	<input type="checkbox"/>	Finger flexors (distal phalanx of middle finger)
T1	<input type="checkbox"/>	<input type="checkbox"/>	Finger abductors (little finger)

UPPER LIMB TOTAL (MAXIMUM)  +  =   
(25) (25) (50)

Comments: \_\_\_\_\_

**SENSORY**  
KEY SENSORY POINTS

0 = absent  
1 = impaired  
2 = normal  
NT = not testable

	R	L	R	L
C2				
C3				
C4				
C5				
C6				
C7				
C8				
T1				
T2				
T3				
T4				
T5				
T6				
T7				
T8				
T9				
T10				
T11				
T12				
L1				

Any anal sensation (Yes/No)

PIN PRICK SCORE (max: 112)

LIGHT TOUCH SCORE (max: 112)

LINE OF PARTIAL RESERVATION (shoulder extent of partially innervated segments) R L

SENSORY MOTOR R L

**AMS:** ASIA motor scale

**ASS :** ASIA sensory scale

**AIS :** ASIA impairment scale

# 患者を評価する@ICU

候補

✓ QOL関連

✓ ADL関連

# 患者を評価する@ICU

## 候補

- ✓ QOL関連
  - SF-36v2
  - EQ-5D

- ✓ ADL関連



# 患者を評価する@ICU

## 候補

- ✓ QOL関連
  - SF-36v2
  - EQ-5D
  - EQ-5D
- ✓ ADL関連

# EQ-5D: EuroQol 5 Dimension

以下のそれぞれの項目の一つの四角に（このように☑）印をつけて、あなた自身の今日の健康状態を最も良く表している記述を示して下さい。

## 移動の程度

- 私は歩き回るのに問題はない
- 私は歩き回るのにいくらか問題がある
- 私はベッド（床）に寝たきりである

## 身の回りの管理

- 私は身の回りの管理に問題はない
- 私は洗面や着替えを自分でするのにいくらか問題がある
- 私は洗面や着替えを自分でできない

## ふだんの活動（例：仕事、勉強、家族・余暇活動）

- 私はふだんの活動を行うのに問題はない
- 私はふだんの活動を行うのにいくらか問題がある
- 私はふだんの活動を行うことができない

## 痛み／不快感

- 私は痛みや不快感はない
- 私は中程度の痛みや不快感がある
- 私はひどい痛みや不快感がある

## 不安／ふさぎ込み

- 私は不安でもふさぎ込んでもいない
- 私は中程度に不安あるいはふさぎ込んでいる
- 私はひどく不安あるいはふさぎ込んでいる

過去12カ月間にわたる自分の一般的な健康水準と比べて、私の今日の健康状態は、

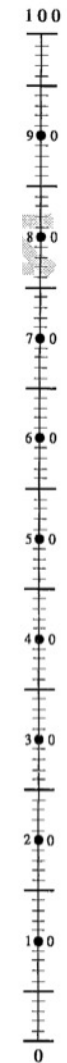
- より良い  一つの
- ほとんど同じ  四角に
- より悪い  印をつけて下さい

健康状態がどれぐらい良いか悪いかを人々が述べるのを手助けするために、（温度計にいくぶん似た）目盛を描きました。あなたが想像できる最も良い状態に100、また、あなたが想像できる最も悪い状態には0が付けられています。

あなた自身の今日の健康状態がどれぐらい良いか悪いか、あなたの考えでこの目盛に示して下さい。このことは、下の四角から、あなたの現在の健康状態がその程度良いか悪いかを示す目盛の点まで、一本の線を引くことで行って下さい。

あなた自身の  
今日の  
健康状態

想像できる  
最も良い  
健康状態



想像できる  
最も悪い  
健康状態

# EQ-5D: EuroQol 5 Dimension

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- |        |                          |          |
|--------|--------------------------|----------|
| より良い   | <input type="checkbox"/> | 一つの      |
| ほとんど同じ | <input type="checkbox"/> | 四角に      |
| より悪い   | <input type="checkbox"/> | 印をつけて下さい |

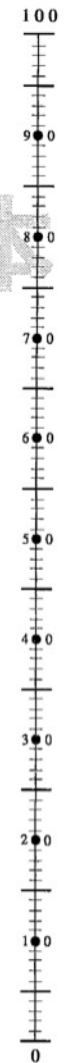
EUROQOL INSTRUMENT

健康状態がどれぐらい良いか悪いかを人々が述べるのを手助けするために、（温度計にいくぶん似た）目盛を描きました。あなたが想像できる最も良い状態に100、また、あなたが想像できる最も悪い状態には0が付けられています。

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あなた自身の今日の健康状態

想像できる最も良い健康状態



想像できる最も悪い健康状態

EUROQOL INSTRUMENT

★利点  
 ✓SF-36v2より簡便  
 ✓お金がかからない  
 ✓日本語の妥当性あり

見本

池田ら. 2015

# 患者を評価する@ICU

## 候補

- ✓ QOL関連
  - SF-36v2
  - EQ-5D
  - EQ-5D
- ✓ ADL関連

# 患者を評価する@ICU

## 候補

- ✓ QOL関連
  - SF-36v2
  - **EQ-5D**
  - **EQ-5D**
- ✓ ADL関連
  - **FIM**
  - **SCIM III**

# 患者を評価する@ICU

## 候補

- ✓ QOL関連
  - SF-36v2
  - **EQ-5D**
  - **EQ-5D**
- ✓ ADL関連
  - FIM
  - **SCIM III**







# SCIM III: Spinal Cord Independence Measure version III

## 呼吸・括約筋機能：40点

<b>Respiration and Sphincter Management</b>		
<b>5. Respiration</b>		<input type="text"/>
0. Requires tracheal tube (TT) and permanent or intermittent assisted ventilation (IAV)		
2. Breathes independently with TT; requires oxygen, much assistance in coughing or TT management		
4. Breathes independently with TT; requires little assistance in coughing or TT management		
6. Breathes independently without TT; requires oxygen, much assistance in coughing, a mask (e.g., peep) or IAV (bipap)		
8. Breathes independently without TT; requires little assistance or stimulation for coughing		
10. Breathes independently without assistance or device		
<b>6. Sphincter Management - Bladder</b>		<input type="text"/>
0. Indwelling catheter		
3. Residual urine volume (RUV) > 100cc; no regular catheterization or assisted intermittent catheterization		
6. RUV < 100cc or intermittent self-catheterization; needs assistance for applying drainage instrument		
9. Intermittent self-catheterization; uses external drainage instrument; does not need assistance for applying		
11. Intermittent self-catheterization; continent between catheterizations; does not use external drainage instrument		
13. RUV < 100cc; needs only external urine drainage; no assistance is required for drainage		
15. RUV < 100cc; continent; does not use external drainage instrument		
<b>7. Sphincter Management - Bowel</b>		<input type="text"/>
0. Irregular timing or very low frequency (less than once in 3 days) of bowel movements		
5. Regular timing, but requires assistance (e.g., for applying suppository); rare accidents (less than twice a month)		
8. Regular bowel movements, without assistance; rare accidents (less than twice a month)		
10. Regular bowel movements, without assistance; no accidents		
<b>8. Use of Toilet</b> (perineal hygiene, adjustment of clothes before/after, use of napkins or diapers).		<input type="text"/>
0. Requires total assistance		
1. Requires partial assistance; does not clean self		
2. Requires partial assistance; cleans self independently		
4. Uses toilet independently in all tasks but needs adaptive devices or special setting (e.g., bars)		
5. Uses toilet independently; does not require adaptive devices or special setting)		
<b>SUBTOTAL (0-40)</b>		<input type="text"/>

# SCIM III: Spinal Cord Independence Measure version III

移動機能：40点

## Mobility (room and toilet)

DATE

\ / \ / \ / \ / \ / \ / \ /

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### 9. Mobility in Bed and Action to Prevent Pressure Sores

- 0. Needs assistance in all activities: turning upper body in bed, turning lower body in bed, sitting up in bed, doing push-ups in wheelchair, with or without adaptive devices, but not with electric aids
- 2. Performs one of the activities without assistance
- 4. Performs two or three of the activities without assistance
- 6. Performs all the bed mobility and pressure release activities independently

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### 10. Transfers: bed-wheelchair (locking wheelchair, lifting footrests, removing and adjusting arm rests, transferring, lifting feet).

- 0. Requires total assistance
- 1. Needs partial assistance and/or supervision, and/or adaptive devices (e.g., sliding board)
- 2. Independent (or does not require wheelchair)

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### 11. Transfers: wheelchair-toilet-tub (if uses toilet wheelchair: transfers to and from; if uses regular wheelchair: locking wheelchair, lifting footrests, removing and adjusting armrests, transferring, lifting feet)

- 0. Requires total assistance
- 1. Needs partial assistance and/or supervision, and/or adaptive devices (e.g., grab-bars)
- 2. Independent (or does not require wheelchair)

--	--	--	--	--	--	--	--

## Mobility (indoors and outdoors, on even surface)

### 12. Mobility Indoors

- 0. Requires total assistance
- 1. Needs electric wheelchair or partial assistance to operate manual wheelchair
- 2. Moves independently in manual wheelchair
- 3. Requires supervision while walking (with or without devices)
- 4. Walks with a walking frame or crutches (swing)
- 5. Walks with crutches or two canes (reciprocal walking)
- 6. Walks with one cane
- 7. Needs leg orthosis only
- 8. Walks without walking aids

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### 13. Mobility for Moderate Distances (10-100 meters)

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- 0. Requires total assistance
- 1. Needs electric wheelchair or partial assistance to operate manual wheelchair
- 2. Moves independently in manual wheelchair
- 3. Requires supervision while walking (with or without devices)
- 4. Walks with a walking frame or crutches (swing)
- 5. Walks with crutches or two canes (reciprocal walking)
- 6. Walks with one cane
- 7. Needs leg orthosis only
- 8. Walks without walking aids

### 14. Mobility Outdoors (more than 100 meters)

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- 0. Requires total assistance
- 1. Needs electric wheelchair or partial assistance to operate manual wheelchair
- 2. Moves independently in manual wheelchair
- 3. Requires supervision while walking (with or without devices)
- 4. Walks with a walking frame or crutches (swing)
- 5. Walks with crutches or two canes (reciprocal walking)
- 6. Walks with one cane
- 7. Needs leg orthosis only
- 8. Walks without walking aids

### 15. Stair Management

--	--	--	--	--	--	--	--

- 0. Unable to ascend or descend stairs
- 1. Ascends and descends at least 3 steps with support or supervision of another person
- 2. Ascends and descends at least 3 steps with support of handrail and/or crutch or cane
- 3. Ascends and descends at least 3 steps without any support or supervision

### 16. Transfers: wheelchair-car (approaching car, locking wheelchair, removing arm- and footrests, transferring to and from car, bringing wheelchair into and out of car)

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- 0. Requires total assistance
- 1. Needs partial assistance and/or supervision and/or adaptive devices
- 2. Transfers independent; does not require adaptive devices (or does not require wheelchair)

### 17. Transfers: ground-wheelchair

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- 0. Requires assistance
- 1. Transfers independent with or without adaptive devices (or does not require wheelchair)

SUBTOTAL (0-40)

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# SCIM III: Spinal Cord Independence Measure version III

1

  
שירותי בריאות  
כללית

**LOEWENSTEIN HOSPITAL REHABILITATION CENTER**  
Affiliated with the Sackler Faculty of Medicine, Tel-Aviv University  
Department IV, Medical Director: Dr. Amiram Catz Tel: 972-9-7709090 Fax: 972-9-7709986 e-mail: amiramc@clalit.org.il

Patient Name: \_\_\_\_\_ ID: \_\_\_\_\_ Examiner Name: \_\_\_\_\_  
(Enter the score for each function in the adjacent square, below the date. The form may be used for up to 6 examinations.)

**SCIM-SPINAL CORD INDEPENDENCE MEASURE** Version III, Sept 14, 2002

Self-Care DATE: \_\_\_\_\_

**1. Feeding** (cutting, opening containers, pouring, bringing food to mouth, holding cup with fluid)

0. Needs parenteral, gastrostomy, or fully assisted oral feeding  
1. Needs partial assistance for eating and/or drinking, or for wearing adaptive devices  
2. Eats independently; needs assistance with drinking  
3. Eats and drinks independently

**2. Bathing** (soaping, washing, drying)

A. 0. Requires total assistance  
1. Requires partial assistance  
2. Washes independently with assistance  
3. Washes independently; dries with assistance  
B. 0. Requires total assistance  
1. Requires partial assistance  
2. Washes independently with assistance  
3. Washes independently; dries independently

**3. Dressing** (clothes, shoes, personal care)

A. 0. Requires total assistance  
1. Requires partial assistance  
2. Independent with wheelchair  
3. Independent with wheelchair  
4. Dresses (any cloth) independently  
B. 0. Requires total assistance  
1. Requires partial assistance  
2. Independent with wheelchair  
3. Independent with wheelchair  
4. Dresses (any cloth) independently

**4. Grooming** (washing hands, hair, face)

0. Requires total assistance  
1. Requires partial assistance  
2. Grooms independently with assistance  
3. Grooms independently with assistance

**Respiration and Sphincter Management**

**5. Respiration**

0. Requires tracheal tube (TT)  
1. Breathes independently with assistance  
2. Breathes independently with assistance  
3. Breathes independently with assistance  
4. Breathes independently with assistance  
5. Breathes independently with assistance  
6. Breathes independently with assistance  
7. Breathes independently with assistance  
8. Breathes independently with assistance  
9. Breathes independently with assistance  
10. Breathes independently with assistance

**6. Sphincter Management**

0. Indwelling catheter  
1. Residual urine volume (RUV) < 100cc or intermittent self-catheterization  
2. RUV < 100cc or intermittent self-catheterization  
3. Intermittent self-catheterization  
4. Intermittent self-catheterization  
5. RUV < 100cc; needs only external catheter  
6. RUV < 100cc; needs only external catheter  
7. RUV < 100cc; continent; does not require catheterization

**7. Sphincter Management**

0. Irregular timing or very low volume  
1. Regular timing, but requires assistance  
2. Regular timing, but requires assistance  
3. Regular timing, but requires assistance  
4. Regular bowel movements, without assistance, no accidents  
5. Regular bowel movements, without assistance, no accidents

**8. Use of Toilet** (perineal hygiene, adjustment of clothes before/after, use of napkins or diapers)

0. Requires total assistance  
1. Requires partial assistance; does not clean self  
2. Requires partial assistance; cleans self independently  
3. Uses toilet independently in all tasks but needs adaptive devices or special setting (e.g., bars)  
4. Uses toilet independently; does not require adaptive devices or special setting

SUBTOTAL (0-40) \_\_\_\_\_

**Mobility (room and toilet)** DATE: \_\_\_\_\_

**9. Mobility in Bed and Action to Prevent Pressure Sores**

0. Needs assistance in all activities: turning upper body in bed, turning lower body in bed, sitting up in bed, doing push-ups in wheelchair, with or without adaptive devices, but not with electric aids  
1. Performs one of the activities without assistance  
2. Performs two or three of the activities without assistance  
3. Performs all the bed mobility and pressure release activities independently

**10. Transfers: bed-wheelchair** (locking wheelchair, lifting footrests, removing and adjusting arm rests, transferring, lifting feet)

0. Requires total assistance  
1. Needs partial assistance and/or supervision, and/or adaptive devices (e.g., sliding board)  
2. Independent (or does not require wheelchair)

SUBTOTAL (0-40) \_\_\_\_\_

**TOTAL SCIM SCORE (0-100)** \_\_\_\_\_

✓ 疾患特異性

✓ 日本語の妥当性が報告されている

黒田ら, 2007

✓ 95パーセントイル値の計算式がある

✓ リハビリ充足度の指標がある

Scivolettら, 2016

# SCIM 95: SCIM IIIの95パーセンタイル値

$$\text{SCIM 95} = 26.0$$

$$- (0.00427 \times \text{AMS}^2) + (1.236 \times \text{AMS})$$

$$- (0.127 \times \text{Age})$$

$$- 3.7 \times \text{Gender}$$

※

AMS: ASIA Motor Scale

Gender: 女=1, 男=0

**SCI-ARMi:** Spinal Cord Injury Ability Realization Measurement Index

リハビリテーション充足度の目安

$$\text{SCI-ARMi} = \frac{100 \times \text{SCIMob}}{\text{SCIM95}}$$

※ SCIMob: SCIMの実測値

# 患者を評価する@ICU

候補

- ✓ QOL関連
- SF-36v2
- EQ-5D
- EQ-5D

- ✓ ADL関連
- FIM
- SCIM III

以下のそれぞれの項目の一つの四角に（このように）印をつけて、あなた自身の今日の健康状態を最も良く表している記述を示して下さい。

移動の程度  
私は歩き回るのに問題はない   
私は歩き回るのにいくらか問題がある   
私はベッド（床）に寝たまきである

身の回りの管理  
私は身の回りの管理に問題はない   
私は洗面や着替えを自分でするのいくらか問題がある   
私は洗面や着替えを自分でできない

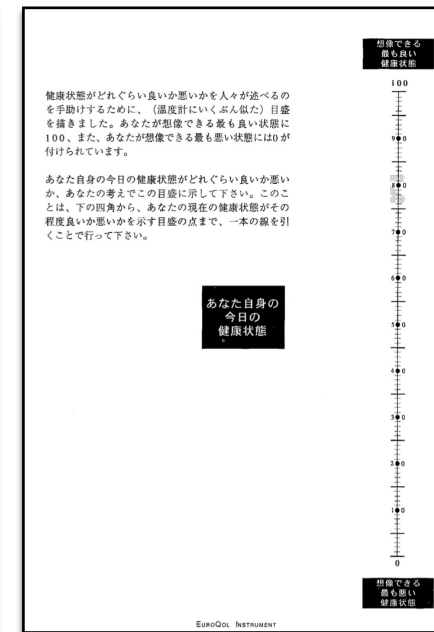
ふだんの活動（例：仕事、勉強、家族・余暇活動）  
私はふだんの活動を行うのに問題はない   
私はふだんの活動を行うのいくらか問題がある   
私はふだんの活動を行うことができない

痛み/不快感  
私は痛みや不快感はない   
私は中程度の痛みや不快感がある   
私はひどい痛みや不快感がある

不安/ふさぎ込み  
私は不安でもふさぎ込みでもない   
私は中程度に不安あるいはふさぎ込んでいる   
私はひどく不安あるいはふさぎ込んでいる

過去12か月間にわたる自分の一般的な健康水準と比べて、私の今日の健康状態は、  
より良い  一つの  
ほとんど同じ  四角に  
より悪い  印をつけて下さい

EUROQOL INSTRUMENT



LOEWENSTEIN HOSPITAL REHABILITATION CENTER  
Affiliated with the Sackler Faculty of Medicine, Tel Aviv University  
Department IV, Medical Director: Dr. Avraham Cnaan, Head of the Center: Dr. Yoram Glickman  
Patient Name: \_\_\_\_\_ ID: \_\_\_\_\_ Examination Number: \_\_\_\_\_  
(Enter the score for each function on the following scales, below the date. The form may be used for up to 9 examinations.)

SCIM-SPINAL CORD INDEPENDENCE MEASURE (0-100) Version III, Sep 14, 2002

Self-Care

1. Feeding (eating, opening containers, pouring, bringing food to mouth, holding cup with hand)  
2. Wash personal hygiene, or fully assisted and feeding  
3. Wash personal hygiene for eating and/or drinking, or for wearing adaptive devices  
4. Eat independently; touch adaptive device or assistance only for cutting food and/or pouring and/or opening containers  
5. Eat and drink independently; does not require assistance or adaptive devices

6. Bathing (washing, washing, drying body and head, maintaining water up) **Upper body; 8 lower limbs**

A. 8. Requires partial assistance  
2. Washes independently with adaptive device or a specific setting (e.g., hot, chat)  
3. Washes independently; does not require adaptive device (shower) or specific setting

B. 8. Requires total assistance  
1. Requires partial assistance  
2. Washes independently with adaptive device or a specific setting (shower)  
3. Washes independently; does not require adaptive device (shower) or specific setting

A. 8. Requires total assistance  
3. Dressing (clothes, shoes, permanent enemas, dressing, wearing, undressing) **A upper body; 8 lower body**

A. 8. Requires total assistance  
1. Requires partial assistance with clothes without buttons, zippers or ties (walks)  
2. Independent with clothes; requires adaptive device and/or specific setting (shower)  
3. Independent with clothes; does not require adaptive device or only only for feet  
4. Dressing (clothes) independently; does not require adaptive device or specific setting

B. 8. Requires total assistance  
1. Requires partial assistance with clothes without buttons, zippers or ties (walks)  
2. Independent with clothes; requires adaptive device and/or specific setting (shower)  
3. Independent with clothes; does not require adaptive device or only only for feet  
4. Dressing (clothes) independently; does not require adaptive device or specific setting

6. Dressing (washing hands and face, brushing teeth, combing hair, shaving, applying makeup)

8. Requires total assistance  
1. Requires partial assistance  
2. Groomes independently with adaptive device  
3. Groomes independently without adaptive device

Respiration and Sphincter Management

9. Respiration  
1. Requires tracheostomy (TT) and permanent or intermittent mechanical ventilation (AV)  
2. Breathes independently with TT; requires oxygen, such assistance as coughing or TT management  
3. Breathes independently with TT; requires little assistance in coughing or TT management  
4. Breathes independently without TT; requires oxygen, such assistance as coughing, trunk (e.g., page) or IAV (diaphragm)  
5. Breathes independently; does not require adaptive device or assistance in coughing  
6. Breathes independently without assistance or device

8. Sphincter Management - Bowel  
1. Indefinite colostomy  
2. Bowel control (more than 90%) - 100%: no regular colostomy or manual intervention colostomy  
3. ILEV or ILEV or combination with colostomy; such assistance as applying drainage apparatus  
4. Intermittent self-catheterization; non-external drainage management; does not need assistance for applying  
5. Intermittent self-catheterization; combined between colostomy; does not use external drainage management  
6. ILEV (100%); such only external drainage management is required for drainage  
7. ILEV (100%); combined; does not use external drainage management  
8. Regular timing or very low frequency (less than once in 10 days) of bowel movements  
9. Regular bowel movements; without assistance; use of spraying (enemas); less than once a month  
10. Regular bowel movements; without assistance; use of spraying (enemas) (less than once a month)  
11. Regular bowel movements; without assistance; use of spraying (enemas)  
12. Regular bowel movements; without assistance; use of spraying (enemas)

8. Use of Tube (partial system; adjustment of device before/after; use of tapers or dilators)

1. Requires total assistance  
2. Requires partial assistance; does not use external self  
3. Requires partial assistance; does not use external self  
4. Uses toilet independently; does not require adaptive device or specific setting (e.g., heat)  
5. Uses toilet independently; does not require adaptive device or specific setting

EUROQOL 10-00

DATE: / /

9. Mobility (room and toilet)  
9. Mobility in Bed and Action to Prevent Pressure Sores  
1. Needs assistance in all activities (using upper body to hold, sitting lower body to hold, sitting up in bed, doing push-ups or wheelchair, with or without adaptive device, but not with electric aid)  
2. Requires use of the electric wheelchair  
3. Requires use of seat or electric wheelchair  
4. Performs all full bed mobility and pressure release activities independently  
5. Performs all full bed mobility and pressure release activities independently  
6. Performs all full bed mobility and pressure release activities independently

10. Transfers: bed-to-chair (lifting wheelchair, lifting footrest, moving and adjusting arm rest, transferring, lifting feet)  
1. Needs partial assistance and/or supervision, and/or adaptive device (e.g., sliding board)  
2. Independent (or does not require wheelchair)

11. Transfers: wheelchair-to-bed (if uses wheelchair; transfers to and from it or accepts wheelchair; locking wheelchair, lifting footrest, moving and adjusting arm rest, transferring, lifting feet)  
1. Needs partial assistance and/or supervision, and/or adaptive device (e.g., grab-bar)  
2. Independent (or does not require wheelchair)

Mobility (indoors and outdoors, on even surface)  
12. Mobility Indoors  
1. Requires total assistance  
2. Needs electric wheelchair or partial assistance to operate manual wheelchair  
3. Moves independently in manual wheelchair  
4. Requires assistance while walking (with or without device)  
5. Walks with a walking frame or crutches (using)  
6. Walks with crutches or two canes (inspired walking)  
7. Walks with one cane  
8. Needs to refuse only  
9. Needs to refuse only  
10. Needs to refuse only

13. Mobility for Indirect Distances (100-100 meters)  
1. Needs electric wheelchair or partial assistance to operate manual wheelchair  
2. Moves independently in manual wheelchair  
3. Requires assistance while walking (with or without device)  
4. Walks with a walking frame or crutches (using)  
5. Walks with crutches or two canes (inspired walking)  
6. Walks with one cane  
7. Needs to refuse only  
8. Needs to refuse only  
9. Needs to refuse only

14. Mobility: Outdoors (more than 100 meters)  
1. Requires total assistance  
2. Needs electric wheelchair or partial assistance to operate manual wheelchair  
3. Moves independently in manual wheelchair  
4. Requires assistance while walking (with or without device)  
5. Walks with a walking frame or crutches (using)  
6. Walks with crutches or two canes (inspired walking)  
7. Walks with one cane  
8. Needs to refuse only  
9. Needs to refuse only  
10. Needs to refuse only

15. Self-Management  
1. Unable to manage or directed  
2. Needs assistance from family with support or supervision of another person  
3. Assists and directs or leads 1 step with support of hand(s) and/or crutch or cane  
4. Assists and directs or leads 2 steps with support or supervision  
5. Assists and directs or leads 3 steps with support or supervision  
6. Performs all self-management activities independently

16. Transfers: wheelchair-to-chair (repositioning or locking wheelchair); moving onto and/or from wheelchair to and from one, bringing wheelchair into and out of room  
1. Needs partial assistance and/or supervision and/or adaptive device  
2. Requires total assistance  
3. Requires total assistance  
4. Requires total assistance  
5. Requires total assistance  
6. Requires total assistance  
7. Transfers independent; does not require adaptive device (or does not require wheelchair)  
8. Transfers independent; does not require adaptive device (or does not require wheelchair)  
9. Requires assistance  
10. Transfers independent with or without adaptive device (or does not require wheelchair)  
11. Transfers independent with or without adaptive device (or does not require wheelchair)

TOTAL SCIM SCORE (0-100)

**Future**

# Exoskeletonの導入

**HAL<sup>®</sup>**



**ReWalk<sup>®</sup> 6.0**



# VRの導入



# VR with Exoskeleton



