



User feedback on wheelchair fitting with the international screeningtool:



**21th of March
Pittsburgh**

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Reade



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WHEELCHAIR CHECK
Wheelchair Check is a screening tool that allows wheelchair users to assess if their wheelchair is optimised for their needs.

Skilful and manoeuvrable?
Can you do whatever you want?

Do the check!


Wheelchair Check is an initiative of **helio mare**

Endorsed by:

- ESCI F** European Spinal Cord Injury Foundation
- MASCIP** MASCIP International Association of Spinal Cord Injury Professionals
- WPR** Wheelchair Professionals
- RNH** Royal National Orthopaedic Hospital
- Brunel University London**
- SUNNAAS REHABILITATION HOSPITAL**

Introduction tool



About International

Do the check

Hacer el check

Mach den Check

Doe de check



Functional and comfortable ?

Can you go wherever you want?



www.wheelchaircheck.com




Introduction: Do the Check

 Do the check



Why a Wheelchair-User Check?



- 🕒 Inspiration Int. Seating Symposium; **empowerment wheelchair users**
- 🕒 Idea hearing test 
- 🕒 Unnecessary wheelchair-related (health) problems in the Dutch Seating Advisory Teams
- 🕒 Confirmed by our study in wheelchair users with SCI:

Experienced sitting-related problems and association with personal, lesion and wheelchair characteristics in persons with long-standing paraplegia and tetraplegia

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Development of the Dutch version

- 👤 Questionnaire used in our study served as a foundation (and literature)*
- 👤 Expert opinion Dutch seating experts
- 👤 Collaboration Dutch patient-organizations/ rehabilitation centers



*Alm M, Gutierrez E, Hultling C, Saraste H. Clinical evaluation of seating in persons with complete thoracic spinal cord injury. *Spinal Cord*. 2003 Oct;41(10):563-71.

CHECK JE ZIT
Op de website checkjezit.nl kan je checken of je goed zit en rijdt in je rolstoel

Kan je lekker spelen
Vanuit je rolstoel?

Check!
QR code

Check je zit is een initiatief van
helio mare

In samenwerking met
adelante, De Jong Straat, Reade, RUNDAM, Hoesburch, Het Brabantse Land, umca

Mede mogelijk gemaakt door
HandicapNL IEDEREEN EERLIJKE KANSEN
CP, DASH, MANKEN, VERENIGING 113, SBR, SPARKKETS HET NEDERLAND, UNIEK, ZITTEN ZORGEN

The graphic is a promotional poster for the 'CHECK JE ZIT' campaign. It features a young girl with blonde hair sitting in a wheelchair outdoors, holding a red paddle. The text is in Dutch and includes a QR code to access the website. At the bottom, there are logos for the organizing organization 'helio mare' and various partner organizations.

Who is it for?

& Global wheelchair users

& available languages



& Coming soon:  (*Congres Positif, Lille France*)

& *Greek, and Latvian partners have started the translation process*

& All diagnoses

& All ages

& All wheelchairs



Explanation:

 Do the check








 Haz el check

 Mach den Check

 Doe de check

 Ta sjekken

Themes:

-  General part (allways)
-  Rolling characteristics
-  Maintenance
-  Wheelchair driving adjustments
-  Seat Dimensions (allways)
-  Problems in sitting/ driving (allways)
-  What would you like to change?

How would you rate the driving characteristics of your wheelchair? =
reasonable,
moderate, poor

Download PDF screening report

**Example;
personal report**

**No personal info
name/email**

**Rating of wheelchair
skills and driving is
good; no further questions**



14/06/2024

Completing the Wheelchaircheck questionnaire will help you to gain insight into possible wheelchair sitting and driving problems such as pain, fatigue, and lack of support. The questionnaire provides tips to solve problems with your manual, triple, or electric wheelchair. These problems can only really be solved properly when you are seen in your wheelchair.

You can use this pdf to have all relevant information about your wheelchair in one place for yourself, your wheelchair advisor or therapist. You can easily send the pdf (by email or post) with other applicable forms (e.g. a wheelchair application). It helps to think together about good solutions for any sitting or driving problems. It is important to discuss the pros and cons in order to make a proper assessment.

What is your age?

53

What medical condition do you have?

Spina Bifida

How many years have you been using a wheelchair?

50

What type of wheelchair do you mainly use?

Manual Wheelchair

For which type of wheelchair are you completing this screening tool?

Manual Wheelchair

How many hours do you use it per day?

12

What is the brand of your wheelchair?

RGK

How long have you been using this wheelchair?

5 years

What is the approximate weight of the wheelchair including the seat cushion?

15-20 kg

How do you move your manual wheelchair

With both hands using the hand rims

How would you rate your wheelchair skills?

Good

How would you rate the driving of your wheelchair?

Good

WHEELCHAIR & CHECK

14/06/2024

Wheelchair driving adjustments

Is your wheelchair properly adjusted for daily use (e.g. it doesn't start to tip over making you almost fall out)?

Yes

Does the wheelchair tip back easily when applying force to the hand rims?

No, the wheelchair doesn't tip back easily and rides smoothly: optimal weight distribution over the wheels)

Can you operate the hand rims easily when rolling?

- No, I have to lift my arms (and shoulders) too high when using the hand rims because I'm sitting too low between the hand rims

Have both the wheel adjustment and the seat height checked (wheels lower/seat height higher). Discuss the pros and cons of any changes with your wheelchair supplier.

Seat dimensions

Is the width of the wheelchair seat (and cushion) optimal?

Yes, there is a small gap between each of my hips and the side flaps of the chair seat.

Is the seat (and cushion) length optimal?

No, the seat length is too large with no space between the back of the knees and the front of the seat.

Have this checked by a professional

Is the seat cushion's firmness optimal for your buttocks and thighs?

Yes, the firmness of the cushion appears safe, comfortable, supportive and balanced

Is the position of your thighs right in the wheelchair?

- No, my knees are lower than my thighs (a lap tray would slide forwards)

Have this checked by a professional

Is the seat height optimal?

- Yes, with the seat height all transfers and activities can be performed without problems

Is/are the footplate(s) height and position right in the wheelchair?

- Yes, the footplate(s) give(s) optimal support to my feet and this does not interfere with activities

Is the backrest comfortable and at an optimal height?

- No, the (upper part of the) backrest pushes my trunk forwards

Have this checked by a professional

Seat dimensions

hel

WHEELCHAIR & CHECK

14/06/2024

Are the armrests' height, shape, and position optimal?

- Yes, the armrests give support to the arms and do not interfere with activities

Sitting-/driving problems

Do you find sitting in the wheelchair, in general, tiring ?

Sometimes

Do you find driving in the wheelchair, in general, tiring

Sometimes

Do you find sitting in your wheelchair, in general, painful ?

Regularly

Sitting/driving problems

Have a wheelchair consultant/professional check whether your complaints can be reduced by a better sitting or driving position in the wheelchair.

Please indicate for which of the following you have pain while sitting and how severe the pain is (pain score).

	No pain	Mild pain	Moderate pain	Serious pain	Severe pain	Excruciating pain
Neck/head	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Back at height of shoulder blades	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Middle of back	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lower back	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Side of chest/ribs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Side (loins)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sitting bones	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tailbone/sacrum	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Do you find driving in your wheelchair, in general, painful ?

Sometimes

Do you currently have a bedsore (i.e. pressure ulcer or decubitus) or have you had one in the last three months ?

No

What is the brand of your cushion?

Soho

Condition of your seat cushion (and cover)

Cushion and cover in good condition

Are you well informed about the correct use of your wheelchair cushion and how it works?

Yes

Is the width of the wheelchair seat (and cushion) optimal?

Yes, there is 0-1 cm of space between each of my hips and its side of my wheelchair seat.

Is the seat (and cushion) length optimal?

No, the seat length is too large with no space between the back of the knees and the front of the seat.

Have this checked by a professional

Is the seat (and cushion) length optimal?

Note: for each of the below questions it is assumed that your buttocks are positioned against the back rest of the wheelchair

- Yes, I have 2-5 cm (1-2 inches) between the back of my knees and the front of my wheelchair seat.
- No, the seat length is too short with more than 5 cm (2 inches) between the back of my knees and the front of the seat.
- No, the seat length is too large with no space between the back of the knees and the front of the seat.**
- No, I am not even able to sit with my buttocks against the back rest because of the (too) large seat depth

Have this checked by a professional

Is the backrest comfortable and at an optimal height?

- No, the (upper part of the) backrest pushes my trunk forwards

Sitting/driving problems

Sitting-/driving problems

Do you find sitting in the wheelchair, in general, tiring ?

Sometimes

Do you find driving in the wheelchair, in general, tiring

Sometimes

Do you find sitting in your wheelchair, in general, painful ?

Regularly

Have a wheelchair consultant/professional check whether your complaints can be reduced by a better sitting or driving position in the wheelchair.

Please indicate below where you have pain while sitting and how severe the pain is (pain score).

	No pain	Mild pain	Moderate pain	Serious pain	Severe pain	Excruciating pain
Neck/head	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Back at height of shoulder blades	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Middle of back	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lower back	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Side of chest/ribs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Side (loins)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sitting bones	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tailbone/sacrum	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Do you find driving in your wheelchair, in general, painful ?

Sometimes

What would you like to change?

Where do you lack support?

- At my lower back
- At my side(s) or at my loin(s)

Do you feel that you have too much support/pressure in your wheelchair?

No

How would you rate your sitting position in your wheelchair?

Moderate

Have your sitting position checked by a consultant/professional.

Do you feel that your wheelchair sitting position could be improved?

Yes

What would you like to change?

- To sit more upright
- To have more support when sitting
- To sit more confidently

**Agreement for use
for research.**
If no, deleted from
the database

Your own logo can
be added for your
country



14/06/2024

Excellent

Does your wheelchair meet your movement needs both indoors and outdoors?

Excellently

Have you filled out this screening tool more often?

- No this is the first time

In which country do you live?

Ireland

I agree to the anonymous use of this data for research. The data will not be personally identifiable in any way

Yes

Wheelchaircheck is
an initiative by

Wheelchaircheck es
una iniciativa de

Wheelchaircheck ist
eine Initiative von



Made possible by

Fecho posible por

Ermöglicht durch



In collaboration with

En asociación con

In Verbindung mit



How to use the tool as a professional?

- 🦽 Ask wheelchair users to fill out the tool **before their visit**
- 🦽 Have them **think in-depth** about their wheelchair-user set-up
- 🦽 Ask them to **email the report, saving you time**
- 🦽 **The report is an overview** of issues **experienced** by your client
- 🦽 **Insight** contributes to **understanding** and being on the same page
- 🦽 Helps to decide together which issues need to be addressed

Be aware:

- 🦽 The wheelchair-user needs to be seen as well
- 🦽 Perspectives may differ on 'issues'

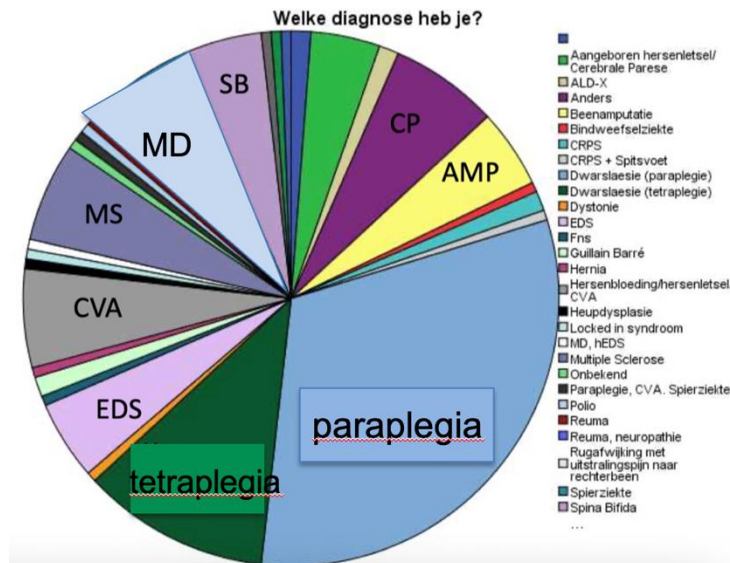


Dutch data base

& >1650 wheelchair-users filled in the tool

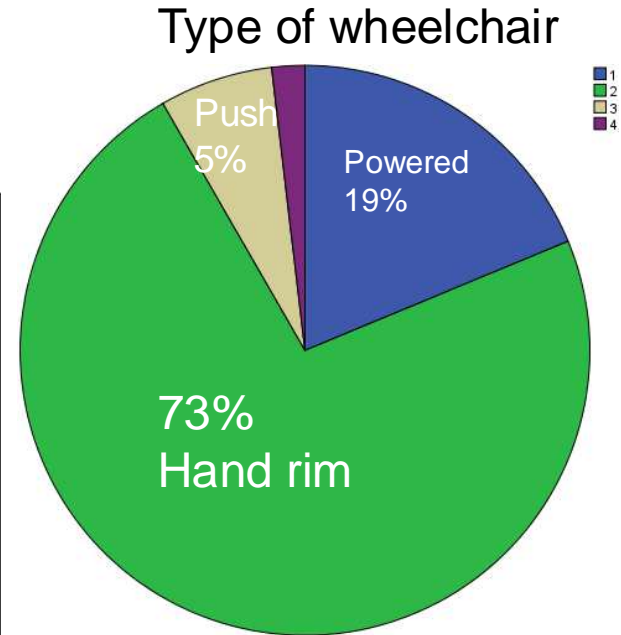
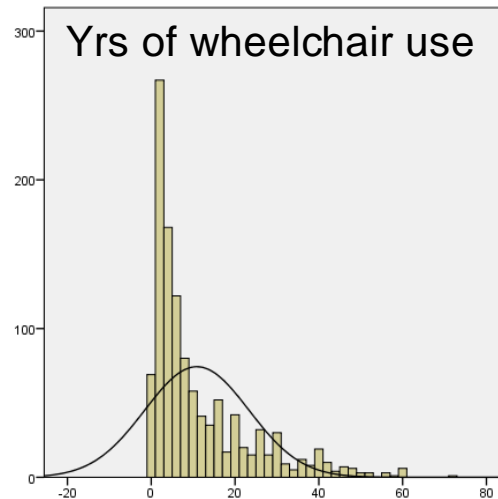
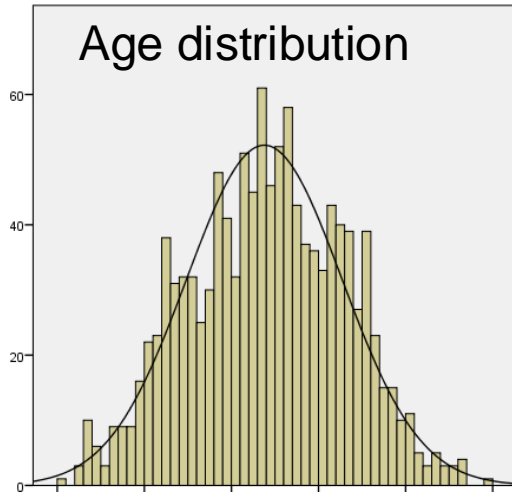
& 1250 permission for use research

& Numbers per diagnosis group depend on PR



Dutch database (n=1250)

- ♿ 42% male, 58% female
- ♿ All ages; 5-100 yrs
- ♿ Most 1-10 years of wheelchair use
- ♿ Most hand rim wheelchair



Evaluation Tool N=44



Did the tool provide **insight** into sitting and driving issues?

Did the tool and following actions help you to **improve** your sitting/ driving?

Do you think the tool will help **other wheelchair-users** to improve sitting/driving?

	n (%)	n (%)	n (%)
No	3 (7%)	17 (40%)	5 (11%)
Yes, a little	20 (48%)	13 (31%)	13 (30%)
Yes, a lot	21 (45%)	12 (29%)	26 (59%)
Totaal	44	42*	44

Research

🇳🇱 Dutch data PhD:
What factors influence whether a wheelchair is a good fit or not (working title)

🇳🇱 Subset SCI; TP: N=80, PP: N=227

- 🇳🇱 (Dis)satisfaction with sitting posture
- 🇳🇱 Lack of support
- 🇳🇱 Improvement possible (and how)

🇳🇱 Comparison with other diagnoses



Improvement preferences of wheelchair users with SCI to prevent wheelchair-related health problems

Linda Valent¹, Evelien van der Sloten², Ludwine van Orsouw³, Marika Bosman³, Loes Mulder⁴, Ellen Kaandorp⁵, Janneke Nachtegaal^{1,5} SCI-sitting expert group (ZZZ)



¹Heliomare Rehabilitation Centre Wijk aan Zee, ²Adelante Rehabilitation Centre Hoensbroek, ³Reva Rehabilitation Centre Amsterdam, ⁴rijndam Rehabilitation Centre Rotterdam, ⁵Roozangh Rehabilitation Centre Enschede, ⁶Dutch SCI expert group (NVdG), The Netherlands



With a patient-focused smart screening tool wheelchair users can evaluate their wheelchairs

Introduction

An inadequate wheelchair-user fit can lead to health complications, including pain, fatigue, deformities, and pressure ulcers. Understanding user feedback on wheelchair fitting may help prevent sitting- and driving-related problems in SCI individuals.

The Dutch screening tool www.checkjezit.nl (recently translated into English, Spanish, and German and non-commercial: www.wheelchaircheck.com) allows users to identify potential misfits and communicate their needs effectively with health professionals and wheelchair advisors.

Methods

All wheelchair users with SCI (n=307) who filled out the Dutch screening tool CheckjeZit agreed that their data was used for research purposes. Descriptive statistics were used to describe the population's characteristics and satisfaction with sitting.

Do the check



Results

Of the participants, 80 had tetraplegia (TP) (49 male (M)/ 3female (F); mean age: 52 (SD=15.5) yrs; mean years of wheelchair use: 15 (SD=15.5) and 227 had paraplegia (PP) (151M/75F); mean age: 53 (16), yrs of wheelchair use: 13.15 (16) yrs). Most people used hand rim wheelchairs (TP: 66%, PP: 92%).

A majority were fairly satisfied with sitting (TP: 47.5%; PP: 42.7%), 37.5% (TP) and 36.6% (PP) were satisfied and 15.1% (TP) and 20.3% (PP) were dissatisfied.

Lack of support (LOS) in their wheelchair was reported by 38.8% (TP) and 42.7% (PP) respectively. **Lacking support was mainly perceived in the lower back (TP: 22.5%; PP: 27,8%).**

Of all participants, most thought improvements were possible in their sitting posture (TP: 63.8%; PP: 67.4%). The aspects participants wanted to improve included **sitting more upright** (TP: 33.8%; PP: 43.2%), **sitting more relaxed** (TP: 37.5%; PP: 41.4%), and **having more support** (TP: 25.2%; PP: 32.2.%).

Contact: L.valent@heliomare.nl



Discussion

When reflecting on the (mis)match of their wheelchair, people with SCI appeared mainly fairly satisfied.

The experienced lacking support offered by the wheelchair appeared high. In previous work, also in persons with SCI, we found that LOS was associated with pain, fatigue, and instability in sitting and driving.[1]

A remarkably high proportion saw room for improvement and could tell **how** they hoped to become seated or where exactly to have more support.

Clinical message

Besides clinical observation, we should listen closely to wheelchair users who suggest improvements to prevent the consequences of improper seating.[2]

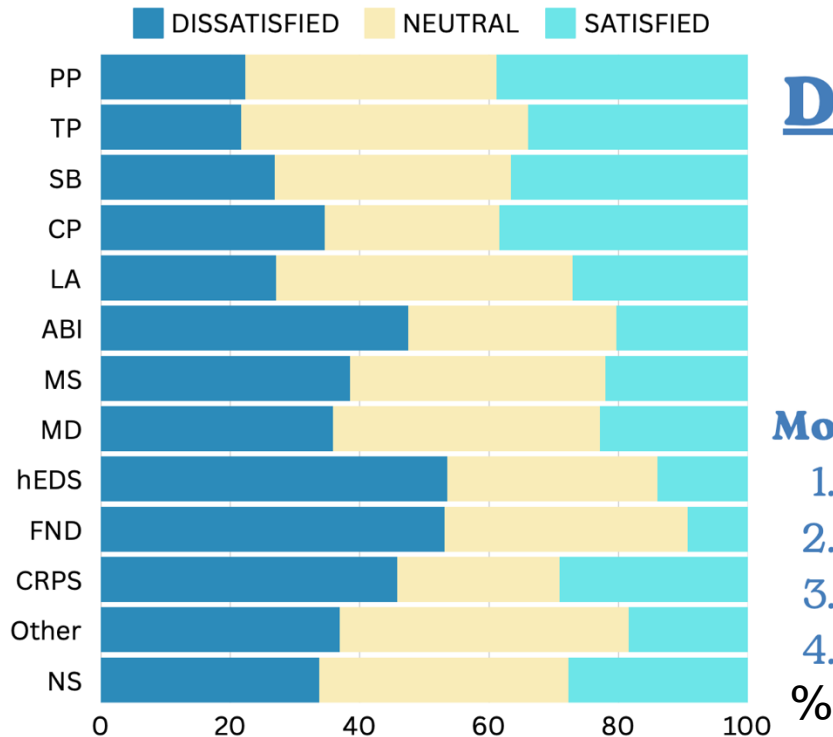
Therefore, we encourage clinicians to introduce the free available new tool: www.wheelchaircheck.com to their patients. It thoroughly explores potential issues and raises awareness among wheelchair users.

We invite clinicians and scientists to collaborate on the Wheelchair Check project to compare wheelchair-user match quality across countries.



Total dataset n=1250

TP: N=97, PP: N=297



Dissatisfaction with sitting posture:

Overall population:

N=419 - 34%

Most dissatisfied: Most satisfied:

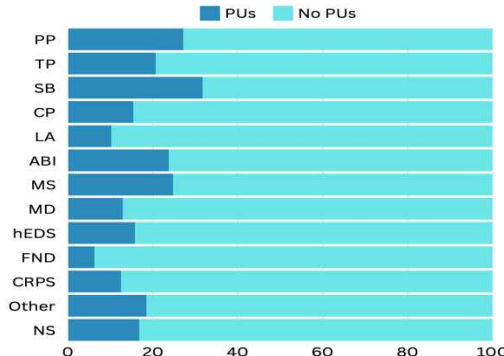
1. hEDS (54%)
2. FND (53%)
3. ABI (48%)
4. CRPS (46%)

1. PP (39%)
2. CP (38%)
3. SB (37%)
4. TP (34%)

International research

🔗 The growing international database is ideal for collaboration in research in the future:

- 🔗 Research with database own country
- 🔗 Between countries; *For example:*
 - Wheelchair set-up (satisfaction)
 - Pain, Fatigue, Pressure Ulcers
 - Associations



Example subset children

How do children/youngsters rate sitting and rolling in their hand rim wheelchair?



Linda valent¹, Marleen Sol², Margo van Hartingsveldt³, Wiek Dirks⁴, Koen van Dijk⁵, Monique Berger^{6,5}

Contact: l.valent@helio Mare.nl

Study aim

To gain insight in how children/parents perceive the wheelchair-child-interface related to rolling and sitting.

Introduction

A good wheelchair-child-interface is an important prerequisite to be able to participate in meaningful activities. This is achieved through proper adjusting and modifying of the wheelchair for optimal postural support (sitting) and functioning (e.g. rolling). How do children rate their wheelchair?

Methods

Children and adolescents (aged 5-18 yrs) and/or their parents filled out the free available smart screening-tool <https://www.checkjezit.nl/hoegeschikt-is-je-rolstoel/check-je-zit/>

CHECKJEZIT



Dutch version

English version

Results

In total 35 children and adolescents (13 +/-4 yrs, M:13, F:22) with diagnoses e.g., Cerebral Palsy, Muscle Disease or Spinal Cord injury, filled out the screening-tool.
 Sitting and rolling was rated 'poor/mediocre' or respectively 37% and 31%, 'reasonable' by 28% and 23% and 'good' by 34% and 45%.
 Sitting and rolling was 'tiring' in, respectively, 54% and 63% and 'painful' in 31% and 20% of the children. Fiftyfive % 'lacked support' by their wheelchair and 69% thought 'sitting could be improved'.
 Some problems e.g. lack of support 'below the thighs', or 'at the lower back' may be related to mal-adjustments of the wheelchair to the (growing) child.



Clinical message

By using the screening-tool, children, adolescents and their parents can reflect on problems but also on improvements e.g.: to sit 'more supported' or 'upright'; a better 'shoulder position for rolling' or 'more grip on the handrims'.

Insight in perceived wheelchair-related-problems may contribute to shared-decision-making regarding realization of improvements in the wheelchair-child-fitting.

Check also: https://www.checkjezit.nl/wp-content/uploads/2023/02/WIN_Waaiers90.pdf

5. Conclusion

A significant portion of the children did not feel adequately supported by their wheelchair and were dissatisfied with sitting comfort or (rolling) ergonomics.

🔗 **HAASER** | **UVA** | **VU+**
Bioscience | **NIA** | **Amsterdam** | **Utrecht**

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Volg *optima_onderzoek* op


*OPTIMA is een consortium afgeleid in 2022mer o.a. Resiliëntoekomst Helio Mare, HAN/CAAPS, ondersteuning OP Nederlandtoekomst, Hogeschool van Amsterdam (Hogescholen), Hogeschool Utrecht (Hogescholen), Hogeschool Den Haag (Hogescholen/technologie) en de Vrije Universiteit Amsterdam (Health Economics and Health Technology Assessment). Durable een subsidie van ZON-MW om de eerste releases goed met een dashboardte ontwikkelen.

Why are we looking for international partners?

IT WORKS!

We invite you to:

👤 **Consider use of the tool**

*Norwegian
example:* 

👤 **Collaborate** in implementation and/or research

 **SUNNAAS
REHABILITATION HOSPITAL** | 

👤 Join forces to achieve a **global index of wheelchair fit**



So, tell your clients about the tool

Do the check



Dutch



English



German



Spanish



Norwegian



On behalf of the
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