



# Promoting sustainable return to work: Towards an occupation-specific job matching tool for vocational rehabilitation of persons with spinal cord injury

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I have the following potential conflict(s) of interest to report

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Background – Job matching research

Development of the job matching tool

Pretest of the tool prototype

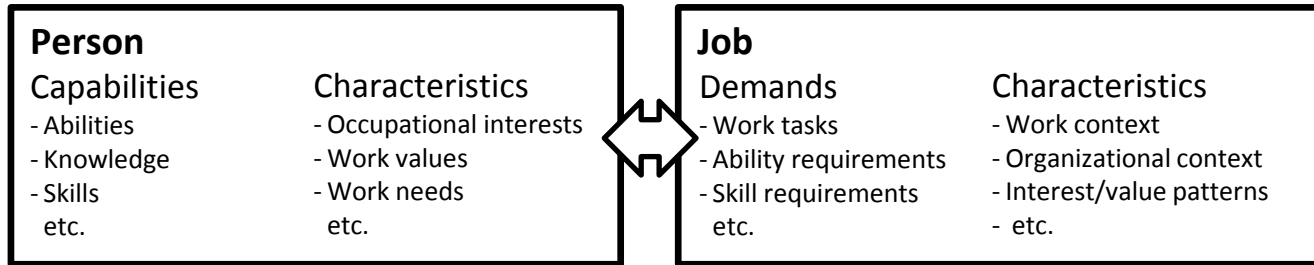
Outlook – Practical and research implications

Conclusion

Please choose an occupation in the drop down menu:  
**Sales Manager/in**

Work styles	Required Level (0=not relevant, 10=extremely relevant)	Level of person (0=not present, 10=highly pronounced)
<b>Achievement Orientation</b>		
Initiative	9.0	7.0
Achievement/Effort	10.0	8.0
Persistence	8.7	8.0
<b>Social Influence</b>		
Leadership	9.6	8.0
<b>Interpersonal Orientation</b>		
Cooperation	9.0	8.0
Social Orientation	9.8	8.0
Concern for Others	5.0	6.3
<b>Adjustment</b>		
Stress Tolerance	8.7	8.0
Adaptability/Flexibility	4.5	8.0
Self Control	3.6	8.0
<b>Conscientiousness</b>		
Attention to Detail	8.7	7.0
Dependability	9.8	8.0
Integrity	9.7	8.0
<b>Independence</b>		
Practical Intelligence	8.3	8.3
Analytical Thinking	6.8	8.0
Innovation	6.0	7.5
	6.8	8.0
	6.7	8.0

**Job matching (JM):** Process of aligning a person's work-related capabilities and characteristics with the demands and characteristics of their job



## Relevance of JM

- Organizational psychology: Recruitment and personnel selection (Schuler, 2000)
- Vocational psychology: Career selection and counseling (Fouad, 2001; Gati, 2013)
- Return to work (RTW): Goal setting, attainment and evaluation in vocational rehabilitation (VR) (Homa, 2007) ; job placement and sustainable RTW (Zoer et al., 2012; de Jong, 2011)



- Extensive amount of JM research in organizational and vocational psychology
- Lack of JM research in RTW

## Currently available JM tools have shortcomings

- *They are not health condition-specific:* Work-related needs and limitations of persons with a particular disability are not included
- *They are not occupation-specific:* Demands and characteristics of particular occupations are not described
- *They are not comprehensive:* Not all aspects that are relevant for describing a person-job match are addressed (e.g., interests, work environment)

## Objective

To develop and pretest an occupation-specific JM tool for VR by using persons with spinal cord injury (SCI) as a case in point

- SNSF-funded project



- Integrating JM approaches from RTW and organizational/vocational psychology

# Development of the JM tool

How is JM defined in different research fields; what aspects are relevant for JM in VR?

	ERP	VP	RTW
Theories / approaches	<ul style="list-style-type: none"> <li>• Single fit views</li> <li>• Person-environment (PE)</li> <li>• Person-organization (PO)</li> <li>• Person-job (PJ)</li> <li>• Person-individual fit (PI)</li> <li>• Interaction and compensation (Schneiders, 1987)</li> <li>• Multilevel fit approach (overall fit, separation) (Janaki &amp; Kruger, 2016)</li> </ul>	<ul style="list-style-type: none"> <li>• Person-organization (PO) fit</li> <li>• Fit theory of Kaplan (Kaplan, 1985)</li> <li>• Theory of fit adjustment (Jickel, 1988)</li> <li>• Multidimensional approach (Jin et al., 2020)</li> </ul>	<ul style="list-style-type: none"> <li>• Health condition-specific needs and interventions (Kernaghan, 2004)</li> <li>• Workplace measures (Institute &amp; University, 2004; Bygoneski et al., 2015)</li> </ul>
JM aspects	Ability, knowledge, skills, needs, characteristics, values, competencies	Workplace, interests, abilities, steps, training, education, skills, knowledge, values	Health condition-specific needs, workplace environment, broader environment (private, social, medical care)
Strength of influence of JM aspects	Directly influencing JM aspects	Directly influencing JM aspects	Directly and indirectly influencing JM aspects
Work feasibility	Access, workplace	Human assets	Workplace
Workplace is modified?	Person	Occupation/Organization	Environment



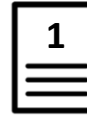
Directly job-related

		Directly job-related			
		PERSON	JOB/WORK CONTEXT		
stable	Abilities		Req. abilities	stable	
	Vocational interests		Req. vocational interests		
	Work values		Req. work values		
	Work styles		Req. work styles		
modifiable	Education		Req. education	modifiable	
	Experience		Req. experience		
	Skills		Req. skills		
	Knowledge		Req. knowledge		
	Work activities		Req. work activities		
needs	Work functioning		Req. work functioning	Supplies	
	Needs (general)		Work context (occupational)		
	Needs (health condition-specific)		Organizational context Workplace		

Req. = required

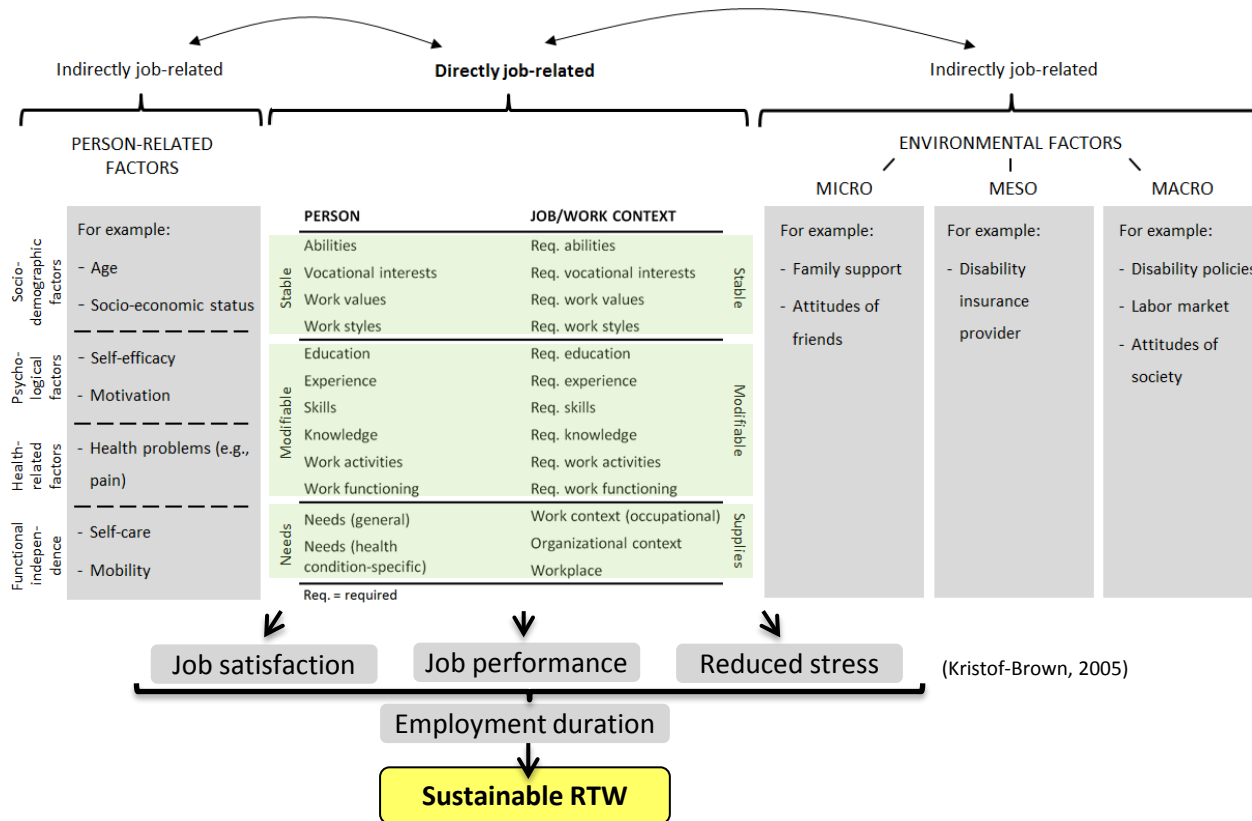
Conceptual framework for JM in RTW  
(= structure of the JM tool)

## Conceptual part



Scoping review on JM  
(Nützi et al., 2017)

# Conceptual framework for JM in RTW





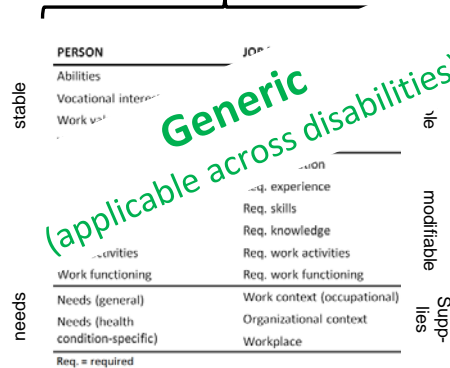
# Development of the JM tool

How is JM defined in different research fields; what aspects are relevant for JM in VR?

	HRP	VP	HRP
Theories / Approaches	<ul style="list-style-type: none"> <li>Single fit views</li> <li>Person-environment (PE)</li> <li>Person-organization (PO)</li> <li>Person-job (PJ)</li> <li>Person-group (PG)</li> <li>Person-individual job fit</li> <li>Interactionist and transactional (Schneiders, 1987)</li> <li>Multilevel fit approach (overall fit, adaptation) (Janak &amp; Kruger-Brown, 1986)</li> </ul>	<ul style="list-style-type: none"> <li>Person-occupation (PO) fit</li> <li>Fit theory of occupation (Ocasio (Bretzfeld), 1985)</li> <li>Theory of Work Adjustment (Jahoda, 1988)</li> <li>Multidimensional approach (Ja et al., 2002)</li> </ul>	<ul style="list-style-type: none"> <li>Health condition-specific needs and interventions (Kernaghan, 2004)</li> <li>Occupational demands (Indurkhya &amp; Brasher, 2004)</li> <li>Byrne et al., 2005</li> </ul>
JM aspects	Ability, knowledge, skills, personality, interests, intelligence	Workload, interests, abilities, stress, resources, education, knowledge, values	Health condition-specific needs, resources, environment, broader environment (social, moral, religious)
Strength of influence of JM aspects	Directly influencing JM aspects	Directly influencing JM aspects	Directly and indirectly influencing JM aspects
Work feasibility	Access, workplace	Human stress	Workplace
Who/what is modified?	Person	Occupation/Organization	Environment

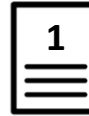


Directly job-related



Conceptual framework for JM in RTW (= structure of the JM tool)

## Conceptual part



1 Scoping review on JM (Nützi et al., 2017)



2 Developing an occupation-specific JM or VR of persons with SCI or observational case studies (Nützi et al. under review)



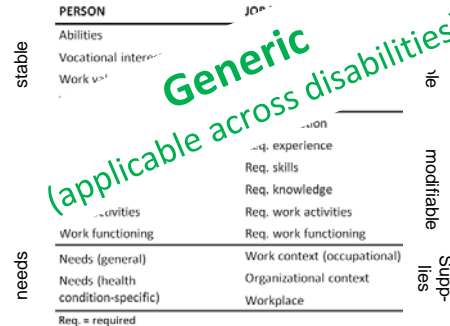
# Development of the JM tool

How is JM defined in different research fields; what aspects are relevant for JM in VR?

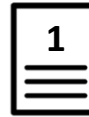
	HRP	VP	RTW
Theories / approaches	<ul style="list-style-type: none"> <li>Single fit views</li> <li>Person-environment (PE)</li> <li>Person-organization (PO)</li> <li>Person-job (PJ)</li> <li>Person-occupation (PO)</li> <li>Person-individual fit (PI)</li> <li>Interaction and compensation (Schwartz, 1987)</li> <li>Multilevel fit approach (overall fit, separation, person &amp; context) (Kossek, 1986)</li> </ul>	<ul style="list-style-type: none"> <li>Person-occupation (PO) fit</li> <li>Fit theory of occupation (Ocasio (Swanson), 1985)</li> <li>Theory of Work Adjustment (Jahoda, 1988)</li> <li>Multidimensional approach (Ja et al., 2002)</li> </ul>	<ul style="list-style-type: none"> <li>Health condition/occupational needs and interaction (Kossek, 2004)</li> <li>Occupational demands (Bryman et al., 2005)</li> </ul>
fit aspects	Ability, knowledge, skills, needs, characteristics, values, competencies	Individual interests, abilities, deep interests, education, skills, knowledge, values	Health condition/occupational needs, interests, experiences, broader environment (social, moral, religious)
Strength of influence of fit aspects	Directly influencing fit aspects	Directly influencing fit aspects	Directly and indirectly influencing fit aspects
Work/facility	Job, workplace	Home, office	Workplace
Individual is modified	Person	Occupation/Organization	Environment

Directly job-related

Conceptual framework for JM in RTW (= structure of the JM tool)



## Conceptual part

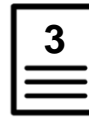


Scoping review on JM (Nützi et al., 2017)



JM in VR of persons with SCI (observational case studies; Nützi et al. under review)

## Content-related part



Demands and characteristics of occupations performed by persons with SCI (data base analysis; Nützi et al, 2017)

## Occupation-specific information

Occupations performed by  
persons with SCI



**Data from Swiss SCI  
community survey 2012**

Comprehensive description of demands and  
characteristics of identified occupations



**O\*NET (Occupational  
Information Network)**  
Comprehensive occupational  
information system from US

**berufsberatung.ch**  
Swiss occupational  
information system

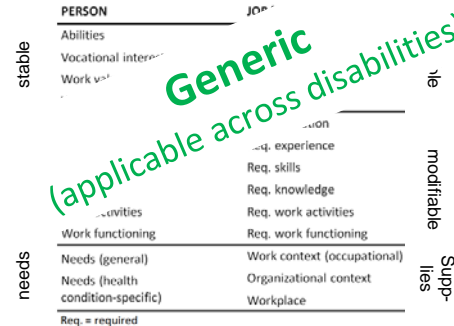
# Development of the JM tool

How is JM defined in different research fields; what aspects are relevant for JM in VR?

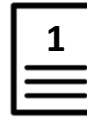
	HRP	VP	RTW
Theories / approaches	<ul style="list-style-type: none"> <li>Single fit views</li> <li>Person-environment (PE)</li> <li>Person-organization (PO)</li> <li>Person-job (PJ)</li> <li>Person-group (PG)</li> <li>Person-individual job fit</li> <li>Interactionist and transactional (Schneiders, 1987)</li> <li>Multilevel fit approach (overall fit, separation, person &amp; group fit) (Kossek, 1986)</li> </ul>	<ul style="list-style-type: none"> <li>Person-occupation (PO) fit</li> <li>Fit theory of occupation (Ocasio (Sexton), 1985)</li> <li>Theory of fit: Adjustment (Jehlich, 1988)</li> <li>Multidimensional approach (Ja et al., 2002)</li> </ul>	<ul style="list-style-type: none"> <li>Health condition (HC), needs and limitations (perceptions, SSOB)</li> <li>Occupational demands (tasks, conditions, demands, resources, SSOB)</li> <li>Work environment (tasks, demands, resources, SSOB)</li> <li>Person-environment (PE) fit</li> </ul>
JM aspects	Ability, knowledge, skills, needs, characteristics, skills, competences	Workload, interests, abilities, stress, interests, abilities, skills, knowledge, values	Health condition (HC), needs, limitations, environment, broader environment (tasks, demands, resources)
Strength of influence of JM aspects	Directly influencing JM aspects	Directly influencing JM aspects	Directly and indirectly influencing JM aspects
Workability	Task, workplace	Home tasks	Workplace
Individual fit/modifier	Person	Occupation/Organization	Environment

Directly job-related

Conceptual framework for JM in RTW  
(= structure of the JM tool)



## Conceptual part

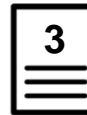


Scoping review on JM  
(Nützi et al., 2017)

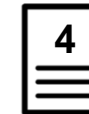


JM in VR of persons with SCI  
(observational case studies;  
Nützi et al. under review)

## Content-related part



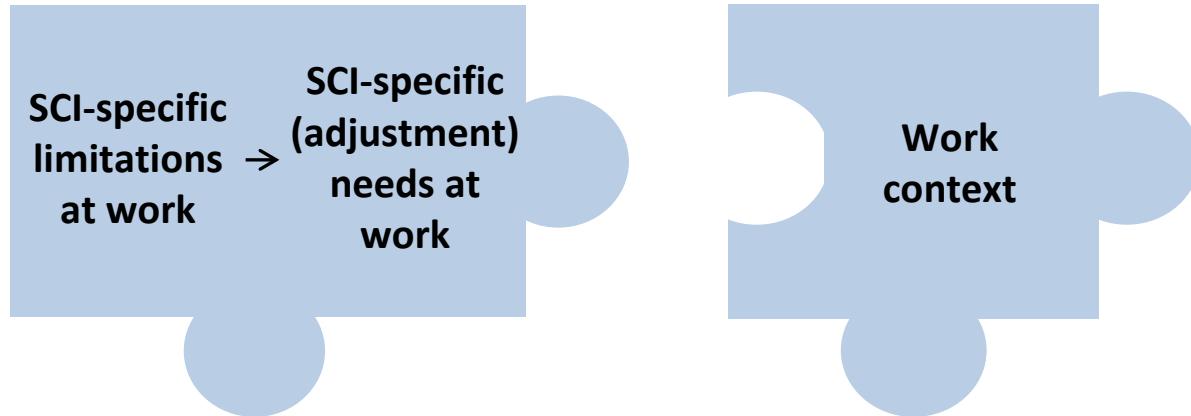
Demands and characteristics of occupations  
performed by persons with SCI  
(data base analysis; Nützi et al, 2017)



Needs, limitations and environmental factors  
influencing RTW and employment of persons  
with SCI  
(focus groups; Schwegler et al, in progress)

## Health condition-specific information

→ Focus group interviews with persons with SCI



### Example:

Problems with bladder/bowel management and work endurance → Need for flexible working hours that should be met by the organization

# Development of the JM tool

How is JM defined in different research fields; what aspects are relevant for JM in VR?

ICF	OP	RTW
<p>Domain 1 (Activities)</p> <ul style="list-style-type: none"> <li>- Single vs. double</li> <li>- Performance (P), Participation (P), Role (R)</li> <li>- Performance (P), Participation (P), Role (R)</li> <li>- Performance (P), Participation (P), Role (R)</li> <li>- Performance (P), Participation (P), Role (R)</li> </ul>	<p>Performance (P), Participation (P), Role (R)</p> <ul style="list-style-type: none"> <li>- Theory of cognitive task design (JCS, 1984)</li> <li>- Theory of work adjustment (Davis, 1984)</li> <li>- Multi-dimensional approach (Bjork et al., 2002)</li> </ul>	<p>Health condition-specific, needs and interests (Schwegerler, 2008)</p> <ul style="list-style-type: none"> <li>- Biopsychosocial framework (Schwegerler &amp; Krumm, 2008)</li> </ul>
<p>Job aspects</p> <ul style="list-style-type: none"> <li>- Job design</li> <li>- Job demands</li> <li>- Job resources</li> <li>- Job characteristics</li> <li>- Job requirements</li> <li>- Job constraints</li> <li>- Job conditions</li> <li>- Job environment</li> <li>- Job context</li> <li>- Job structure</li> <li>- Job content</li> <li>- Job tasks</li> <li>- Job roles</li> <li>- Job functions</li> <li>- Job responsibilities</li> <li>- Job objectives</li> <li>- Job outcomes</li> <li>- Job impacts</li> <li>- Job effects</li> <li>- Job consequences</li> <li>- Job results</li> <li>- Job achievements</li> <li>- Job accomplishments</li> <li>- Job successes</li> <li>- Job failures</li> <li>- Job setbacks</li> <li>- Job challenges</li> <li>- Job opportunities</li> <li>- Job risks</li> <li>- Job hazards</li> <li>- Job dangers</li> <li>- Job threats</li> <li>- Job dangers</li> <li>- Job risks</li> <li>- Job hazards</li> <li>- Job dangers</li> <li>- Job threats</li> </ul>	<p>Job design, Job demands, Job resources, Job characteristics, Job requirements, Job constraints, Job conditions, Job environment, Job structure, Job content, Job tasks, Job roles, Job functions, Job responsibilities, Job objectives, Job outcomes, Job impacts, Job effects, Job consequences, Job results, Job achievements, Job accomplishments, Job successes, Job failures, Job setbacks, Job challenges, Job opportunities, Job risks, Job hazards, Job dangers, Job threats</p>	<p>Health condition-specific, needs and interests (Schwegerler, 2008)</p> <ul style="list-style-type: none"> <li>- Biopsychosocial framework (Schwegerler &amp; Krumm, 2008)</li> </ul>
<p>Management of balance of all aspects</p> <p>Stability: balancing job aspects</p>	<p>Stability: balancing job aspects</p>	<p>Stability: balancing job aspects</p>
<p>Healthability</p> <p>Stable, modifiable</p>	<p>Stable, modifiable</p>	<p>Stable, modifiable</p>
<p>Healthability to maintain</p> <p>Stable</p>	<p>Stable, modifiable</p>	<p>Stable, modifiable</p>

Directly job-related

	PERSON	JOB/WORK CONTEXT	
stable	Abilities	Req. abilities	stable
	Vocational interests	Req. vocational interests	
	Work values	Req. work values	
	Work styles	Req. work styles	
	Education	Req. education	
	Experience	Req. experience	
	Skills	Req. skills	
	Knowledge	Req. knowledge	
	Work activities	Req. work activities	
	Work functioning	Req. work functioning	
need	Needs (general)	Work context (occupational)	Support- lies
	Needs (health condition-specific)	Organizational context	
		Workplace	
	Req. = required		

Development JM tool prototype

## Conceptual part

- 1 Scoping review on JM (Nützi et al., 2017)
- 2 JM in VR of persons with SCI (observational case studies; Nützi et al. under review)

## Content-related part

- 3 Demands and characteristics of occupations performed by persons with SCI (data base analysis; Nützi et al, 2017)
- 4 Needs, limitations and environmental factors influencing RTW and employment of persons with SCI (focus groups; Schwegler et al, in progress)

## Technical part

- 5 Matching profiles and rating scale

# JM tool prototype - Profile

## Sales Manager/in

→ Currently selected person profile rated by: VR professional X

Work styles	Person profile (0=not present, 10=highly pronounced)		Mis-match	Person profile Rated by: VR professional X (0=not present, 10=highly pronounced)		Person profile Rated by: VR professional Y (0=not present, 10=highly pronounced)	
	Person profile	Job profile (0=not relevant, 10=extremely relevant)		Person profile	Person profile		
<b>Achievement Orientation</b>	6.0	9.0	x	6.0	7.3		
Initiative	8	10	x	8	8		
Achievement/Effort	4	8	x	4	6		
Persistence	6	9	x	8	8		
<b>Social Influence</b>	8.0	8.0		8.0	8.0		
Leadership	8	8		8	8		
<b>Interpersonal Orientation</b>				6.7	6.7		
Cooperation	8	8		8	8		
Social Orientation	7	7		7	7		
Concern for Others	5	5		5	5		
<b>Adjustment</b>				7.0	7.0		
Stress Tolerance	8	8		8	8		
Adaptability/Flexibility	7	9	x	7	7		
Self Control	6	8	x	6	6		
<b>Conscientiousness</b>	8.3	8.3		8.3	8.5		
Attention to Detail	8	6	!	8	8		
Dependability	8	9		8	8		
Integrity	9	10		9	9		
<b>Independence</b>	4.0	8.0	x	4.0	5.0		
<b>Practical Intelligence</b>	8.5	6.0	!	8.5	8.0		
Analytical Thinking	8	6	!	8	8		
Innovation	9	6		9	8		

Detailed profiles are currently available for 415 occupations

# Pretest of the JM tool prototype

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To pretest the tool's usability and potential applicability

- **Simulation exercise with 11 VR experts from the Swiss Paraplegic Center** (vocational counselors, job coaches, vocational teachers, occupational therapists, neuropsychologist) who applied the tool prototype on current RTW cases.
- **Semi-structured questionnaires and group discussions** to establish the VR experts' user experience and evaluation of the tool's potential applicability in VR



## Results from pretest

- ☺ Determination of suitable jobs for a vocational retraining
- ☺ Interdisciplinary planning of vocational interventions
- ☹ Determination whether a client can return to pre-injury job → *work activities should be described on a work functioning level*
- ☹ Not all occupations available in the Swiss labor market are included
- ☹ Unclear how to transfer results from vocational assessments in to the scale of 0-10

## Practical implications

### *Determination of suitable target occupations*

- for a vocational retraining as part of vocational rehabilitation
- beyond the RTW context in career counseling in the community

## Research implications

- (1) Development of a web-version and *practical validation*
- (2) Examination of the *predictive validity* of the JM tool
- (3) Scaling up: extending JM tool to other disabilities, other countries and settings

# Conclusion

- Development of a comprehensive JM tool using an interdisciplinary approach and in close collaboration with VR practice
- *Conceptual JM framework*: Generic blueprint for JM in RTW of persons with disabilities
- *JM tool*: Determination and attainment of well-matching jobs towards a sustainable RTW for persons with SCI



# Thank you for your attention!

