

Development and evaluation of the Sherbrooke model

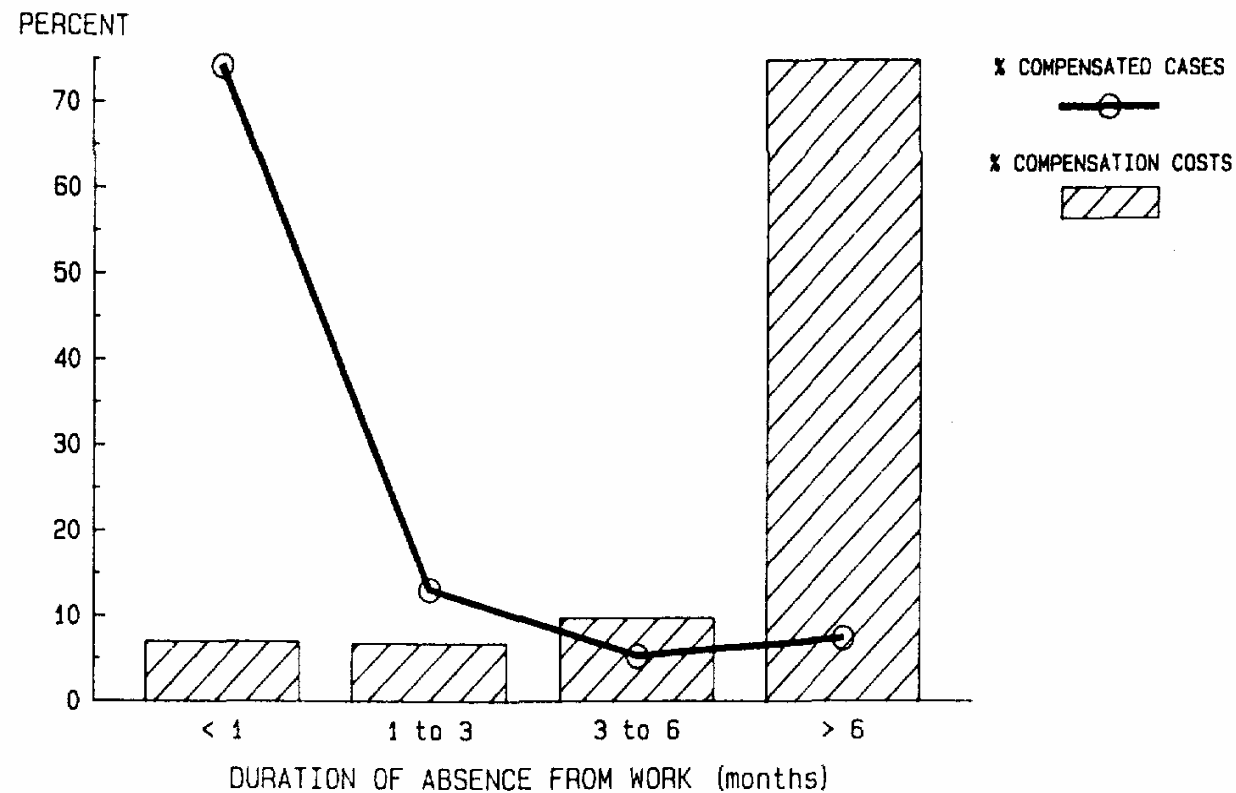


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February 18th, 2009



Rationale for the study

- Québec task force





Alf Nachemson

- *Work* for all. For those with low back pain as well (Clinical Orthopaedics, 1983)
- Gives a start to research on LBP disability



Rationale for the study

- Bulk of the costs for non specific back pain is related to prolonged disability
- Disability from back pain has multiple causes (physical, psycho-social, occupational, administrative)
- Appropriate management in disability prevention is required



Rationale for the study: Québec task force

- Recommendations:
 - Advice of a medical specialist after 7 weeks of absence from work
 - Active treatment after 8 weeks
 - If no improvement, early vocational rehabilitation and ergonomics intervention



Building a disability prevention program

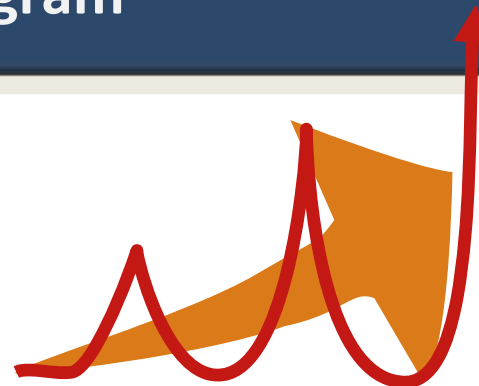
1990:

Design a workdisabilityprevention program:

- fromevidenceatthat time
- available to a population of workers
- compatible with provincial law
- involvingstakeholders

Assess the program

Québec task force



Evidence



The Sherbrooke Model

Step 1: Design

Evidence

- ❑ Multidisciplinary rehabilitation programs using physical fitness and work conditioning along with cognitive-behavioural approach was effective (Mayer et al., 1985).
- ❑ Appropriate management in collaboration with attending physicians was effective in a large industrial settlement (Wiesel et al., 1984).
- ❑ Jobsite problems are associated to back pain and possibly to prolonged disability (Spitzer, 1987)



The Sherbrooke Model

Step 2: Modelization

Step0

Detection of cases atrisk of chronicity

4 weeks

From 31 workplaces in the
Sherbrooke area



The Sherbrooke Model

Step 2: Modelization

Step1

Worksite intervention

6-10 weeks

Occupationalphysician

Participatoryergonomics



The Sherbrooke Model

Step 2: Modelization

Step2

Diagnosis and back school

8-12 weeks

Back pain specialist

Back School



The Sherbrooke Model

Step 2: Modelization

Step 3

Early rehabilitation

13-26 weeks

Functional rehabilitation therapy+
therapeutic return to work

Management and prognosis by
multidisciplinary team



The Sherbrooke Model Step 2: Modelization

End Issue

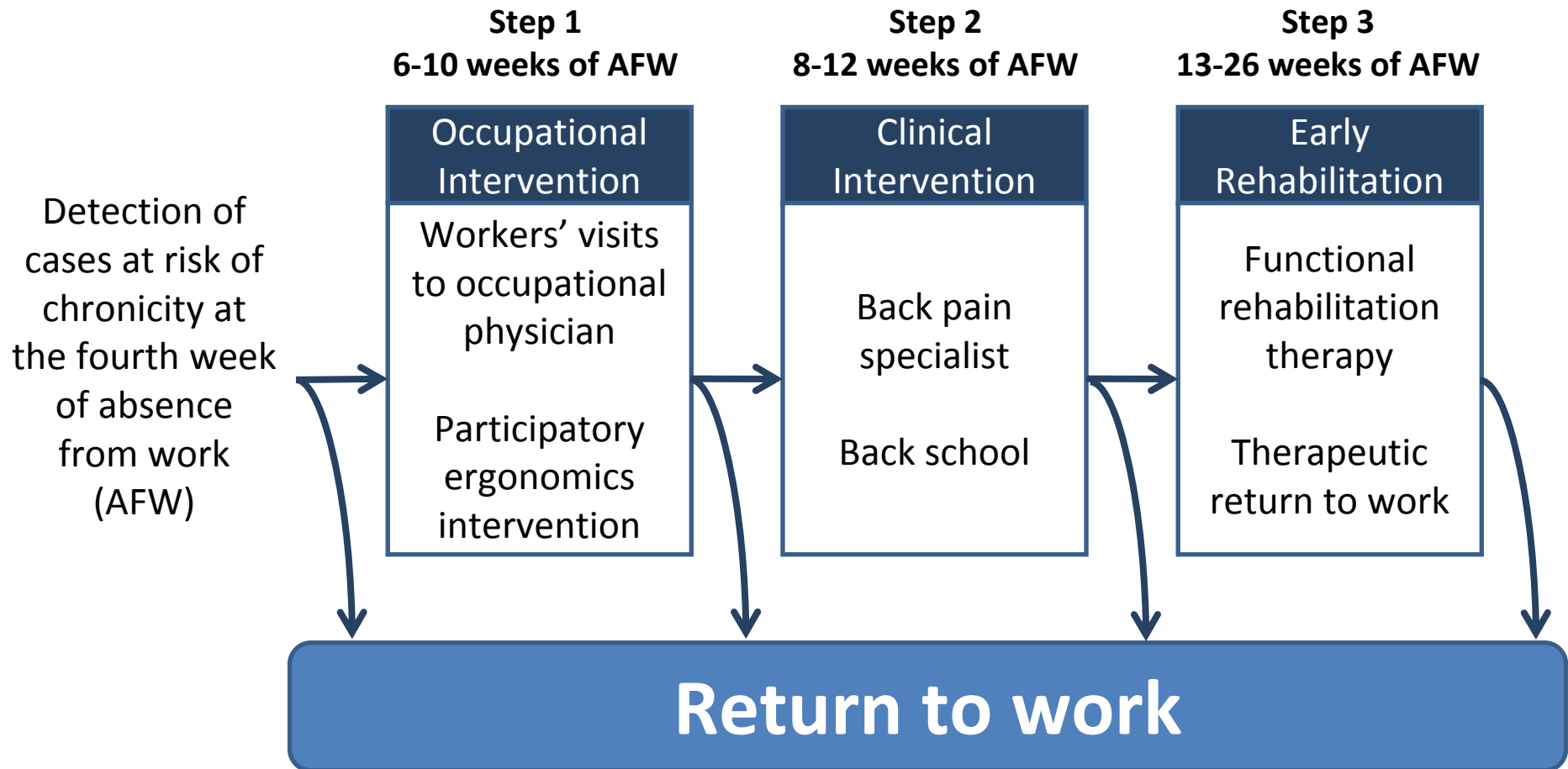
Before 6 months

Return to previous work possibly modified by
ergonomic intervention

If not possible: early vocational rehabilitation



The Sherbrooke model



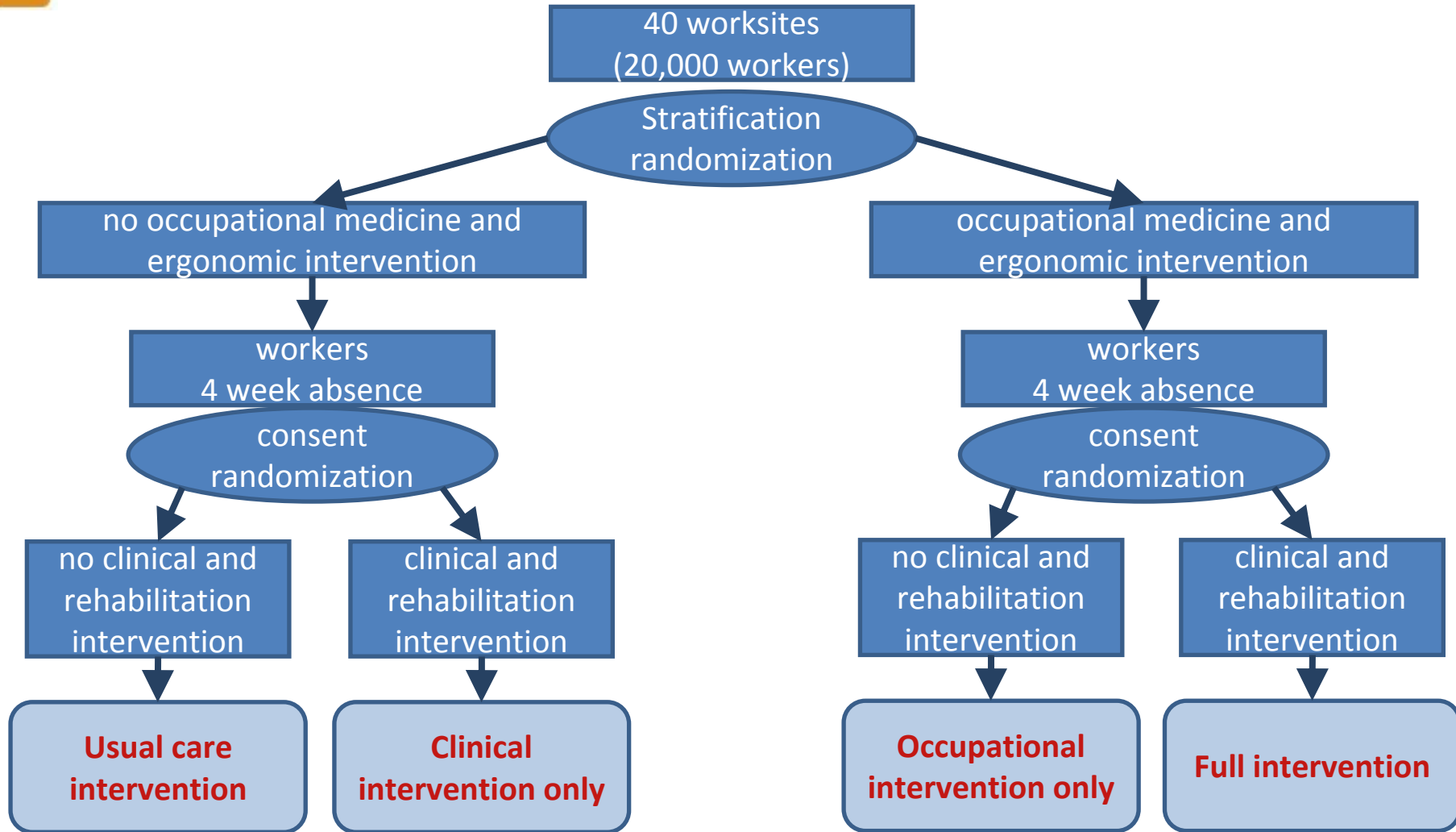


Study design

- Population based randomized clinical trial
- All workplaces > 175 workers, < 30 km around the study back pain clinic
- Workers from these workplaces absent from regular work > 4 weeks and compensated for occupational back pain



Randomization





Basic principles from the Sherbrooke Model

- Early detection of cases (42 days)
- Early reassurance
- Link with workplace
- Avoid unnecessary interventions
 - 37 upon 47 randomized in occup. & model arms received ergonomics
 - 16 upon 56 randomized in clinical & model arms received TRW
- Work rehabilitation interventions quickly available when needed



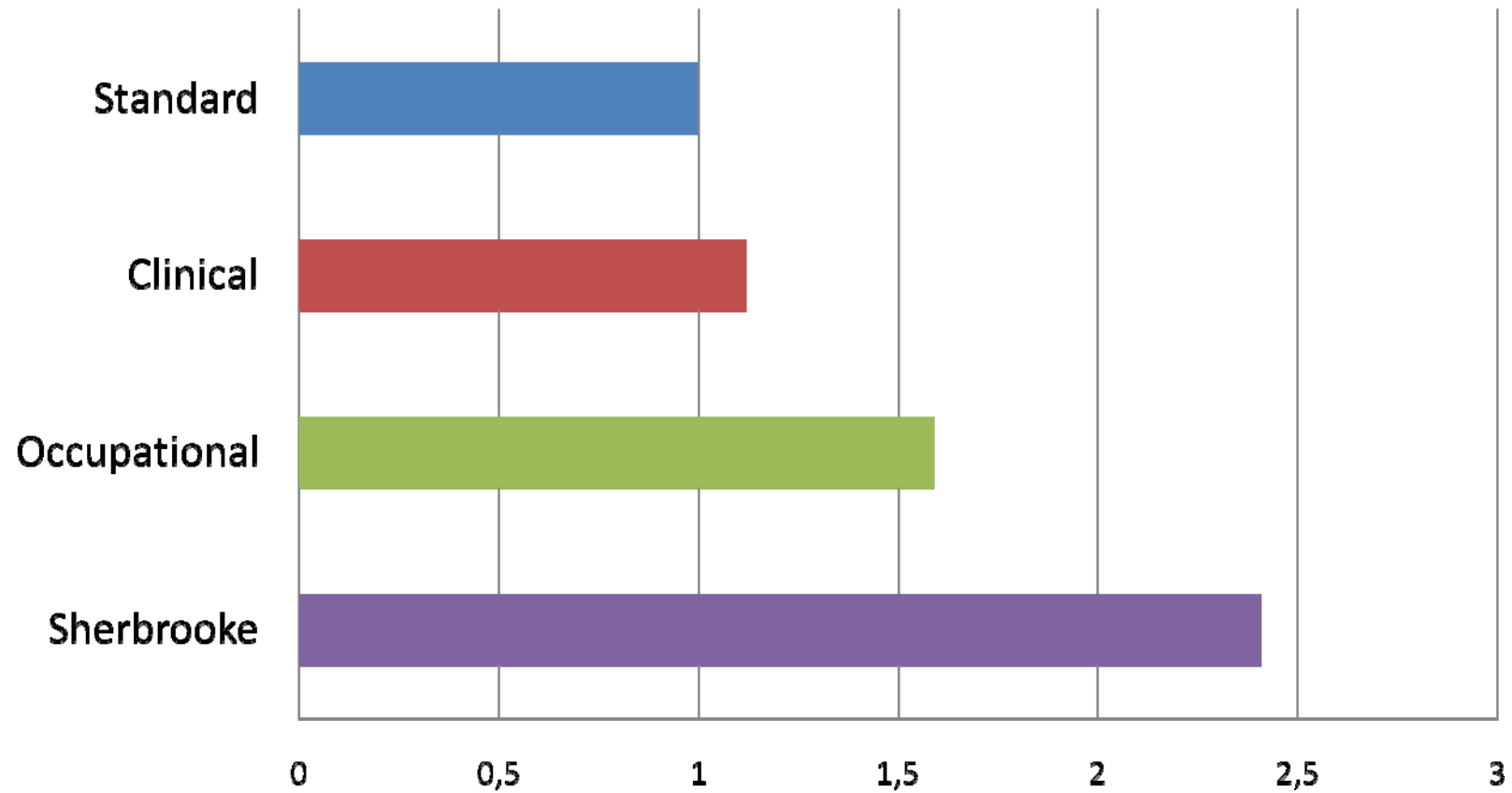
Results on return to regular work: 1 year follow-up (Spine, 1997)

- Occupational intervention alone was effective
- Clinical intervention alone was not effective
- Combination of both (Sherbrooke model) was the most effective



Results on return to regular work: 1 year follow-up (Spine, 1997)

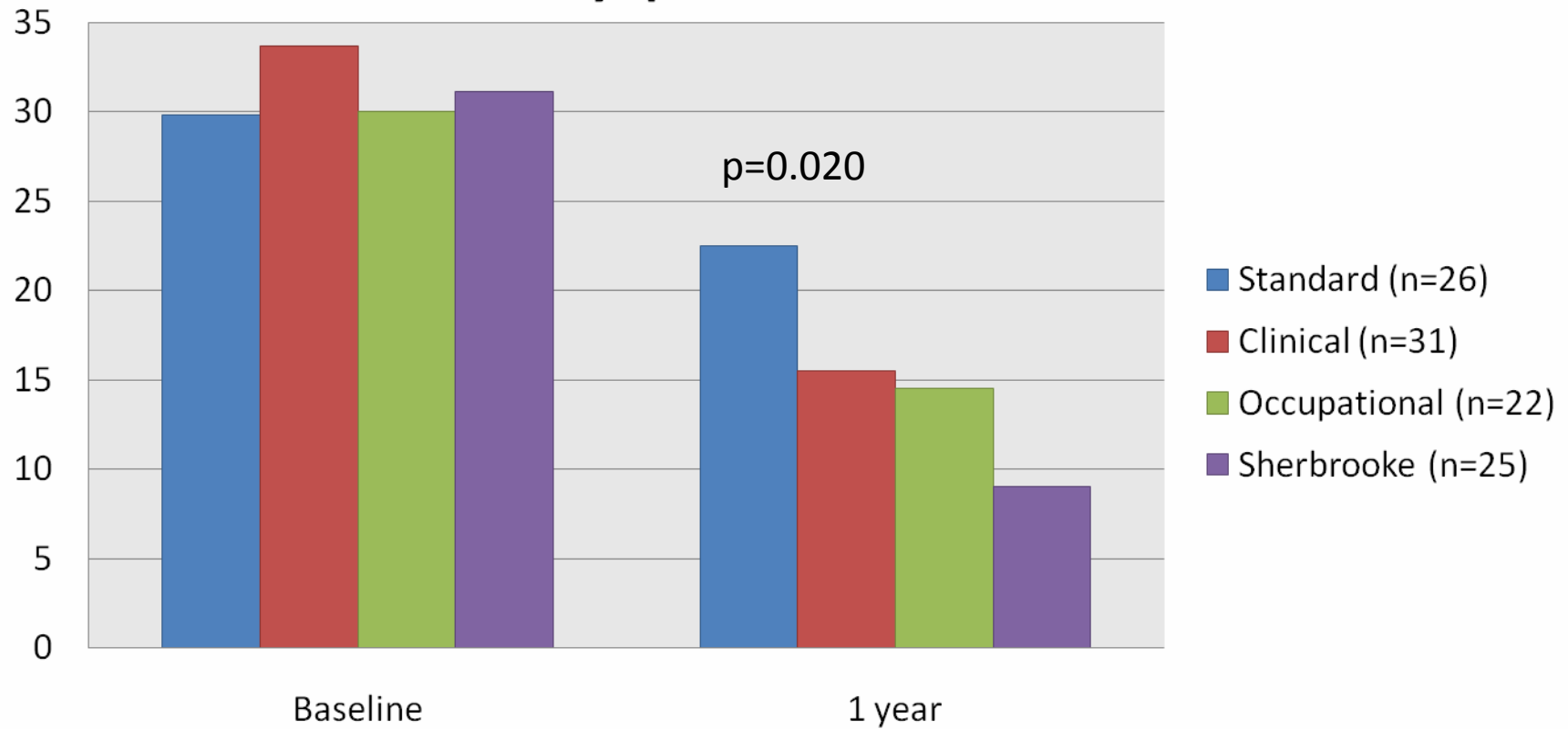
Rate ratio (Cox Model) of return to regular work





Functional status (Spine, 1997)

Functional status Oswestry questionnaire





Therapeutic return to work

- Efficacy of TRW
 - 28 workers with back pain
 - 3 to 6 months of absence from regular work
 - Mean follow-up: 18 months
 - 26 working
 - 1 non working (non back related)
 - 1 lost to follow-up



Cost-benefit analysis: methods

- Single WCB in Quebec (CSST)

- CSST pays to compensated workers:
 - non taxable 90 % of after tax income
 - all healthcare costs
 - vocational rehab if needed
 - disability pension if permanent restrictions are attributed (difference between pre-accident salary and estimated post accident possible income)



Cost-benefit analysis: methods

- **Costbenefitfrom the WCB perspective**
 - CSST files were opened for the 104 randomized workers from the accident to December 31, 1998
 - All recorded costs were obtained for analysis
 - All recurrent episodes of back pain were retained



Cost-benefit analysis: methods

- **Intervention costs:** all costs (mainly healthcare) paid during the 1st year following the work accident
 - Costs usually paid by the CSST
 - Additional costs due to experimental interventions:
 - study physicians
 - costs of participatory ergonomics interventions
 - costs of work rehabilitation interventions
 - Costs of job modifications (paid by employers) not included



Cost-benefit analysis: methods

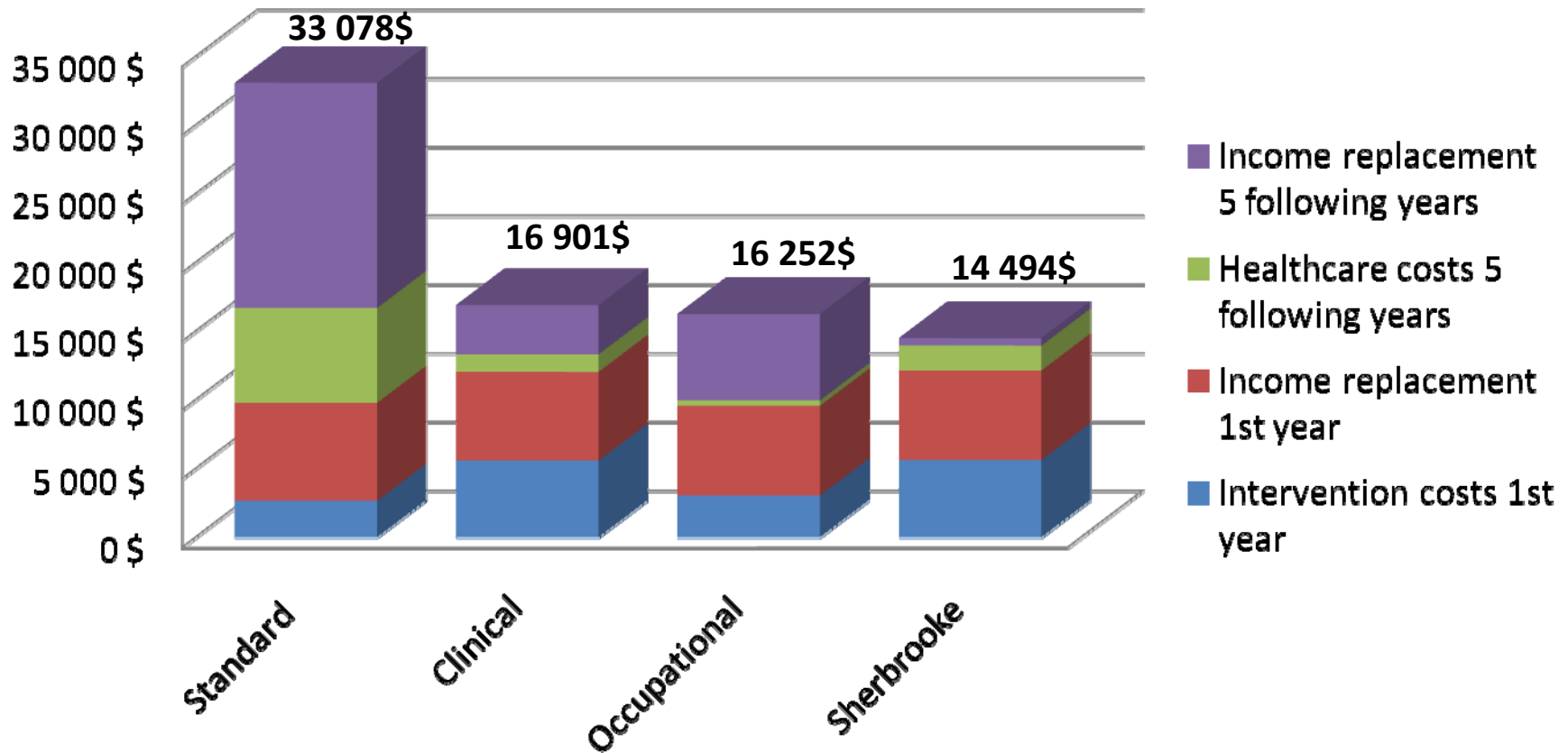
- To allow comparison between arms, adjustment was made for:
 - wage replacement amount (depending on salary before accident)
 - inflation: 1998 CAN \$

- Mean follow-up: 6.4 years



Cost-benefit analysis: results (6 year follow-up)

Mean costs per worker



1998 \$CAN



Cost-benefit analysis: results

- In the Sherbrooke model arm:

**each 100 \$ invested the 1st year
in additional intervention costs
returned 562 \$ in the five following years**



Cost-effectiveness analysis: results

- In the Sherbrooke model arm:

**293 days of compensation were saved
in six years**



Discussion

- Early management (mean= 42 days) of occupational back pain cases with a multidisciplinary team **linking occupational intervention with appropriate clinical care** was:
 - effective on return to regular work
 - cost effective



Dutch study

Multidisciplinary rehabilitation for subacute low back pain: graded activity or workplace intervention or both? A randomized controlled trial

Anema JR, Steenstra IA, Bongers PM, de Vet HC, Knol DL,
Loisel P, et al.

Spine. 2007;32(3):291-8



Dutch study

- Population-based randomized controlled trial

- Randomization:
 - Participants sick-listed 2 to 6 weeks (nonspecific LBP):
 - Workplace intervention (n=96)
 - Usual care (n=100)

 - Participants still sick-listed at 8 weeks:
 - Graded activity (n=55)
 - Usual care (n=57)

- Outcomes (assessed at baseline & 12, 26, 52 weeks):
 - Lasting return to work, Pain intensity, Functional status

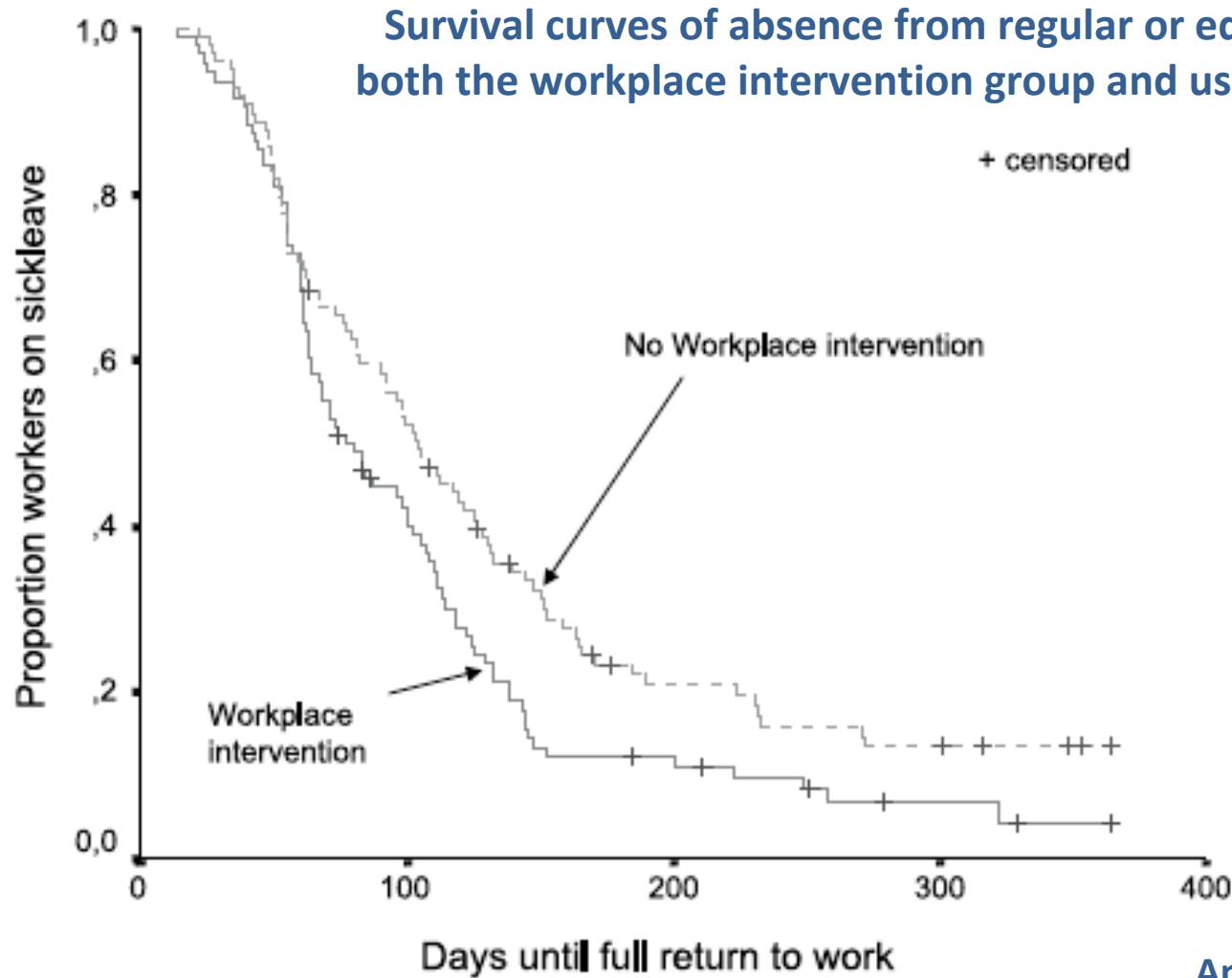


Dutch study: Multidisciplinary Rehabilitation for Subacute LBP: Graded Activity or Workplace Intervention or Both?

- Time until return to work:
 - Workplace intervention: 77 days
 - No workplace intervention: 104 days
- **Workplace intervention: positive** effect on return to work
- **Graded activity: negative** effect on return to work and functional status.
- **Combined interventions: no** effect on return to work



Dutch study: Multidisciplinary Rehabilitation for Subacute LBP: Graded Activity or Workplace Intervention or Both?

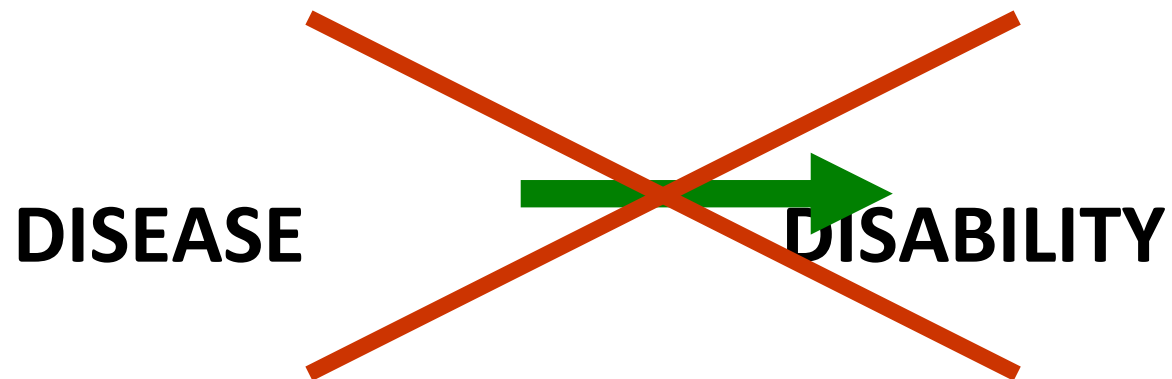


Anema et al. (2007)



Classic disease model

Curing the disease will avoid disability

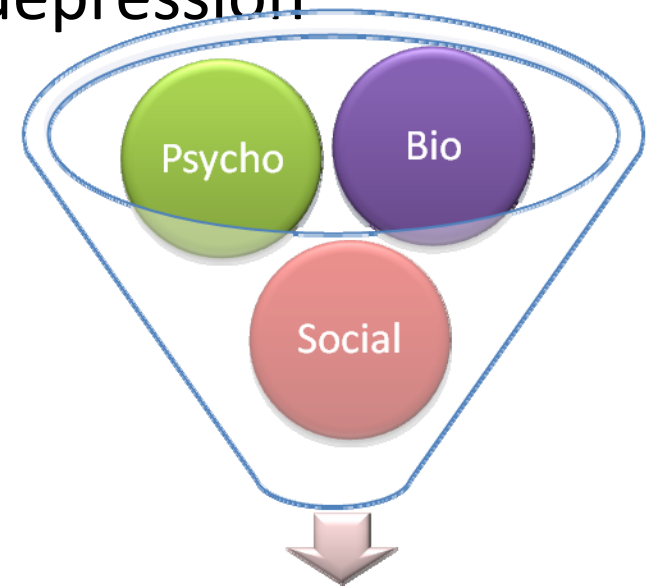


Why?



Determinants of Work Disability

- Biological factors
 - e.g. medical status, physical capacity
- Psychological factors
 - e.g. fear, anxiety, motivation, depression
- Social factors
 - e.g. work environment, family





Determinants of Work Disability

- Linked to the patient/worker:
 - Catastrophism
 - Inappropriate fears and beliefs
 - Loss of self efficacy
 - Disability perception
 - Little hope of healing

(Burton 1995; Cole 2002; Crook 1998; Dionne 2004; Feuerstein 1991; Haldorsen 1998; Jensen 1999; Klenerman 1995; Sandström 1986; Sullivan 1998; Tate 1999)



Representations

- Important to understand what motivates workers during the return-to-work process.
- Multi-dimensional:
 - cognitive and emotional representations
 - interactional: communicational and sociocultural factors
- Bridge the gap between a personalist (micro) approach and a socio-cultural (macro) approach



Determinants of Work Disability

- ORGANISATIONAL factors
 - Stress at work
 - Poor work satisfaction
 - High work demands (quantity, pace, monotonous,...)
 - Low control
 - Poor work relationship

(Bigos 1991; Coste 1994; Hemingway 1997; Infante-Rivard 1996; Krause 2001; Thomas 1999; van der Weide 1999)



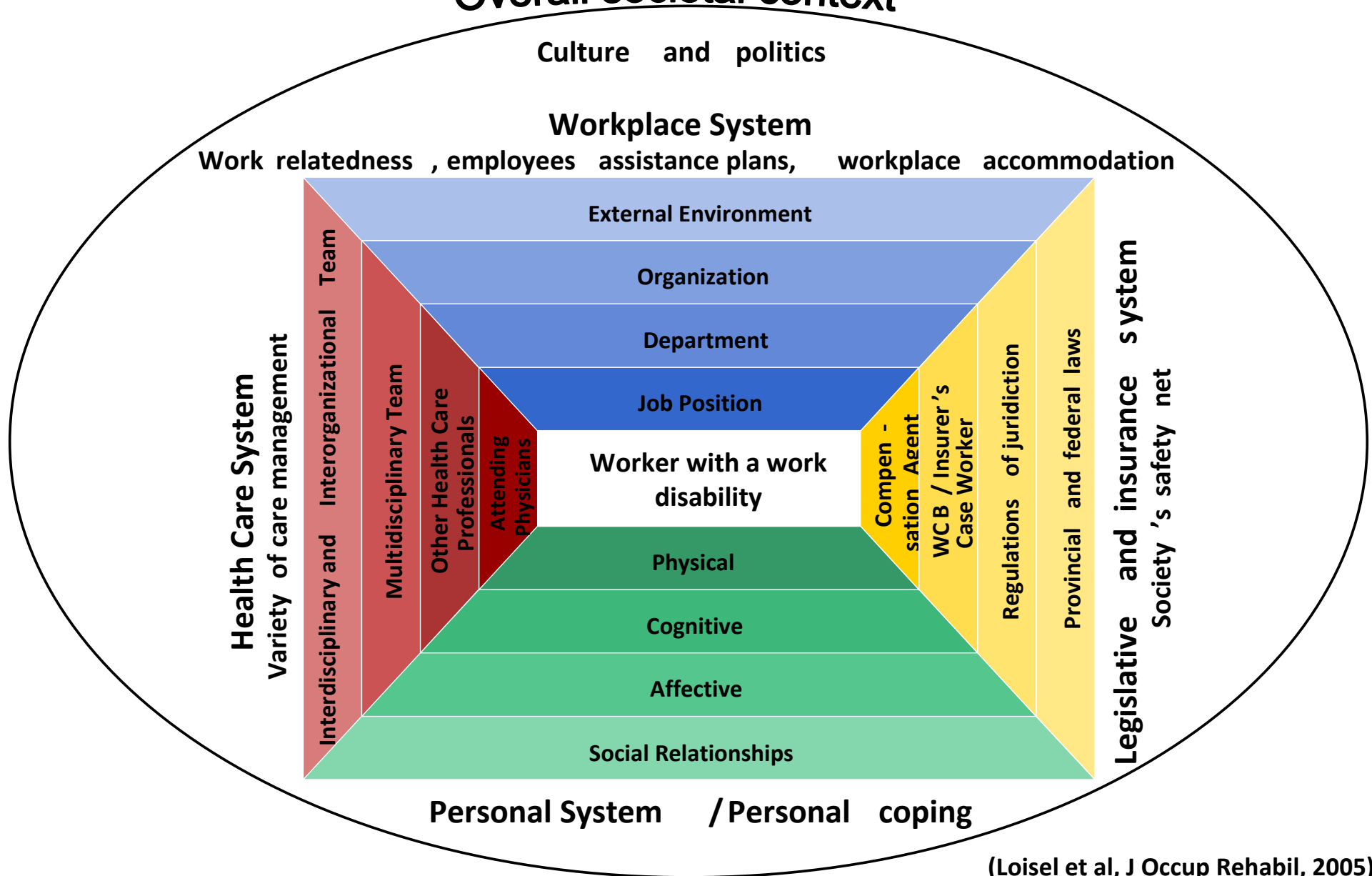
Determinants of Work Disability

- ADMINISTRATIVE factors
 - Compensation
 - Appeals

(Abenhaim et al, 1995; Baldwin et al, 1996; Butterfield et al,1998; Baril et al, 1994; Sinclair et al, 1997)

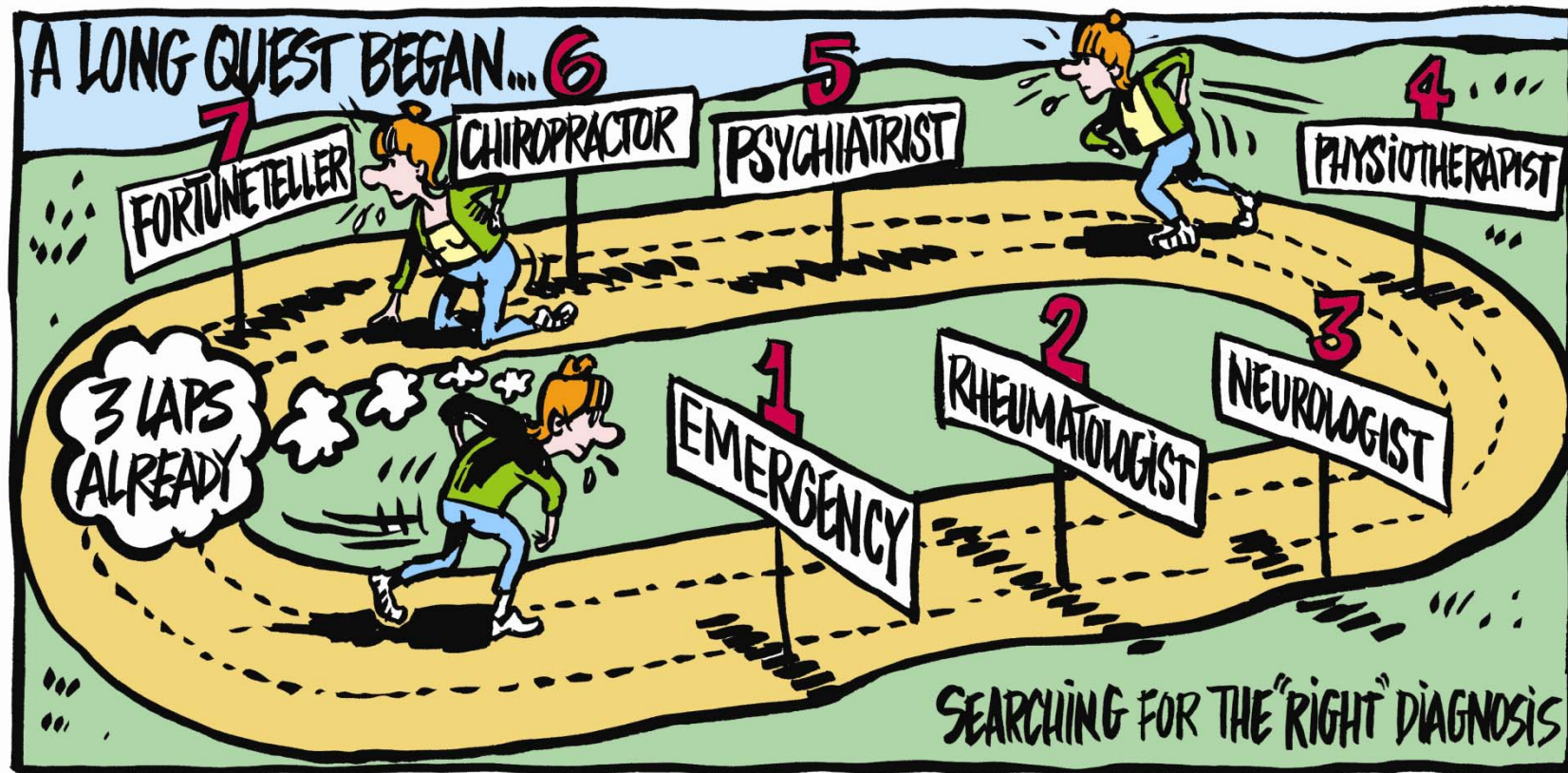
The Arena of Work Disability

Overall societal context



(Loisel et al, J Occup Rehabil, 2005)

Where to go? What to do? Who to believe?



Disability is not disease

**Treatments should be replaced
by management**

Implementation of the Sherbrooke model in the community: the PREVICAP program



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Pain vs disability vs time off work

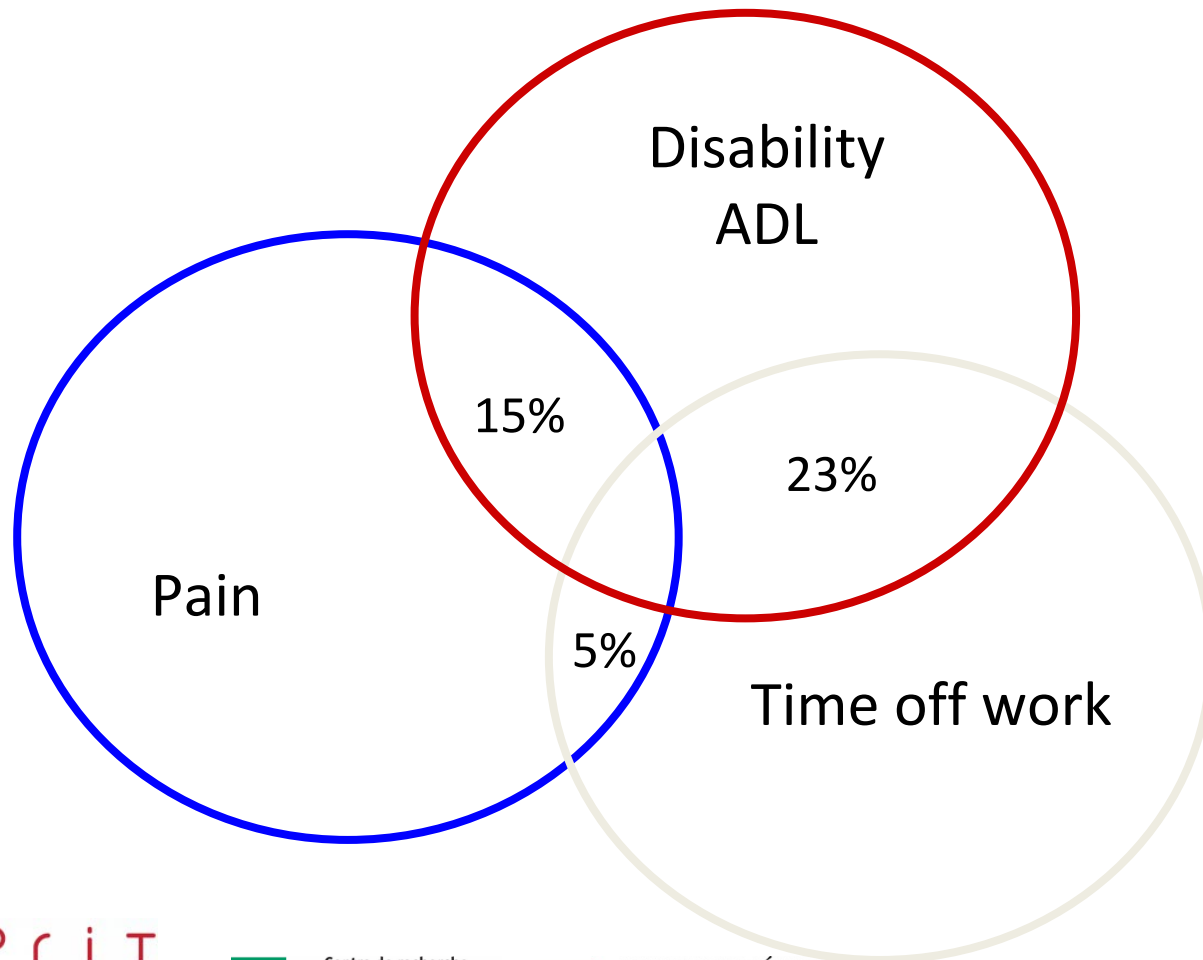


Figure adapted
de Waddel et al
2002



The PREVICAP program Design

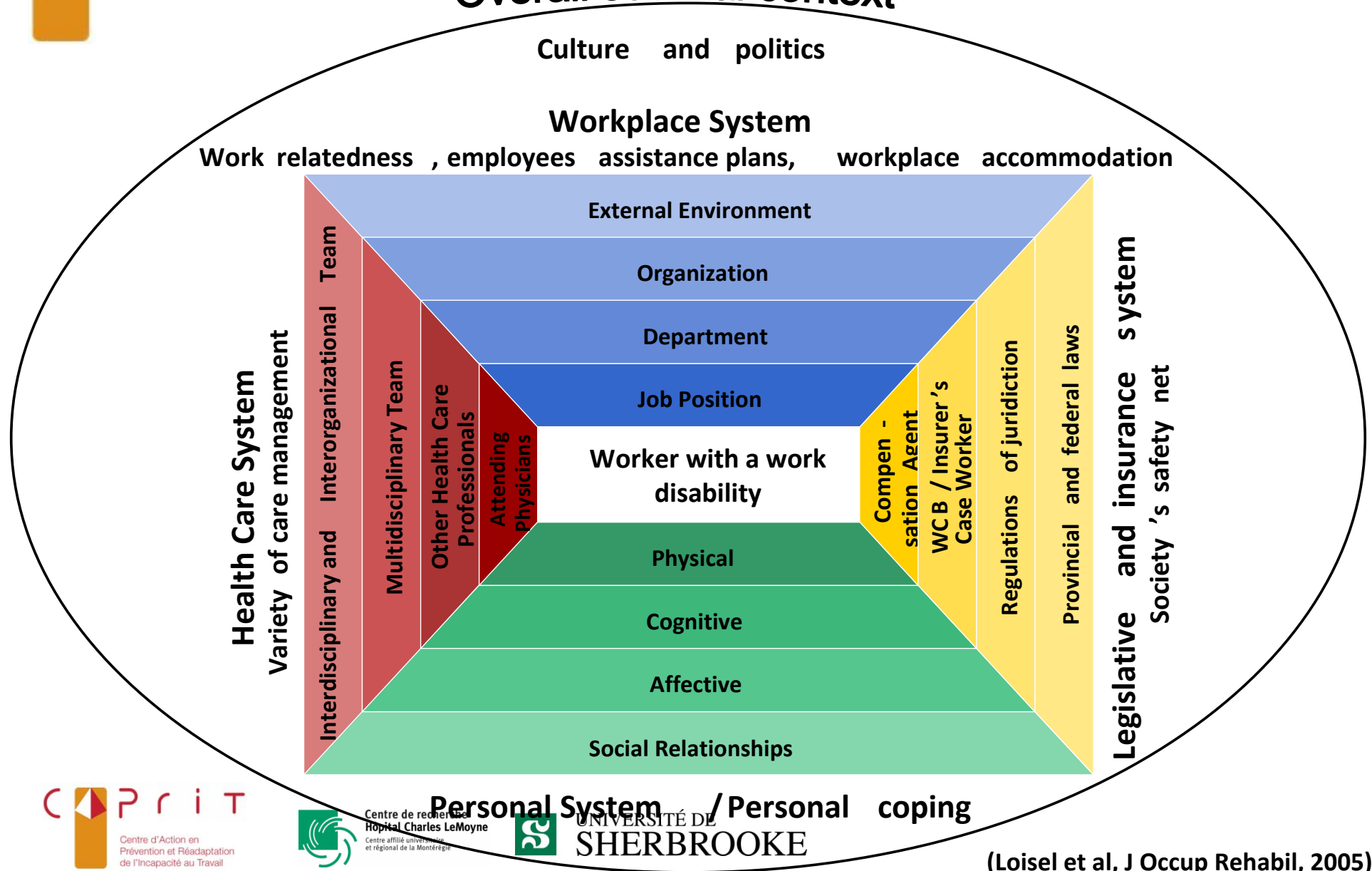
Evidence

- Developed from the Sherbrooke model by a panel of experts
- Aim: disability prevention
- Characteristics
 - ❑ interdisciplinary team intervention
 - ❑ rehabilitation centralized in the workplace
 - ❑ collaboration with all stakeholders in the disability problem
 - ❑ inter-organisational approach



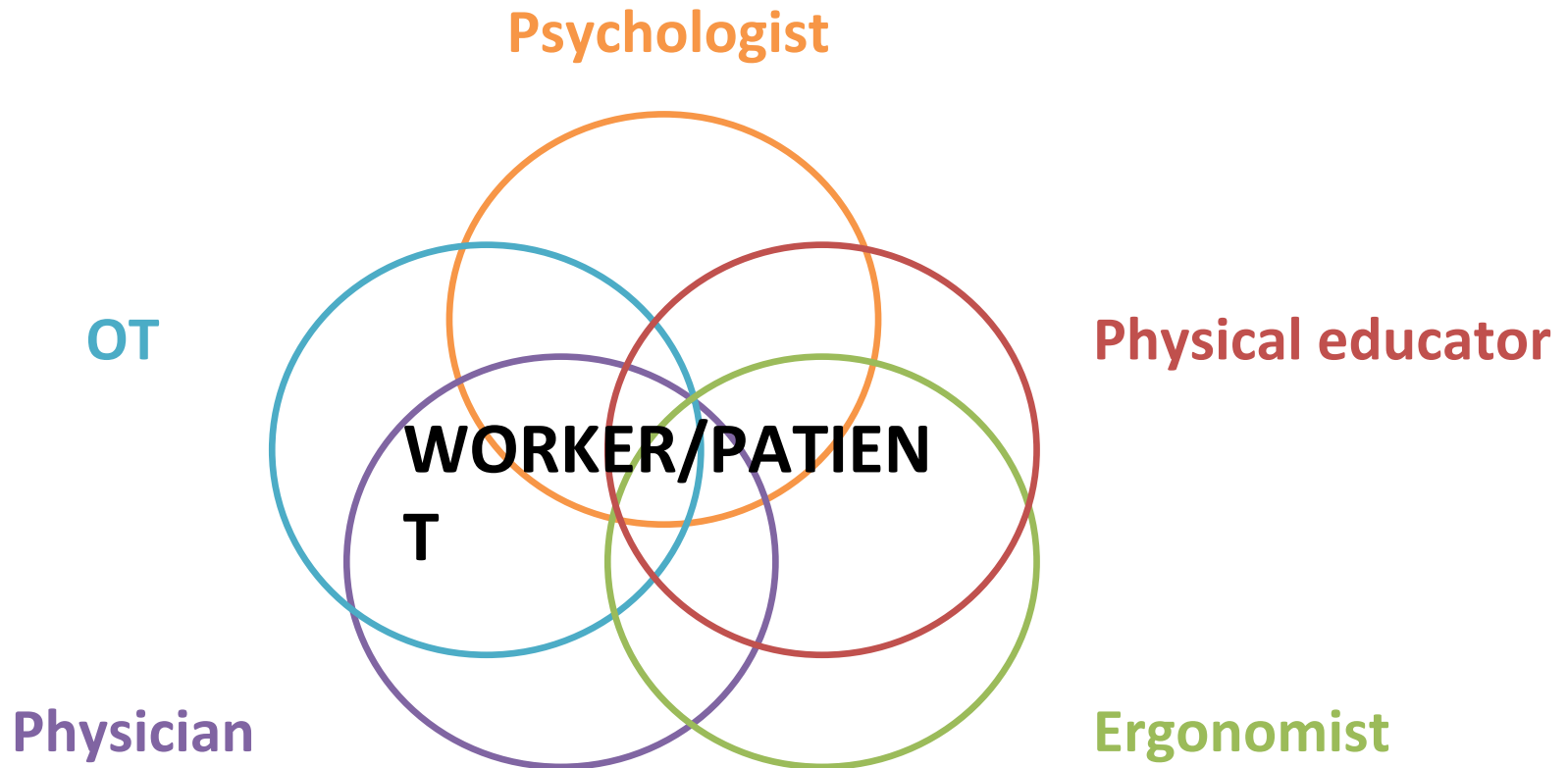
The Arena of Work Disability

Overall societal context



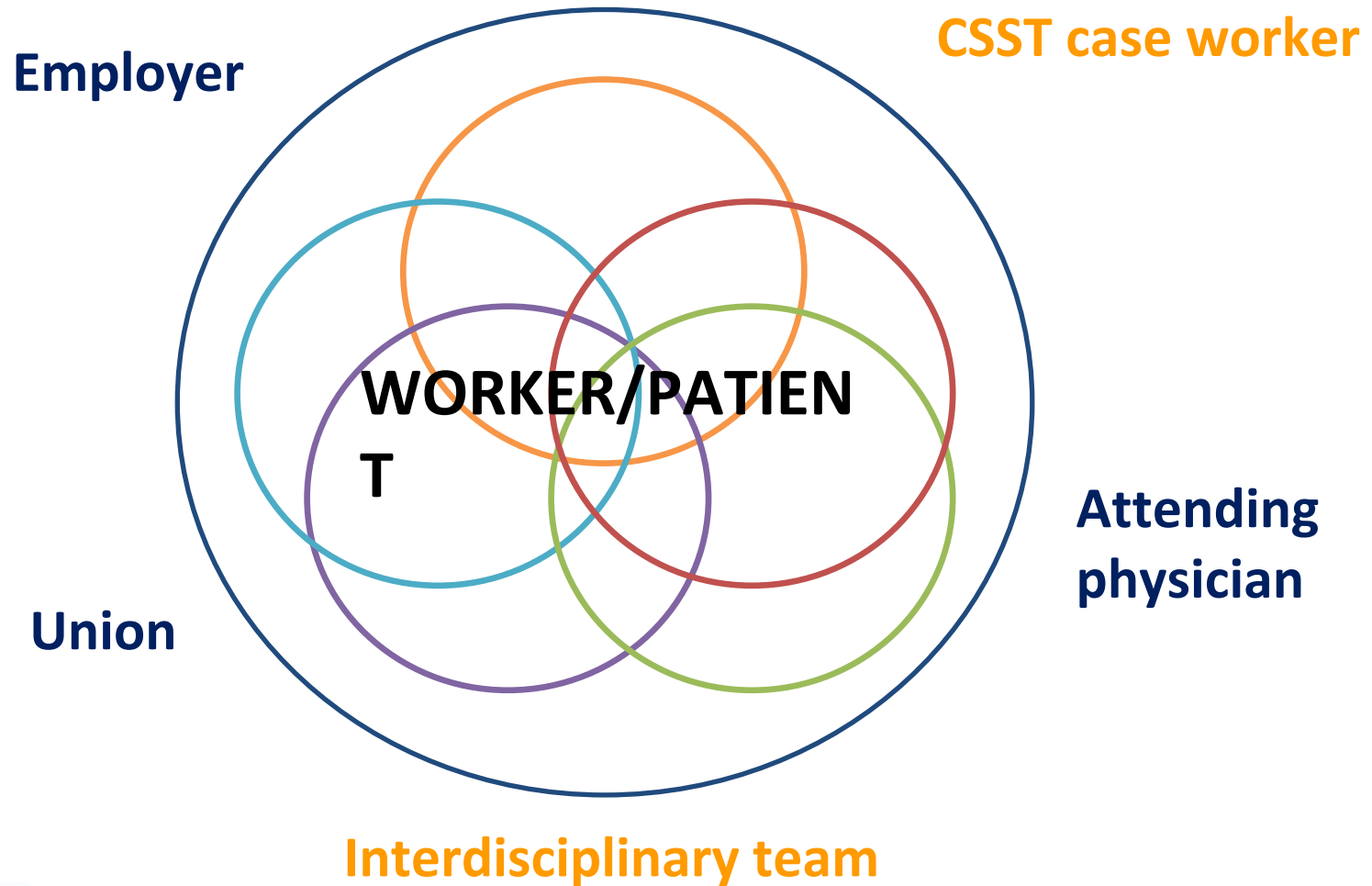


Interdisciplinary team





Inter-organizational team

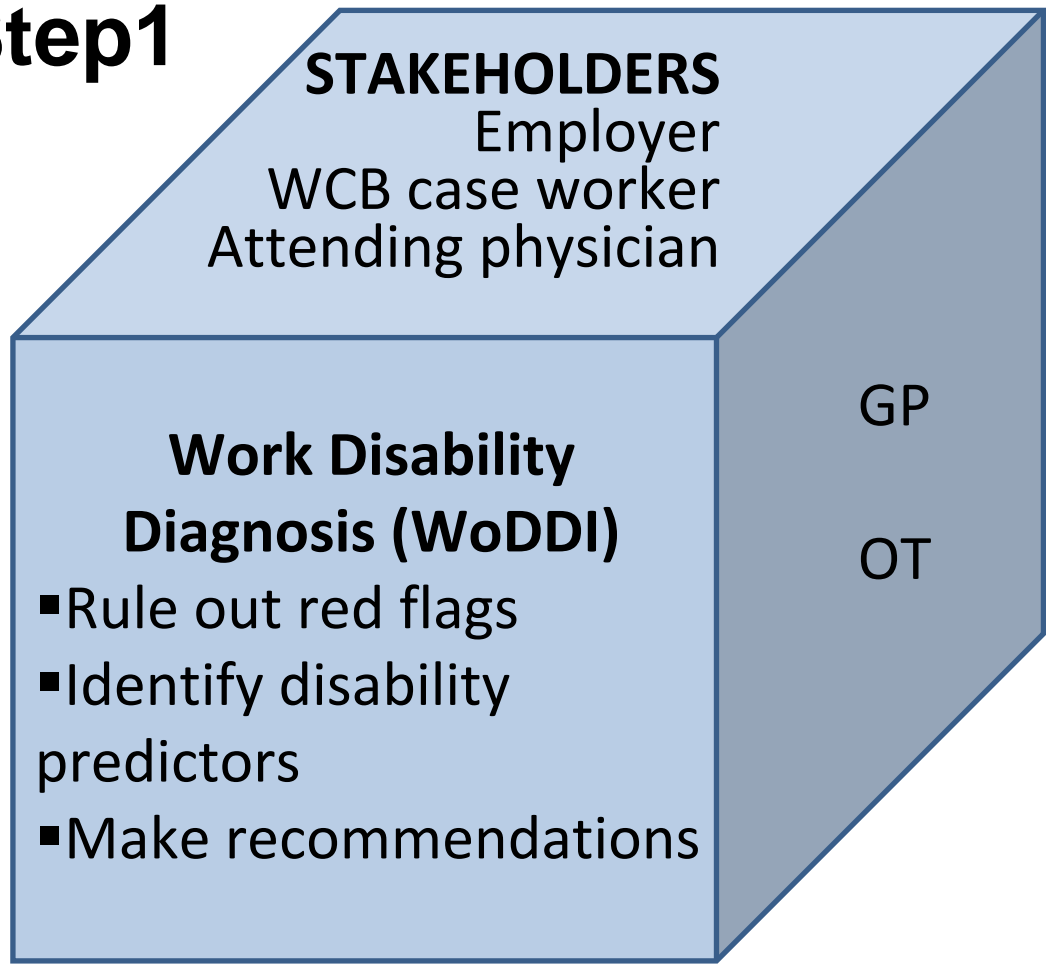
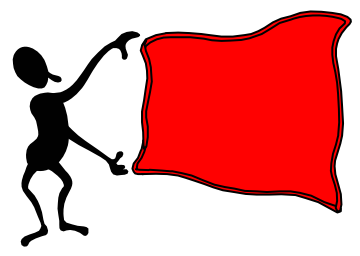




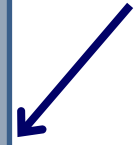
The PREVICAP program

Step 2: Modelization

Step1



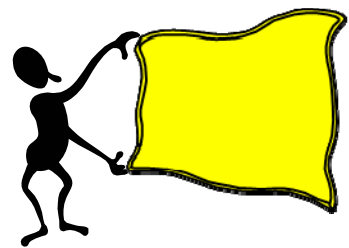
Multidimensional
problem



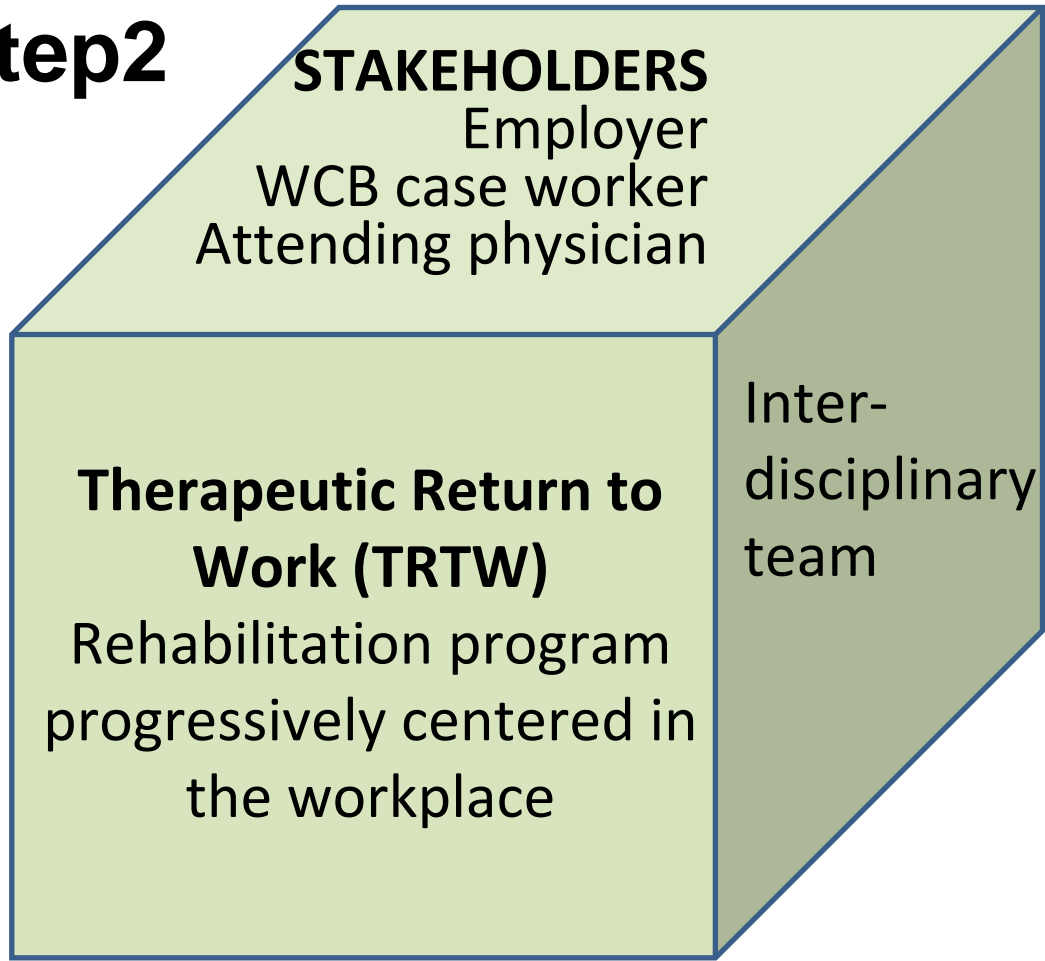


The PREVICAP program

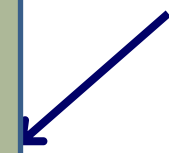
Step 2: Modelization



Step2

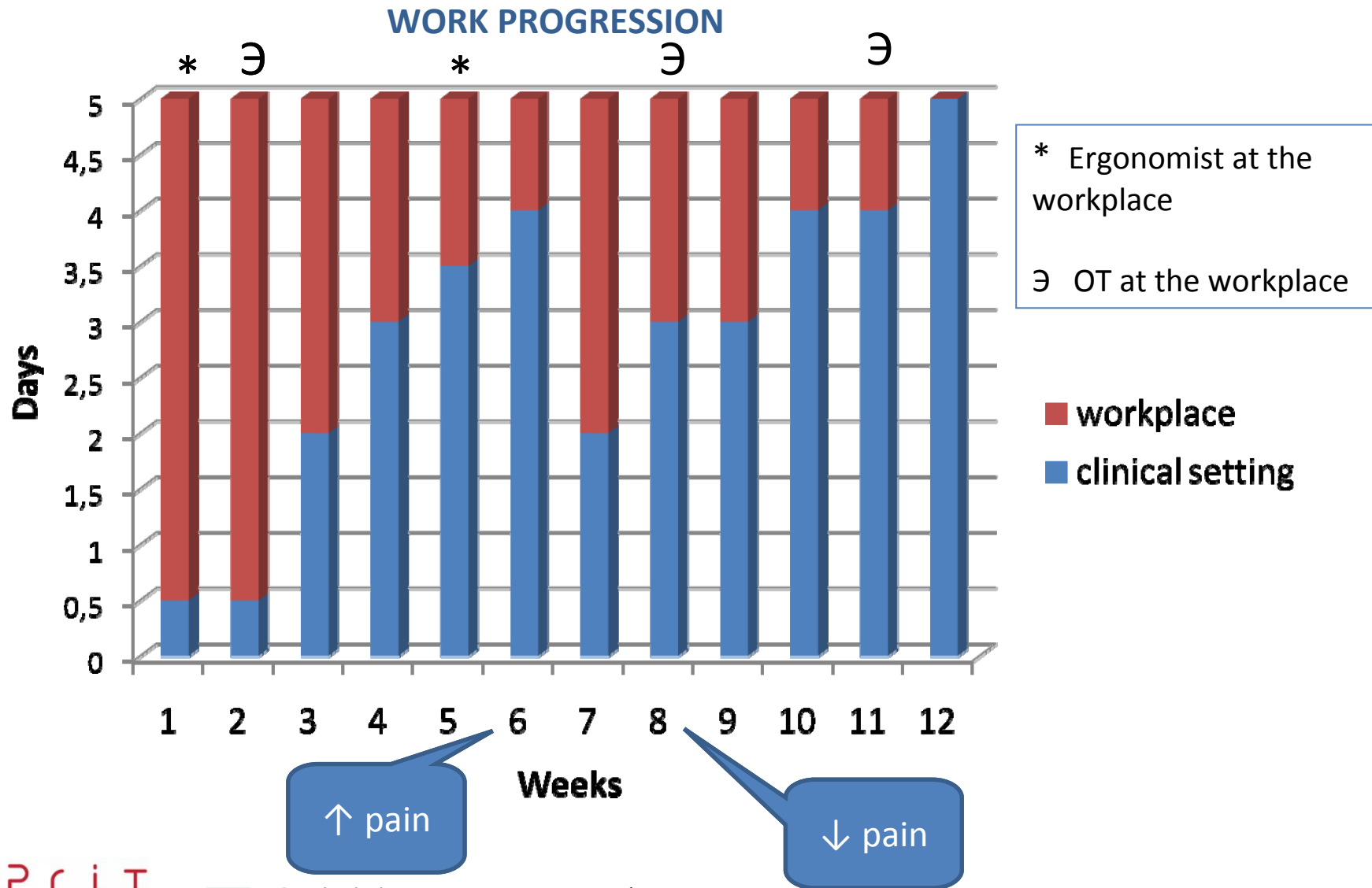


Multidimensional solution



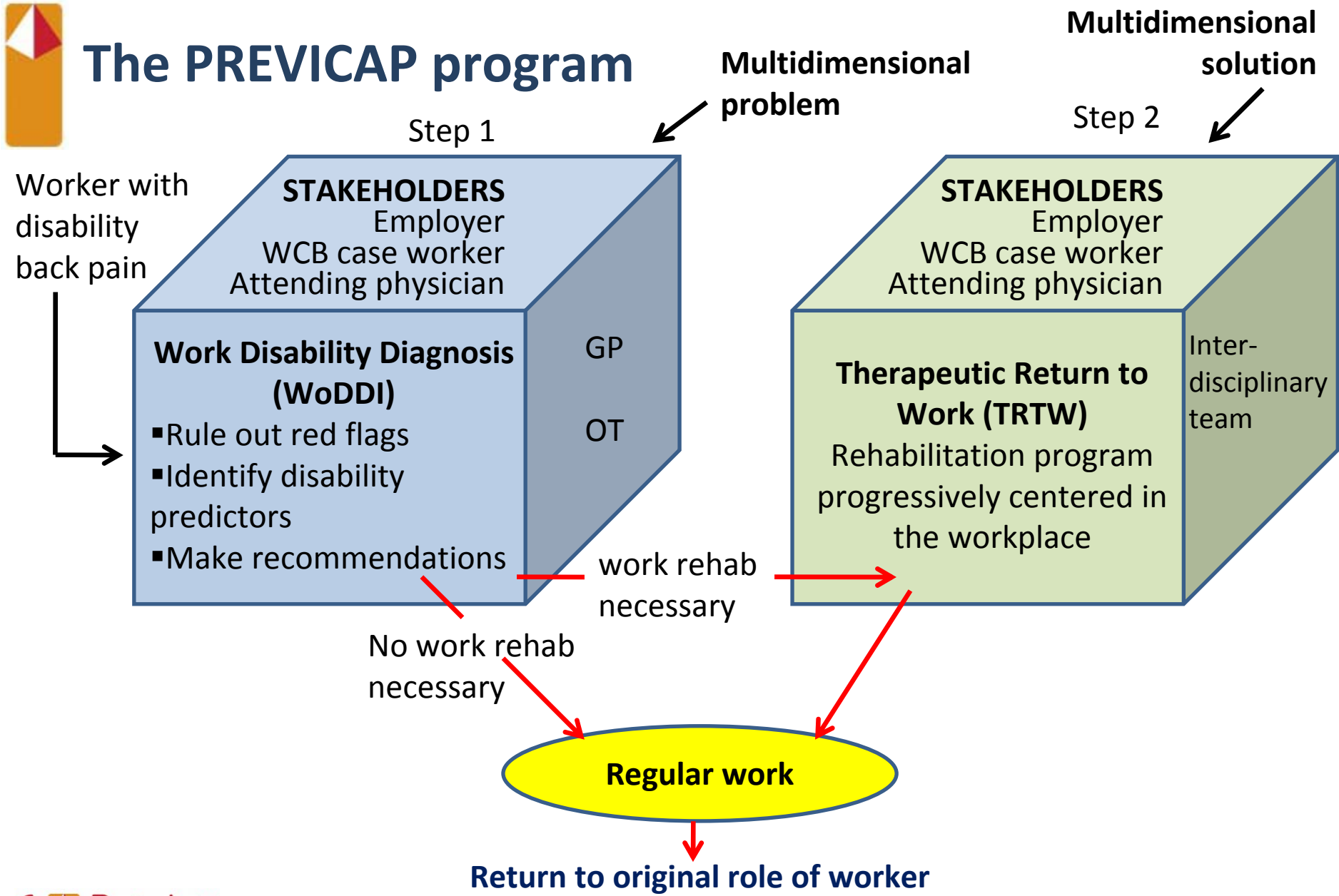


Therapeutic return to work





The PREVICAP program





The PREVICAP program Step 4: Implementation

- Implementation analysis of the PREVICAP program in 4 sites in Québec (30 months)
- 500 references by the WCB
- 435 (87,0%) WoDDI
- 259 (59,5%) TRW
- Mean of 6 months of absence from work



Follow-up at one and three years after the program

- Perceived health status
- Level of pain
- Resumption of leisure and daily living activities
- Work status

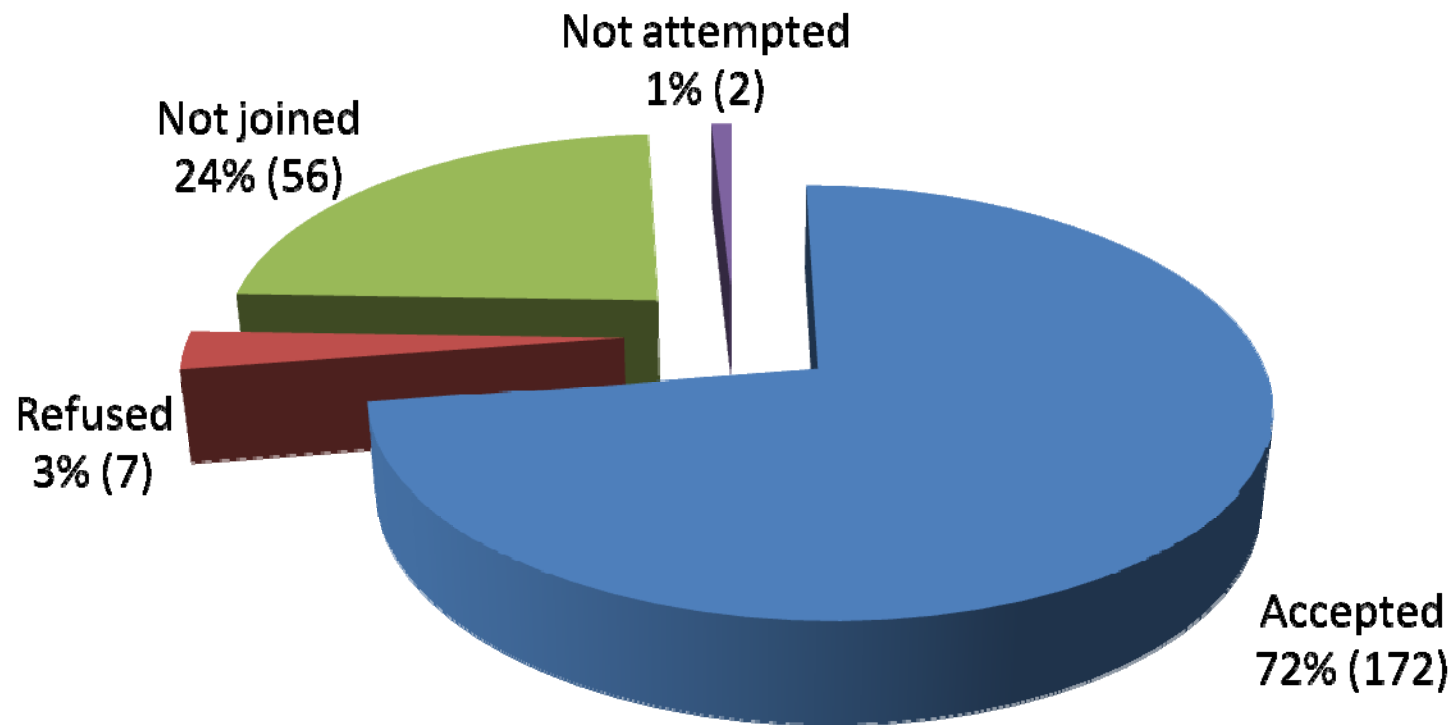




The PREVICAP program Results

One year follow up

Follow-up 1 year
n = 237



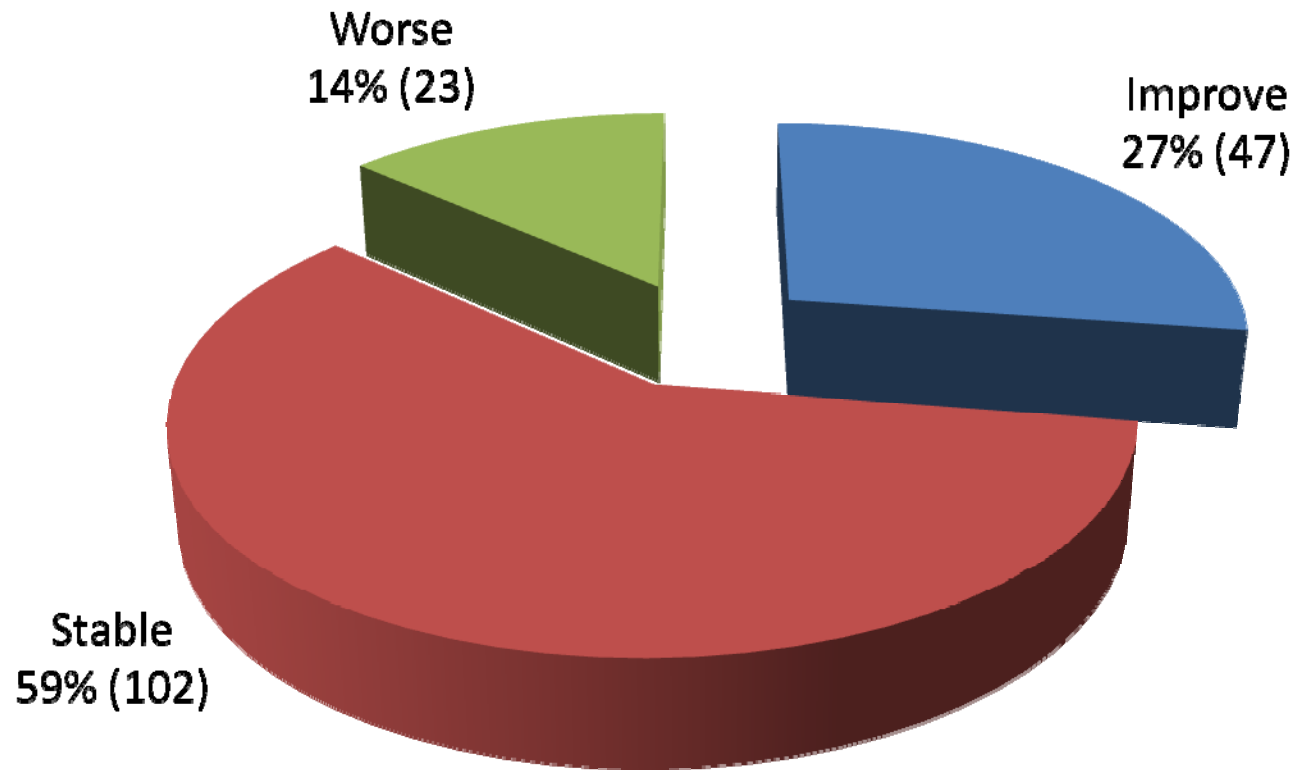


The PREVICAP program Results

One year follow up

Perceived health status of workers

n = 172



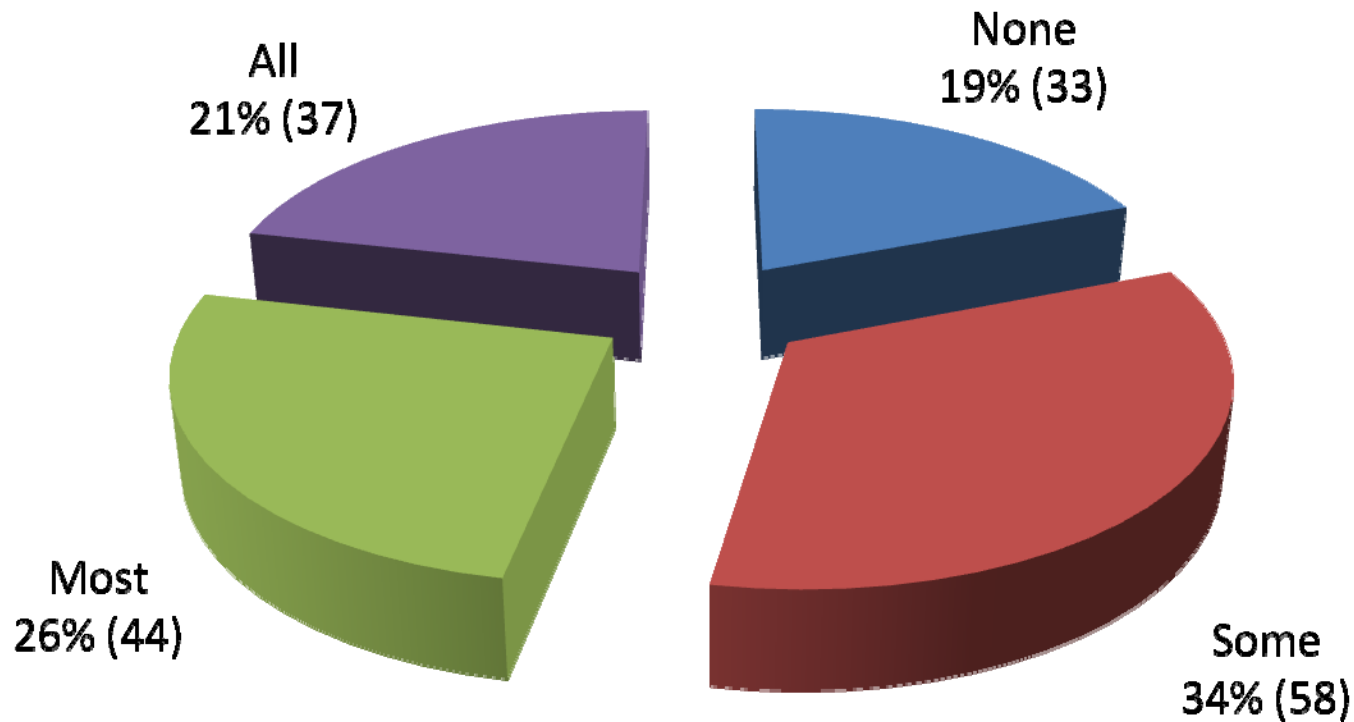


The PREVICAP program Results

One year follow up

Resumption of leisure and daily living activities

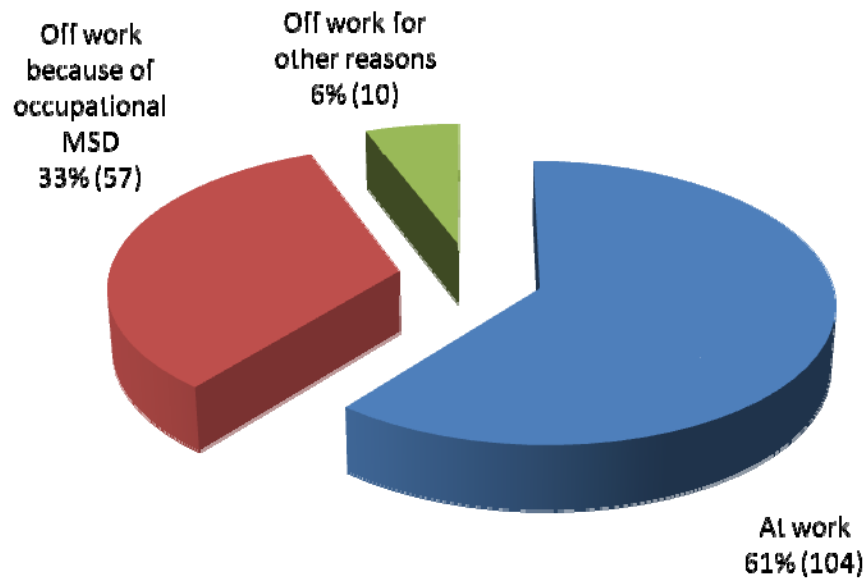
n = 172



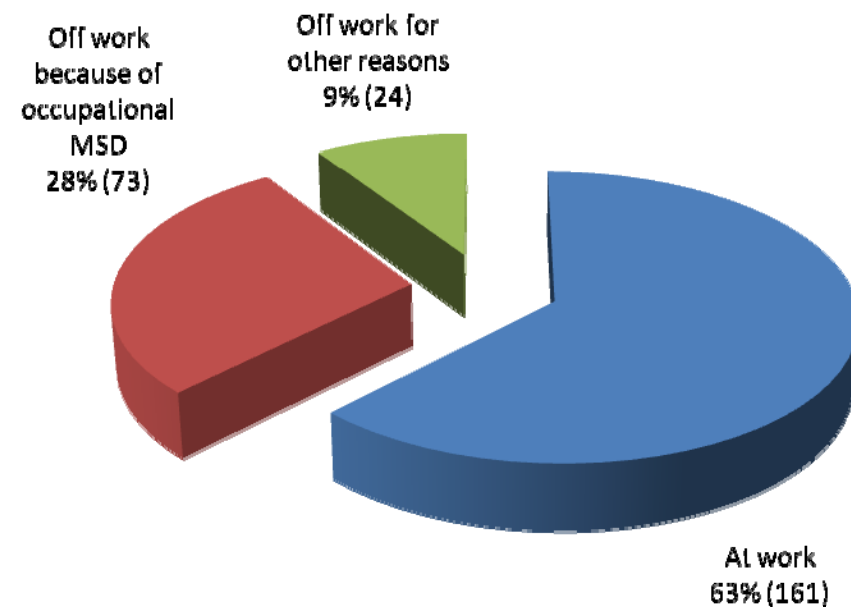


The PREVICAP program Results

Work status after 1 year n = 171



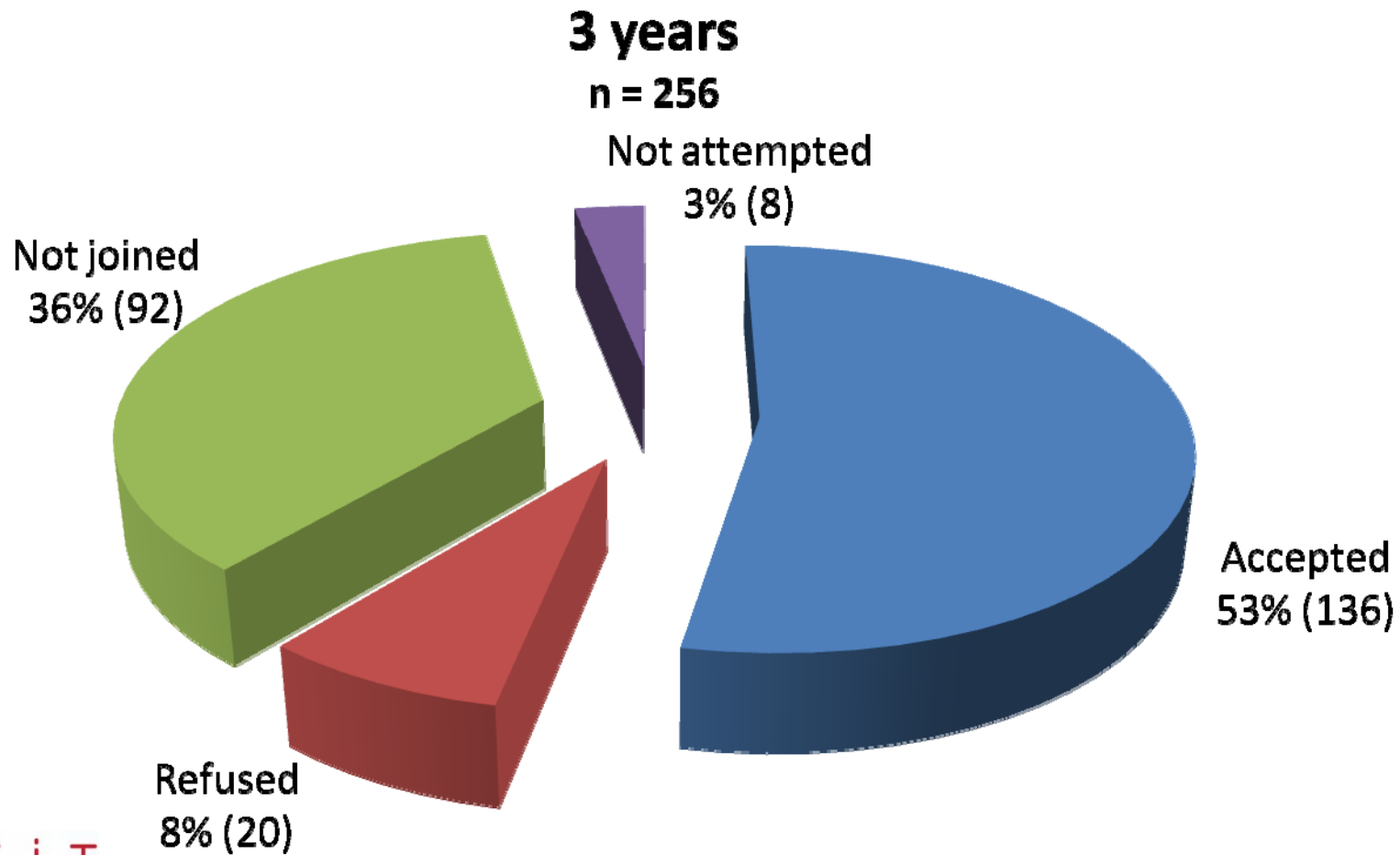
Work status at the end of the PREVICAP program n=258





The PREVICAP program Results

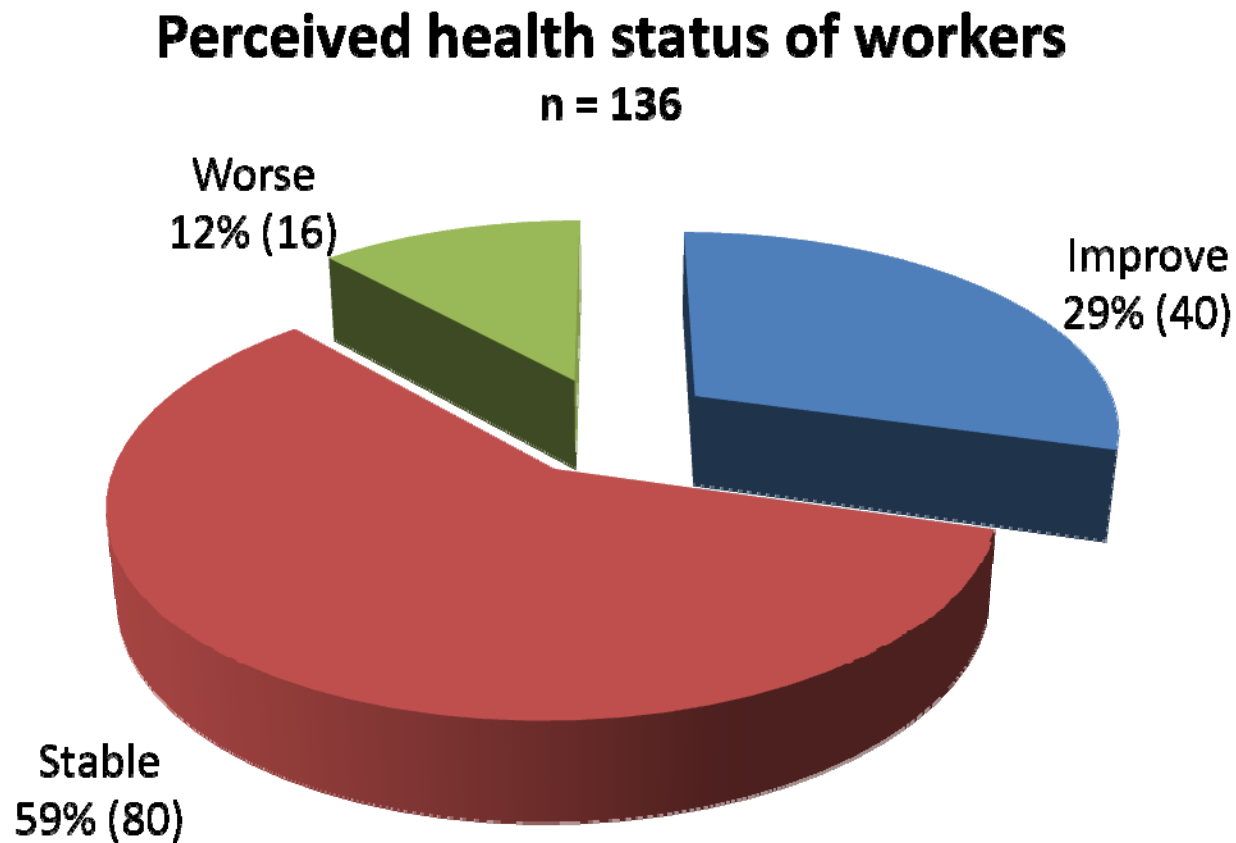
Three-year follow up





The PREVICAP program Results

Three-year follow up



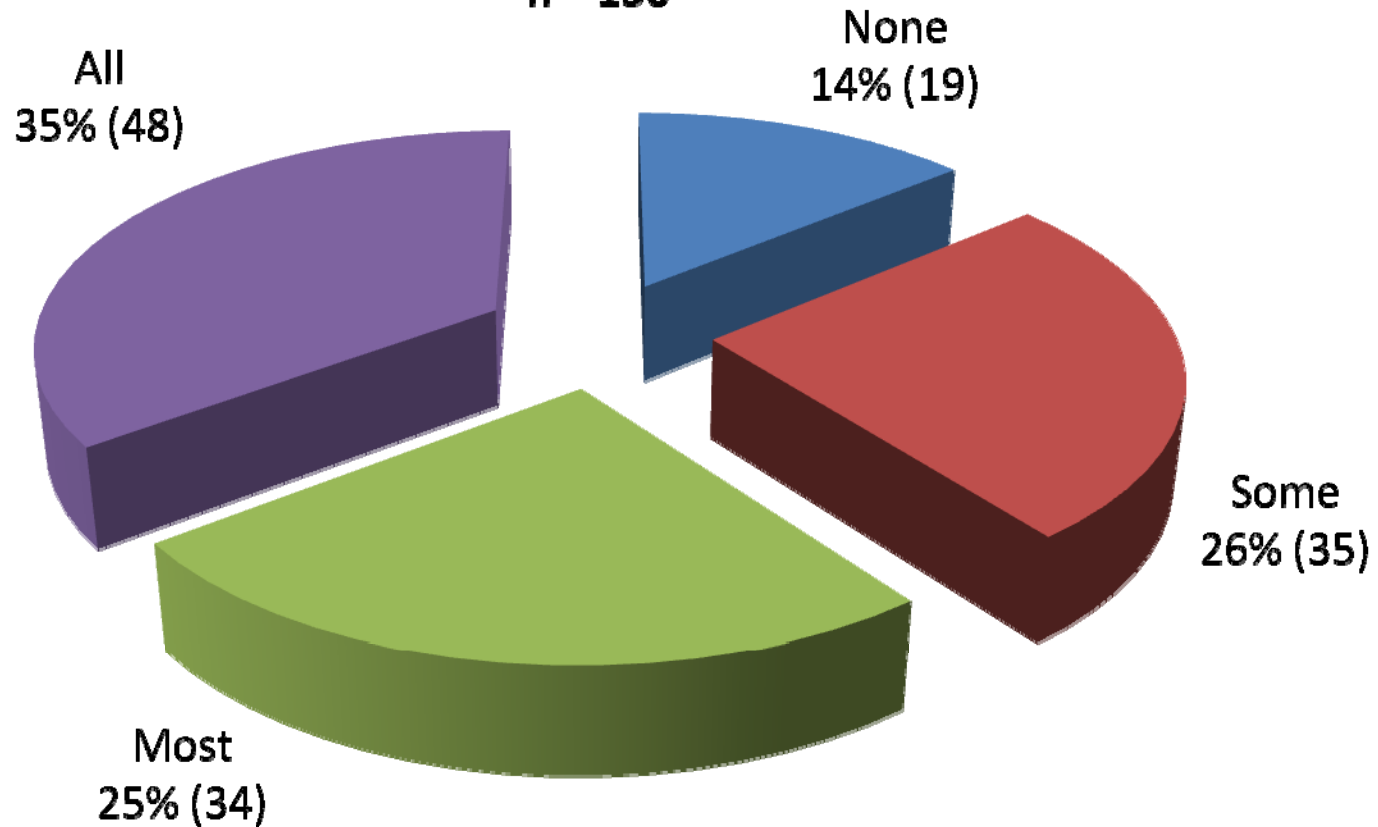


The PREVICAP program Results

Three-year follow up

Resumption of leisure and daily living activities

n = 136



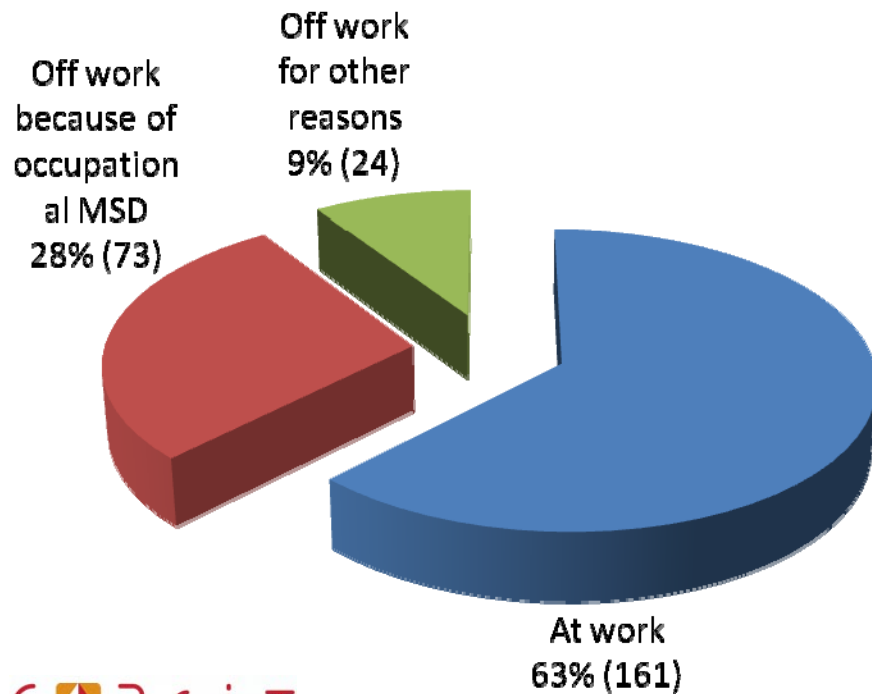


The PREVICAP program Results

Three-year follow up

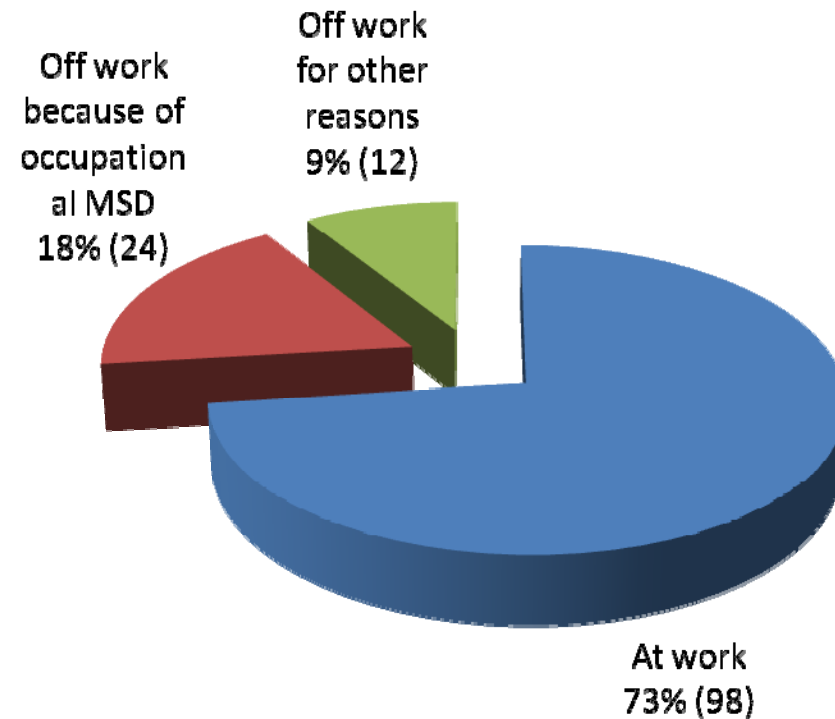
Work status at the end of the PREVICAP program

n=258



Work status after 3 years

n = 134





Evidences for safe return to work

- **W: work**

(Krause et al 1998; Franche et al 2005; Durand et al 2000)

- **R:reassurance**

(Dionne et al 2005; Picavet et al 2002; Crombez et al 1999; Indalsh et al 1995)

- **A: activity**

(Malmivaara et al 1995; Abenhaim et al 2000; Hagen et al 2004)

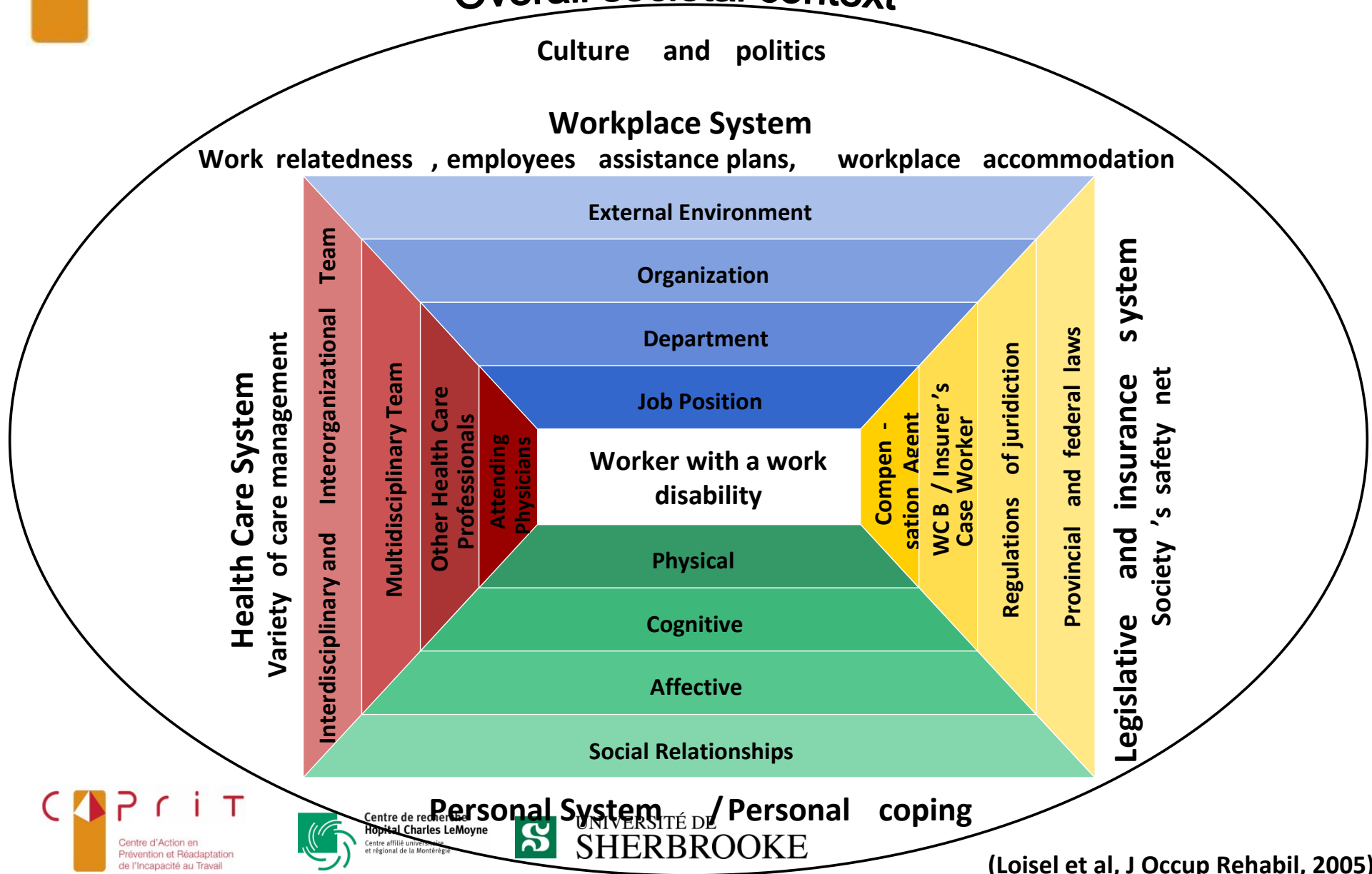
- **P: partnership**

(Shaw et al 2003; Stock et al 1999; Friesen et al 1999; Baril et al 2003)



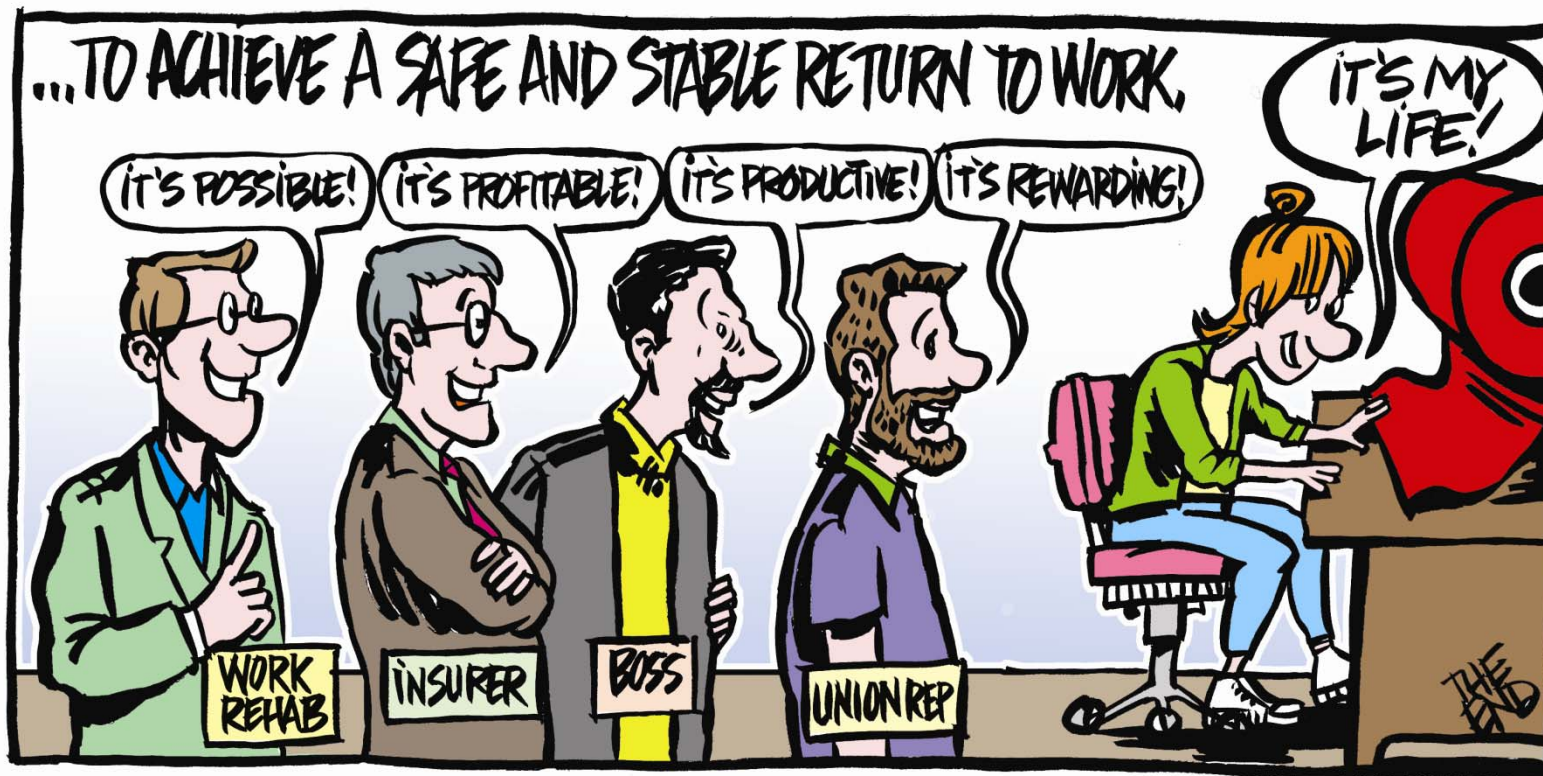
The Arena of Work Disability

Overall societal context



Partnership, RTW coordination

- Bringing together all stakeholders (in the arena) is a win-win strategy





Nextstep:

Buildyouown NORWEGIAN program from scientific evidence