



¹ NYU School of Medicine, Program of Ergonomics and Biomechanics

²NYU Langone, Occupational & Industrial Orthopaedic Center

³NYU Langone, Environmental Health & Safety

Workplace interventions to facilitate returning to work after MSDs: practice variations and theoretical premises

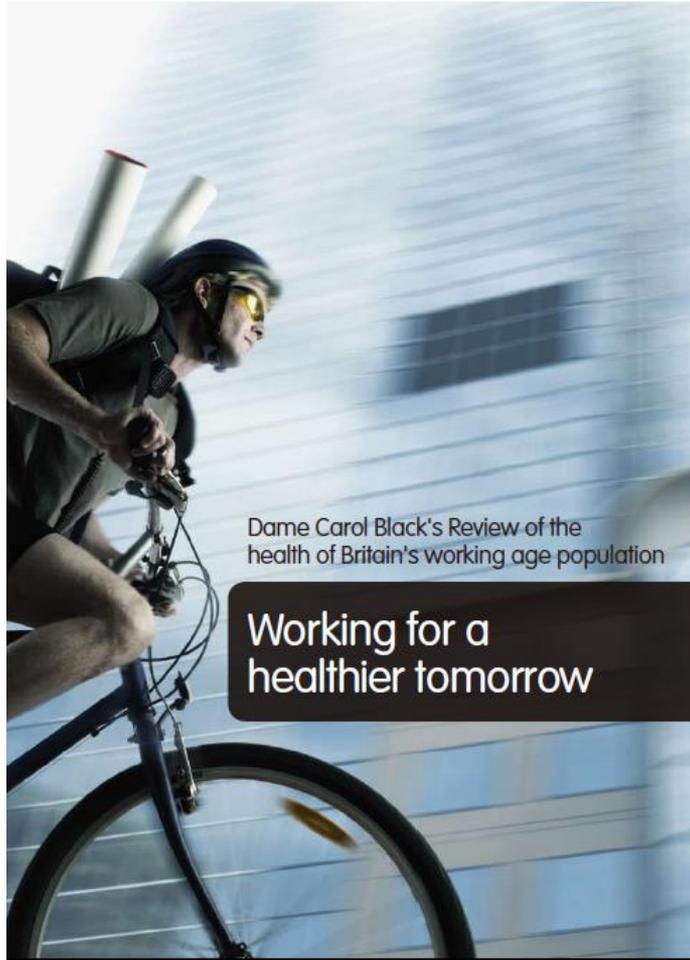
Presented at **2nd International Symposium to Advance Total Worker Health®**
Strategies for Returning to Work Session- Wednesday May 9th 2018

Research team:

Kátia M. Costa-Black ^{1, 2}, Shari Berkowitz¹, Amaanat Kaur Gill¹ and Daisy Zhang^{1, 3}

Disclaimer: Master's students participating in this project were partially supported by Grant Number T42OH008422, funded by the Centers for Disease Control and Prevention. The contents of this presentation are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention or the Department of Health and Human Services.

Healthcare, Social Protection and RTW policies: under reform in many countries



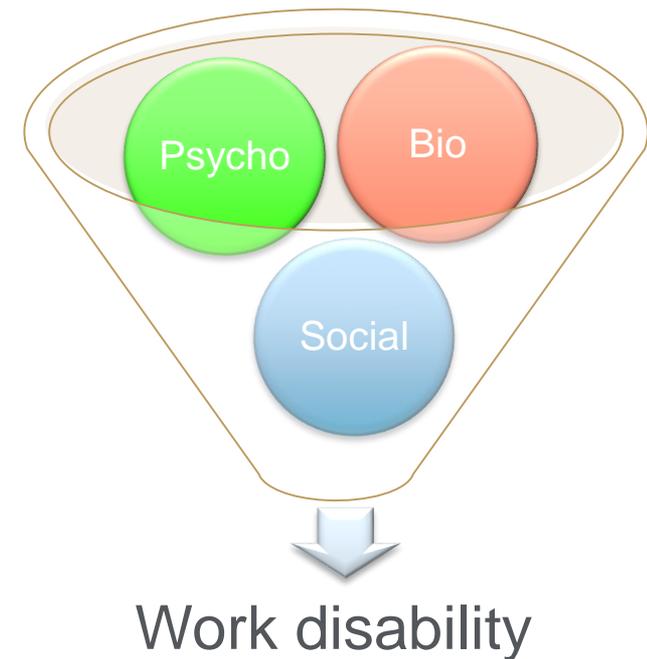
- For the majority cases of chronic musculoskeletal disorders 100% recovery is unrealistic (Waddell, 2000).
- Absence of/from work seems rather unhealthy:

In the UK Dame Carol Black's report states that: "The current sickness certification process focuses on **what people cannot do**, thereby institutionalizing the belief that it is inappropriate to be at work unless 100% fit and that being at work normally impedes recovery."

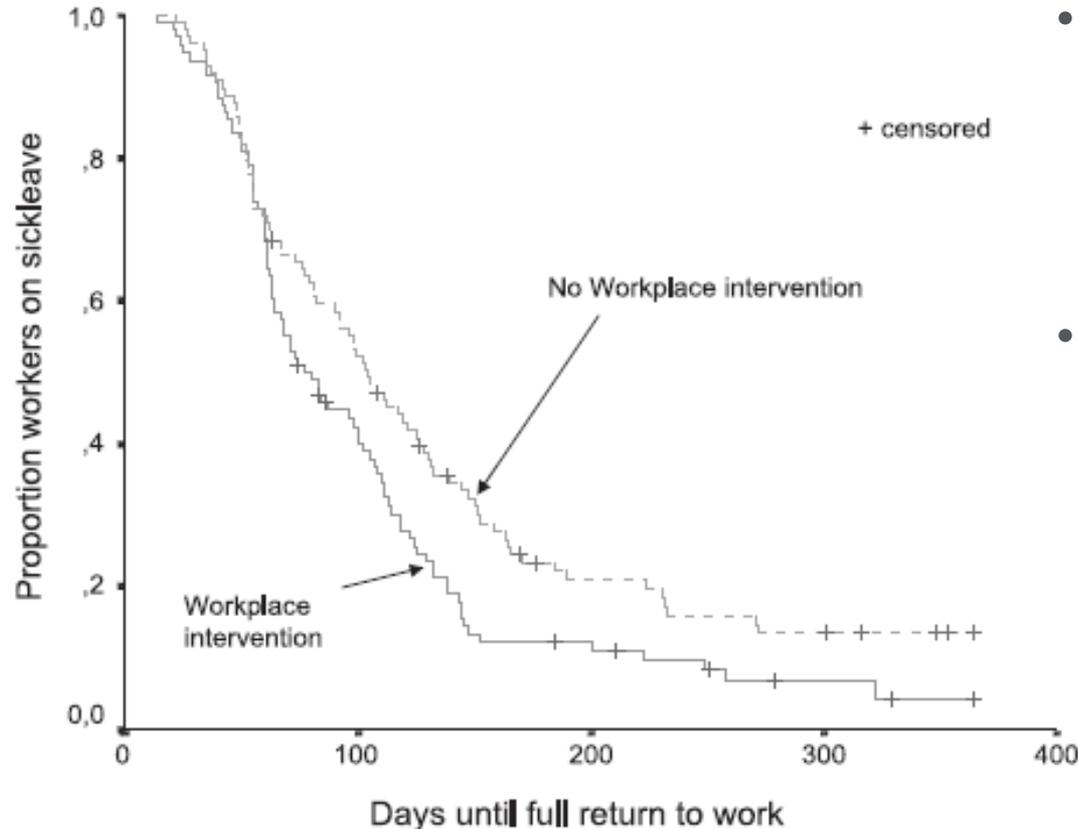
But is work always safe and therapeutic to return to after a MSD?

RTW research for MSDS

- Early RTW: the longer a person stays away from work, the more difficult it will be to return;
- Must deal with multi-systems and use a proactive approach;
- RTW interventions must address the biopsychosocial determinants leading to musculoskeletal disability, i.e. all factors that impede RTW;
- Positive contribution of ergonomics to rehabilitation and recognition that RTW is part of recovery, by supporting workers to restore a BALANCE between their abilities and the work demands.



Dutch study: subacute and chronic low back pain



- Work is not always “therapeutic” and safe to return to and workplace interventions might be needed in certain cases.
- Dutch adaptation of Sherbrooke Model (Canada) linking clinical rehabilitation + occupational intervention (*Loisel et al 1997*)

Figure 2. Survival curves of absence from regular or equal work for both the workplace intervention group and usual care group.

Core components of RTW interventions: Results from a meta-narrative review on effective components (Costa-Black, K. 2013)

INTERVENTION COMPONENTS	SUPPORTING EVIDENCE					
	Effectiveness studies	Economic studies	Complementary studies	Reports	Reviews	
Ergonomic or workplace assessment	++	+	+++	+	++	A
Participatory ergonomics*	+	+	+	+	+	C
Provisional work accommodations	+	+	+	0	+	C
Workplace at the center of the rehabilitation plan	+	+	+++	+	++	B
Workplace modification (permanent)*	++	+	+++	+	++	A

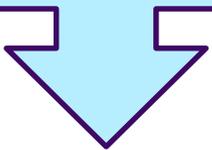
Interface with workplace

Costa-Black, K. Core Components of RTW Interventions. In: Handbook of Work Disability: Prevention and Management. Loisel, P. et al (eds), Springer 2013

Objective of this systematic review

- To use a structured methodology to evaluate the literature and make a synthesis of the evidence regarding the design of **workplace interventions** to facilitate the return to work after musculoskeletal disorders.

RQ: What is the rationale and in which circumstances the workplace intervention worked?



Black box of why it was done (theoretical premises) and how was done (the delivery process and format, by whom and with what)

Methods

- Mixed-methods systematic review: Keeping methodological rigor while combining different study designs and still be able to answer various research questions (National Center for the Dissemination of Disability Research (NCDDR))
 - Not a clear cut between making synthesis from qualitative and from quantitative studies, rather “descriptive themes” were identified from both study types as related to the research question.

Quality assessment:

- Use of the highest level of evidence by retrieving tested interventions from 7 high quality systematic reviews and seminal papers with valued contributions in the field;
- Data extraction was done by two independent reviewer using a detailed protocol based on the Template for Intervention Description and Replication (TIDieR) guide (Hoffmann et al 2014);
- Conflicting data between 2 reviewers were verified by a 3rd reviewer and resolved by consensus during face-to-face meetings.

Methods: a summary of our review process

Search: Iterative and exploratory process to find evidence

1. Hand searching seminal papers and high quality reviews (effectiveness studies);
2. Formal database search (additional effectiveness studies and complementary studies related to the tested intervention);
3. *Final search for additional studies when review is near completion (to be completed).*

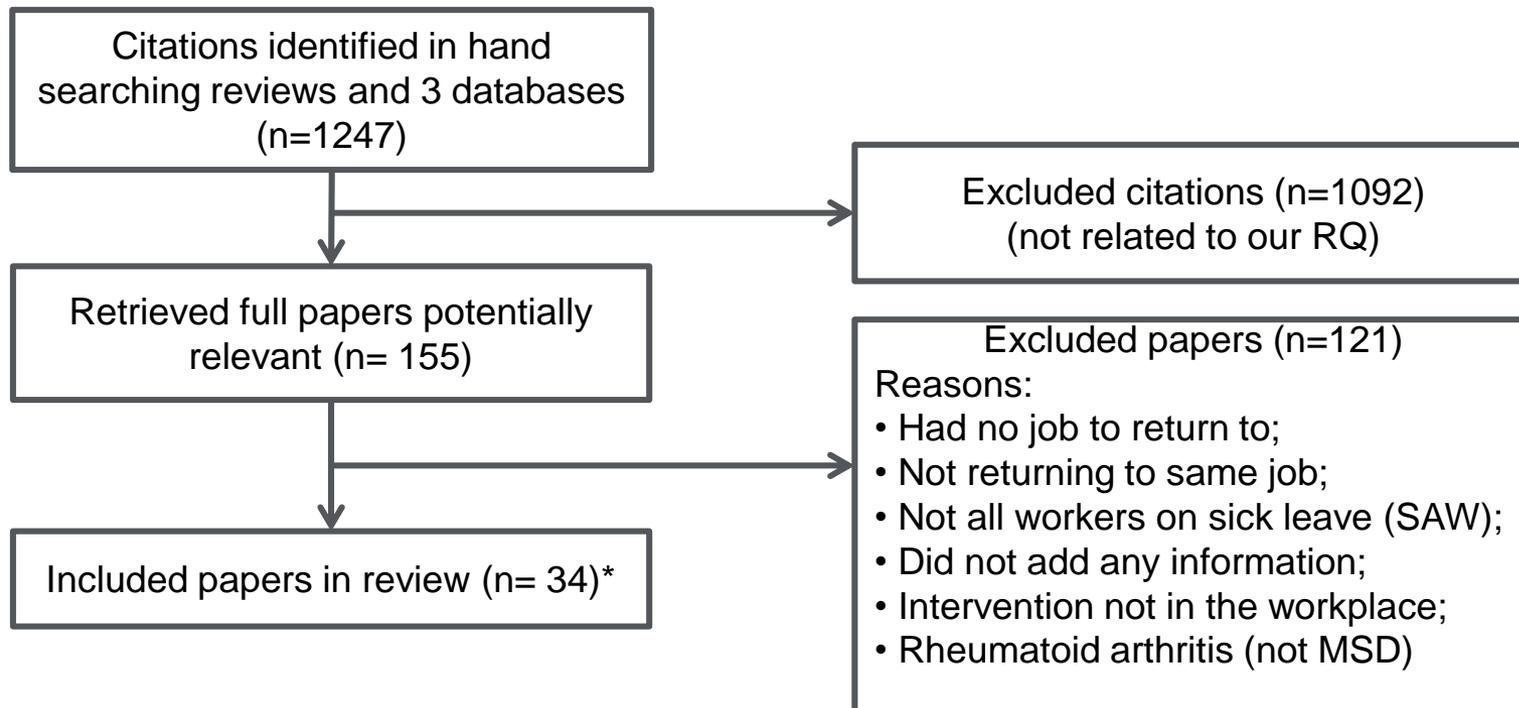
Appraisal: Must meet inclusion criteria

1. Appraise primary studies and extract data if meets IC (relevance to RQs);
2. Refine data extraction using a protocol and use a naturalistic approach to extract data (avoiding assumptions about intervention descriptions made by authors)
3. Extract different data from different studies to populate data extraction protocol about intervention description (thematic analysis)

Mapping/Synthesis:

1. Map first the intervention types and focus
2. Map intervention types with for whom, how and why
3. Use ‘conflicting’ findings to generate insights about the context where intervention was tested to refine synthesis.

Results: Flowchart describing the process of identifying relevant literature



Papers published in English between 1991 and 2018 (32 articles and 2 chapters)

Study designs (empirical n= 30)	Populations
RCT, non-randomized trial, quasi-experimental design, intervention mapping, process evaluation, case-control and qualitative	LBP (acute, subacute and chronic), Early musculoskeletal symptoms, upper extremity disorders, MSDs, workers comp claimants with MSDs

* Representing 18 tested workplace interventions

Preliminary Results- Table 1- RATIONAL

WI	Theoretical Premises (why?)	
Ergonomics component	<ul style="list-style-type: none">• To reduce physical demands and ergonomic risks that can lead to musculoskeletal pain, discomfort, accidents and pain reoccurrence (PRINCIPLES of injury prevention and of Work Disability Prevention -WDP);• To rehabilitate workers quickly and prevent long-term disability (PRINCIPLES of early RTW and of WDP);• To involve workers in the recovering from injury process in order to sustain the RTW (PRINCIPLES of Participatory Ergonomics and of WDP);• To progressively restore function (by focusing on worker’s capabilities not just on pain) and safely return to previous work (PRINCIPLES of work rehabilitation with gradual RTW and job-matching model);• To tackle the workplace factors (blue flag) which are obstacles to RTW (PRINCIPLES of work disability prevention);• To combine primary prevention activities with onsite early RTW activities using a <u>bipartite support to prevent injury (re-injury)</u> as well as reduce disability (PRINCIPLES of early RTW and of WDP).	
	Educational component	<ul style="list-style-type: none">• To help workers deal with work demands and to help them to shift perceptions, attitudes and believes;• To improve communication and social support in the workplace;• To help supervisors better devise a RTW plan and support the workplace accommodation process;• To change organization H&S culture to decrease risk of injury and respond to workers’ H & S concerns;• To decrease occupational stress and improve self-efficacy to manage work tasks.

Preliminary Results – Table 2: Practice variations in the design of the Workplace intervention- EDUCATIONAL component

How (format and delivery process)	Resources Used
<ul style="list-style-type: none"> <input type="checkbox"/> By training supervisors, nurses, PTs and/or ergonomists in: <ul style="list-style-type: none"> -prioritizing accommodations, -identifying barriers to RTW, -evaluating/implementing any adjustments at the workplace, or -better understanding of the RTW process and benefits. <input type="checkbox"/> By advising workers in: <ul style="list-style-type: none"> -how to self-manage their workplace problems or to make their own adjustments in the workplace, or -proper work techniques (lifting, sitting, reaching, etc). <input type="checkbox"/> By integrating physical training and cognitive behavioral training (CBT) with particular focus on organizational involvement 	<ul style="list-style-type: none"> <input type="checkbox"/> Training materials for PE, CBT, back school and self-management such as booklets, guides, leaflets (1,2,6, 7,8,11,12,13,10,15) <input type="checkbox"/> Worker Personal Diary about Experience with Training (3) <input type="checkbox"/> Worksite observations are done by supervisor and company nurse to check if advice about work techniques is employed (13)

Preliminary Results – Table 3: Practice variations in the design of the Workplace intervention- ERGONOMICS component

How (format and delivery process)	Resources Used
<p><u>Problem Identification (17 out of 18)</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Worksite walk-through (expert observations) to assess physical, psychosocial and/or environmental stressor at work; <input type="checkbox"/> Worker and supervisor rank obstacles to RTW independently; <input type="checkbox"/> Meetings with workplace parties to clarify job requirements and necessary modifications; <input type="checkbox"/> Participatory Ergonomics workgroup discusses risks, details of the incident, workplace characteristics, organizational and physical job demands; <input type="checkbox"/> If necessary, the hygienist will quantify the physical demands of the various tasks and determine whether they can be accommodated. 	<ul style="list-style-type: none"> <input type="checkbox"/> Assessment tools: Checklists (1, 5, 12, 14), Postural Assessment (6, 10), Job Requirements and Physical Demands Survey (2,12), Work Demands Questionnaire (10), dynamometer (6), measuring tape (6), or Ergonomic Hazard Analysis (4, 7, 11, 12, 14) <input type="checkbox"/> Inventory and ranking of task demands and obstacles to RTW by supervisor(16) <input type="checkbox"/> Semi-structured diary or interviews to obtain precise information about daily tasks (postures, breaks, etc)(3) <input type="checkbox"/> Use of a combination of self-report and nurse’s evaluation of work demands;

Preliminary Results – Table 4: Practice variations in the design of the Workplace intervention- ERGONOMICS component

How (format and delivery process)	Resources Used
<p><u>Brainstorm Solution (13 out of 18)</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Worker, supervisor and healthcare professional brainstorm solutions until reaching consensus; <input type="checkbox"/> Worker receives report from workplace visit done by ergonomist and shares it with supervisor; <input type="checkbox"/> Prioritize changes to highly demanding tasks, come up with solutions and make an implementation plan. 	<ul style="list-style-type: none"> <input type="checkbox"/> Nominal Group Technique (1) <input type="checkbox"/> 6 Point Problem Solving Technique (2,12) <input type="checkbox"/> Worksheet to Record Solutions for Ergonomic Problems (12)
<p><u>Implement Work Solution (18)</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Modify ergonomic risk factors and reduce work demands by: <ul style="list-style-type: none"> -making adjustments to workstation, -reducing workload by restricting worktime (half shift), -modifying work tasks (including MMH activities), or - using restricted or modified duty; <input type="checkbox"/> Implement necessary workplace accommodations (...); <input type="checkbox"/> Gradual work resumption (and therapeutic RTW assisted by the OT); <input type="checkbox"/> Periodically adjust RTW plan with workplace parties according to progress and feasibility. 	<ul style="list-style-type: none"> <input type="checkbox"/> New equipment/furniture/tools when needed (4,5, 6,7,8, 11,12, 13,14,16) <input type="checkbox"/> Trained ergonomist or health care professional with ergonomics training is required (1, 2, 3, 5,7,12, 16, 17) <input type="checkbox"/> A form is signed by the supervisor, worker, and industrial hygienist outlining the agreed responsibilities for implementing any modified work, including any changes in job design (11). <input type="checkbox"/> Written reports to document solutions implemented (1,2,6,9, 12, 14,16)

Preliminary Results – Table 5: Practice variations in the design of the Workplace intervention- ERGONOMICS component

How (format and delivery process)	Resources Used
<p><u>Follow-Up/communication (12 out of 18)</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Continuous intervention feedback from worker to clinical team; <input type="checkbox"/> Making plans for a regular follow-up <input type="checkbox"/> OT ensures the equipment was received and is being used properly; <input type="checkbox"/> Progression of job accommodations are monitored until resumption of original job duties; <input type="checkbox"/> Meetings between healthcare and H&S professionals to monitor employee progress. 	<ul style="list-style-type: none"> <input type="checkbox"/> Assessment Report is shared between worker, supervisor, and healthcare team (6, 12, 14, 16) <input type="checkbox"/> Used of Email, phone, and conference calls between workplace parties and healthcare team (1, 6, 7,14, 16) or Re-evaluation by telephone is done by the OT (4 weeks after) (16) <input type="checkbox"/> If needed any stakeholder will be contacted to support intervention (costs) (4)

Final Remarks

- ❑ This mixed-methods review looked beyond intervention effectiveness studies to withdraw **practical recommendations** about the rationale, the format and the delivery process of tested workplace interventions. We were able to identify a number of important features and contextual variations that can help with replication and adoption of evidence-based workplace interventions. HOWEVER,
- ❑ The quality of descriptions of most tested workplace interventions is poor in particular when describing the implemented measures (what was really implemented with success. Using a standardized template such as the TIDieR to describe the intervention could facilitate replication.
- ❑ We found 18 effective interventions (single and multi-facet) with a workplace focus. The majority of well-tested RTW interventions are directed at the worker and are far from the workplace despite the fact that we have cumulative evidence about the importance of addressing workplace determinants of work disability after MSD (biopsychosocial determinants).
- ❑ More high quality effectiveness studies of workplace interventions are needed to support larger dissemination and scale up of these proactive RTW measures in line with a more comprehensive prevention model.