

Integrated Worker Health Protection and Promotion: Overview and Perspectives on Health and Economic Outcomes

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Introduction and Background

- Early 2000's: NIOSH *WorkLife* program and the *Steps to a Healthier U.S. Workforce* symposium
- Early 2010's: Introduction of the NIOSH *Total Worker Health* program
- Traditionally, occupational safety and health (OSH) and worksite health promotion (WHP) have operated in separate, non-integrated ways
- Integrated worker health protection and promotion (IWHPP) programs may increase effectiveness of worker health programs beyond what each could do on its own
- What evidence is available to substantiate this assumption?
 - Health outcomes
 - Economic outcomes (productivity and health care costs)



Purpose

- Discuss the rationale for integration of OSH and WHP
- Describe program characteristics of IWHPP programs
- Place identified characteristics in context
- Summarize evidence of effectiveness of IWHPP on health and economic outcomes
- Offer perspective on the findings



Why Integrate OSH and WHP?

- Exposure to both hazardous working conditions and risk behaviors increases workers' risk of disease, illness and injury
- Those at highest risk for hazardous exposures are also most likely to engage in high-risk behaviors
- Integration of OSH and WHP may increase program participation and success rates
- Integration of OSH and WHP may reduce costs to the company (health care or productivity)

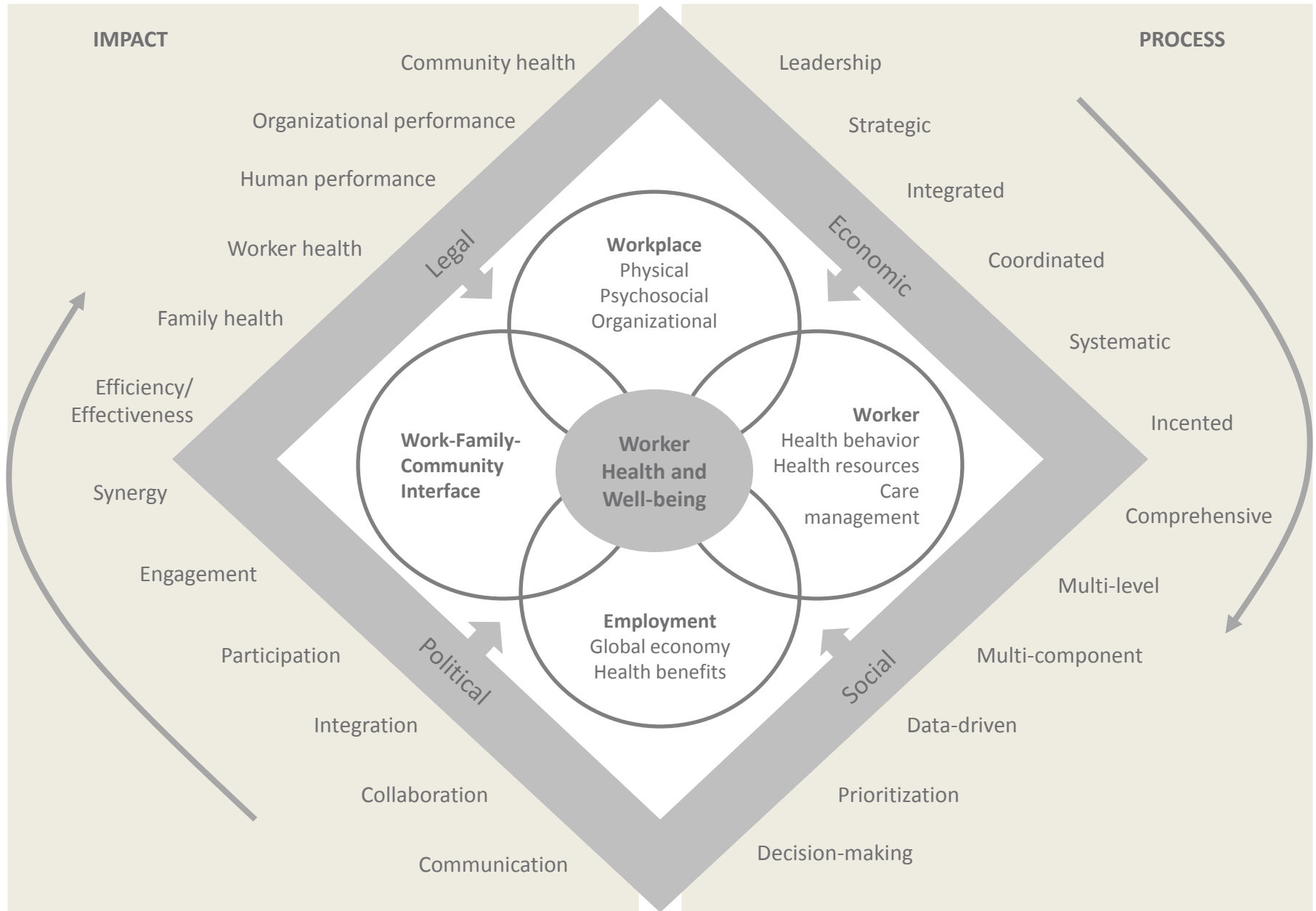
(Source: Sorensen and Quintilliani, 2009)



Describing and Defining IWHPP

- No formal generally accepted definition of IWHPP initiatives appears to be available
- Several reports, however, describe characteristics of integrated worksite health programs
 - NIOSH
 - NIH/CDC Workshop report
 - WHO Global framework for healthy workplaces
 - Finnish Institute of Occupational Health
 - ACOEM
 - IAWHP
- **Central characteristics**
 - Worker
 - Workplace
 - Work-family-community
 - Employment
- **Contextual characteristics**
 - Legal
 - Economic
 - Social
 - Political
- **Process characteristics**
 - E.g., leadership, strategic, integrated, multi-level, multi-component, data-driven, decision-making
- **Impact characteristics**
 - E.g., participation, health, performance (human/organizational)

Compilation of Characteristics of Integrated Worker Health Protection and Promotion Programs





Evidence of Effectiveness

- “Integrated” intervention studies only...not separate OSH or WHP studies
 - Health outcomes
 - Economic outcomes
 - » Productivity
 - » Health care expenditures
- Results organized by
 - Experimental studies
 - Reviews and reports
 - Case examples / case studies



Experimental Studies

- 10 Studies
- 7 RCTs
- All intervention-comparison group studies
- All report positive health-related outcomes
- Positive productivity outcomes in 3/10 studies
- Outcomes in health care costs lacking
- Sit-stand studies address office ergonomics and sedentary behavior

<i>Study and Reference</i>	<i>Design</i>	<i>Health Outcomes</i>	<i>Economic Outcomes</i>	
			<i>Productivity Loss Reduction</i>	<i>Health Care Expenditures</i>
The Brabantia Project (Maes et al 1998)	Quasi-experimental pre-post study with comparison sites	+	+	NA
WellWorks-1 (Sorensen et al 1998a)	RCT at the worksite level	+	NA	NA
WellWorks-2 (Sorensen et al 2002)	RCT at the worksite level	+	NA	NA
Healthy Directions/Small Business (Sorensen et al 2005)	RCT at the worksite level	+	NA	NA
Tools for Health (Sorensen et al 2007)	RCT at the worksite level	+	NA	NA
Hlobil et al 2007	RCT at the individual level	+	+	NS
MassBuilt (Okechukwu et al 2009)	RCT and Methods development study	+	NA	NA
Office ergonomics and sit-stand workstations (Robertson et al 2012)	RCT at the individual level	+	+	NA
Sit-stand workstations (Alkhajah et al 2012)	Quasi-experimental design with comparison group	+	NS	NA
Take-a-Stand Project (Pronk et al 2012)	Two-group pre-post comparison interrupted time series study	+	NS	NA



Ergonomics and Sedentary Behavior

	Robertson, et al	Alkhajal, et al	Pronk, et al.
Reduced sitting time	Improvement	Improvement	Improvement
HDL cholesterol	--	Improvement	--
Total cholesterol; Triglycerides; Glucose	--	<i>No change</i>	--
Eye strain / visual discomfort	Improvement	--	--
Fatigue	--	--	Improvement
Vigor	--	--	Improvement
Tension	--	--	Improvement
Confusion	--	--	Improvement
Depression	--	--	Improvement
Total Mood Disturbance (TMD)	--	--	Improvement
Upper back/neck, and shoulder pain	Improvement	--	Improvement
Productivity / performance indicators	Improvement	<i>No change</i>	<i>No change</i>
Acceptability	--	High (83%)	High (100%)



Reviews and Reports

- 10 reports, including several systematic reviews, with general agreement on positive health outcomes
- Most conclusions on productivity outcomes were based on separate OSH or WHP studies
- Few reports include health care cost outcomes and outcomes were based on separate OSH or WHP studies

<i>Review Type or Report</i>	<i>Reference</i>	<i>Health Outcomes</i>	<i>Economic Outcomes</i>	
			<i>Productivity Loss Reduction</i>	<i>Health Care Expenditures</i>
Literature review and framing of an integrated concept	Shain, Kramer 2004	LE	LE	LE
NASA report	IOM Report 2005	+	NA	NA
Literature review and analysis	Ruotsalainen et al 2006	NR †	NR †	NA
Systematic review and best evidence synthesis	Brewer et al 2006	Mixed	NA	NA
Systematic review and meta-analysis	Kuoppala et al 2008	+	+	NA
Literature review	Goetzel et al 2008	+	+ *	+ *
Systematic review	Verbeek et al 2009	+	+	+
NIOSH Total Worker Health Report—1	Sorensen, Barbeau 2012	+	+	NA
NIOSH Total Worker Health Report—2	Goetzel 2012	+	+ *	+ *
NIOSH Total Worker Health Report—3	Seabury, et al 2012	+	NA ¥	NA ¥



Case Examples

- Single employer case examples are included to illustrate “proof of concept”
- A relatively rich “practice-based evidence” literature exists, but there is an obvious bias for positive case examples
- Not an exhaustive, all-inclusive list
- Generally, well-documented programs by large companies
- Introduction of sport sciences to integrate OSH and WHP shows promise

<i>Employer</i>	<i>References</i>
3M	Anderson, Stolzfus, 2001
Chevron	Whitehead D, 2001
Dell	Van de Ven, 2004 Dell, 2012
Dow Chemical	Dow Sustainability Goals, 2010
IBM	IOM, 2005
Johnson & Johnson	Isaac F, 2001
UAW-General Motors	UAW-GM Joint Activity System, 2012
USAA	USAA, 2006
Weyerhaeuser Company	Roberts, 2009

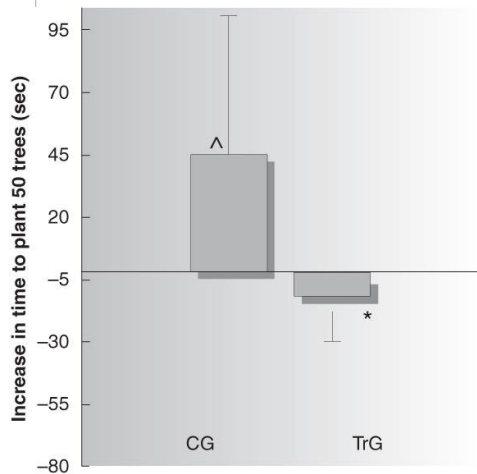


The Occupational Athlete

- Tree planters in western Canada
- The “Fit to Plant” program – developed to reduce injury rates, increase productivity, and reduce stress
- Program design based on applied sport sciences
- Brings together work organization, health behaviors (fitness and nutrition focus), pre-season training



© 2009 Human Kinetics. Photo courtesy of Natural Image Photography, Dave R. Gluns.



- **Trained group**
 - Increased functional capacity
 - Faster planting time even after 3:00 pm (see graph)
 - Higher mean daily heart rate during planting (ability to sustain higher output)
- Program applied to all silviculture contractors for Weyerhaeuser Company
- **Injury rates over 5 y of implementation fell from 22% to 5%**



Discussion

- A formal, broadly accepted definition with associated measurement indicators is needed for the emerging field of integrated worker health protection and promotion
- Sufficient evidence of effectiveness supports an integrated approach to improving worker health
- In general, economic outcomes are lacking
 - Cautious optimism supports productivity outcomes
 - Health care expenditures outcomes are lacking



Discussion

- Strong case examples from the field support the case for integrated programs
- Additional research is needed to:
 - Study economic outcomes to create a compelling business case
 - Address company size
 - Address industry type



Discussion

- Other observations
 - Decisions to invest in integrated worker health protection and promotion programs – where is the leverage?
 - » Legal/regulatory
 - » Financial
 - » Moral
 - Need to focus on stakeholder collaborations to create, adopt, implement, maintain, and study integrated programs
 - Identify the barriers and opportunities presented through health policy reform landscape (ACA context)



Conclusions

- The integration of worker health protection and promotion efforts is an area of emerging importance in need of a formal definition with associated measurement indicators
- Existing evidence supports an integrated approach in terms of health outcomes but will benefit significantly from research designed to strengthen the business case for employers of various company sizes and industry types



Thank You

