

16th Annual Ohio Employee Health & Wellness Conference

Leading with Movement as a Total Workplace Health Strategy

Rick Wickstrom, PT, DPT, CPE, CME

Doctor of Physical Therapy

Certified Professional Ergonomist

Certified Medical Examiner

Ohio BWC Transitional Work Program Developer

President of WorkAbility Systems, Inc.

Learning Objectives

1. Explain recent trends and challenges for implementing traditional workplace wellness programs.
2. Describe the evolution of movement screening to promote musculoskeletal health.
3. Distinguish event planning logistics for traditional biometrics versus movement biometrics.
4. Identify the benefits for leading with movement and functioning from hire to retire.

Total Worker Health® is a registered trademark of the U.S. Department of Health and Human Services (HHS). Use of this mark does not imply endorsement by HHS, the Centers for Disease Control and Prevention, or the National Institute for Occupational Safety and Health.

Musculoskeletal Disease and Costs

<http://www.boneandjointburden.org>¹

- Musculoskeletal disorders & costs (\$332 billion) are 5.76% of US gross domestic product and account for 216 million work-days
- More than 50% of all adults report having a musculoskeletal condition – This outpaces respiratory (24%) and circulatory conditions that include high blood pressure (42%).
- Chronic low back pain, joint pain and disability account for 3 of the top 5 most commonly reported medical conditions.

A Musculoskeletal Movement Screen is needed to measure risks and promote suitable physical activity!

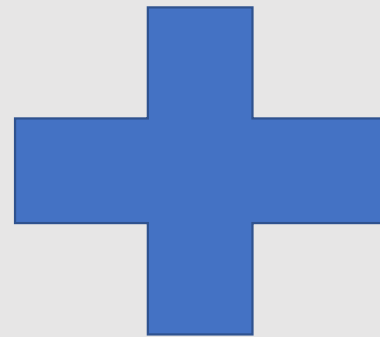
Role of Physical Therapists with Employers

Physical therapists are entry-point practitioners for activity participation, wellness, health, and disability determination.

- Education programs for physical therapists have advanced to a doctoral level (DPT) to improve access to safe, cost-effective care.
- Physical therapists deliver a broad range of services that include examination, evaluation, diagnosis, prognosis, intervention, care coordination, prevention, wellness, research, and consultation.
- Physical therapists prescribe or recommend physical activity, accommodations, adaptive and assistive technology, diagnostic tests, and other interventions to optimize work participation.

Adapted from APTA House of Delegates (2022)²

Total Worker Health®

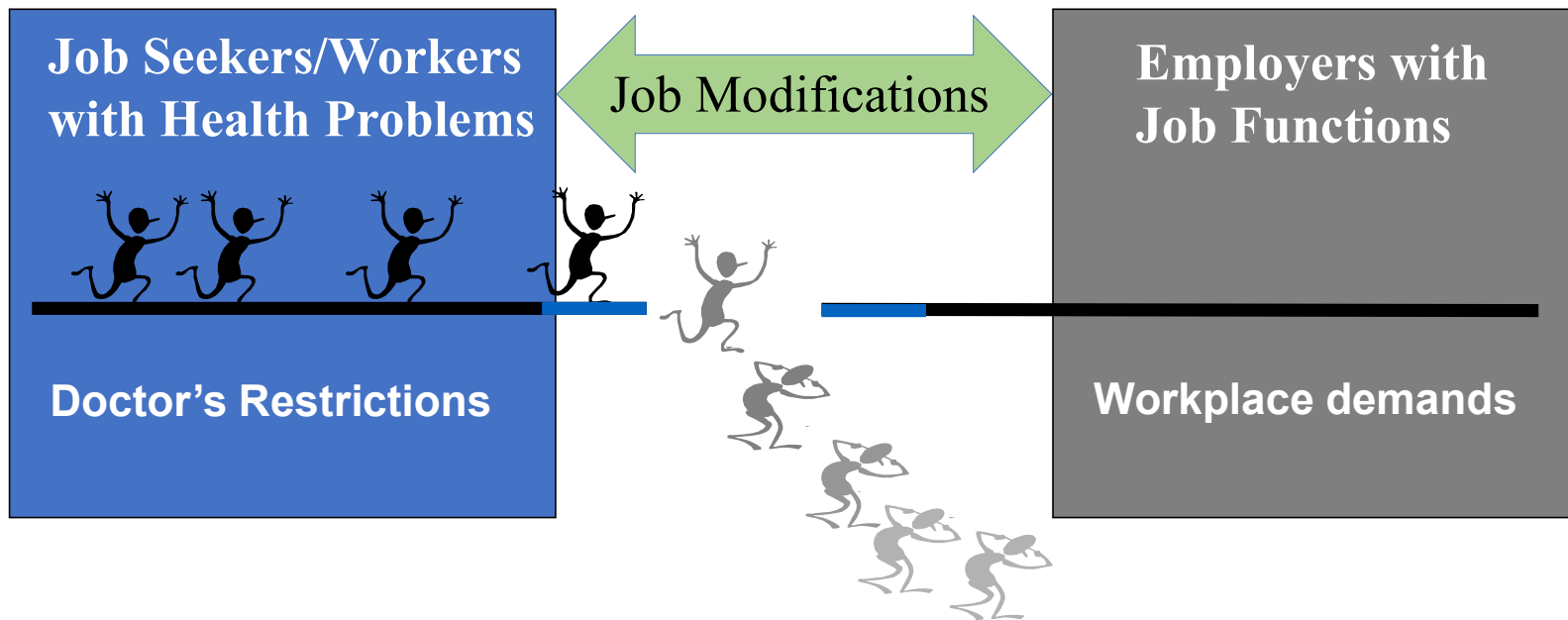


A **wholistic approach** to policies, programs, and practices that integrates **protection** from work-related safety and health hazards with **promotion** of injury and illness-prevention efforts to advance worker well-being.

Chari et al (2018)³ and Sherman et al (2019)⁴

Gaps exist in:

1. What employers require of workers
2. What providers understand about jobs
3. What workers are safely capable of doing
4. How workers are matched to job demands



Bridging the Gap Between Workplace and Clinic⁵

**Bridging the Gap
Between the Workplace
and Clinic**

**Evidence-based
Solutions**

On-site & Near-site
Health Centers

Total Workplace
Health Gap Analysis

Workplace Wellness
Lead with Movement

WorkerFIT Job
Descriptions

WorkAbility Job
Fitness Exams

Integrated Transitional
Work Program

Total Workplace Health Gap Analysis

Five Defining Elements

Leadership

1

Demonstrate leadership commitment to worker safety and health at all levels of the organization.

Work Design

2

Design work to eliminate or reduce safety and health hazards and promote worker well-being.

Engagement

3

Promote and support worker engagement throughout program design and implementation.

Confidentiality

4

Ensure confidentiality and privacy of workers. Data sources that require confidentiality considerations and/or protections

Systems

5

Integrate relevant systems to advance worker well-being.

Introducing WorkerFIT!

Fitness-for-duty Innovation Technology



\$26 ROI for every \$1 invested in **integrated** workplace intervention compared to usual care!⁶

Our health care spend is too costly!



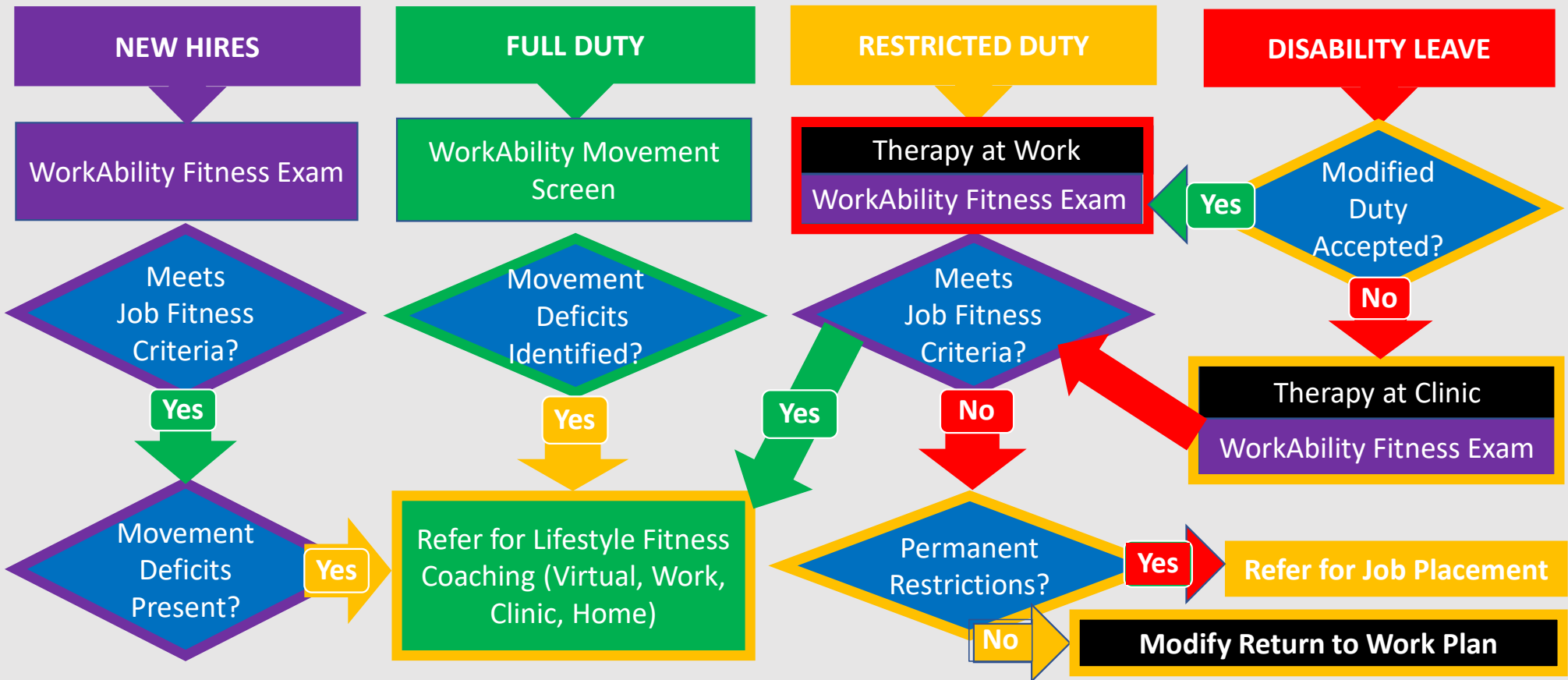
Direct Costs (Personal/Work injury)

- Medical expenses
- Disability leave/legal expenses

Indirect Costs

- Hiring/training/overtime replacements
- Productivity loss due of restrictions
- Quality defects/administrative burden

Integrated Transitional Work Program and Job Fitness Exams

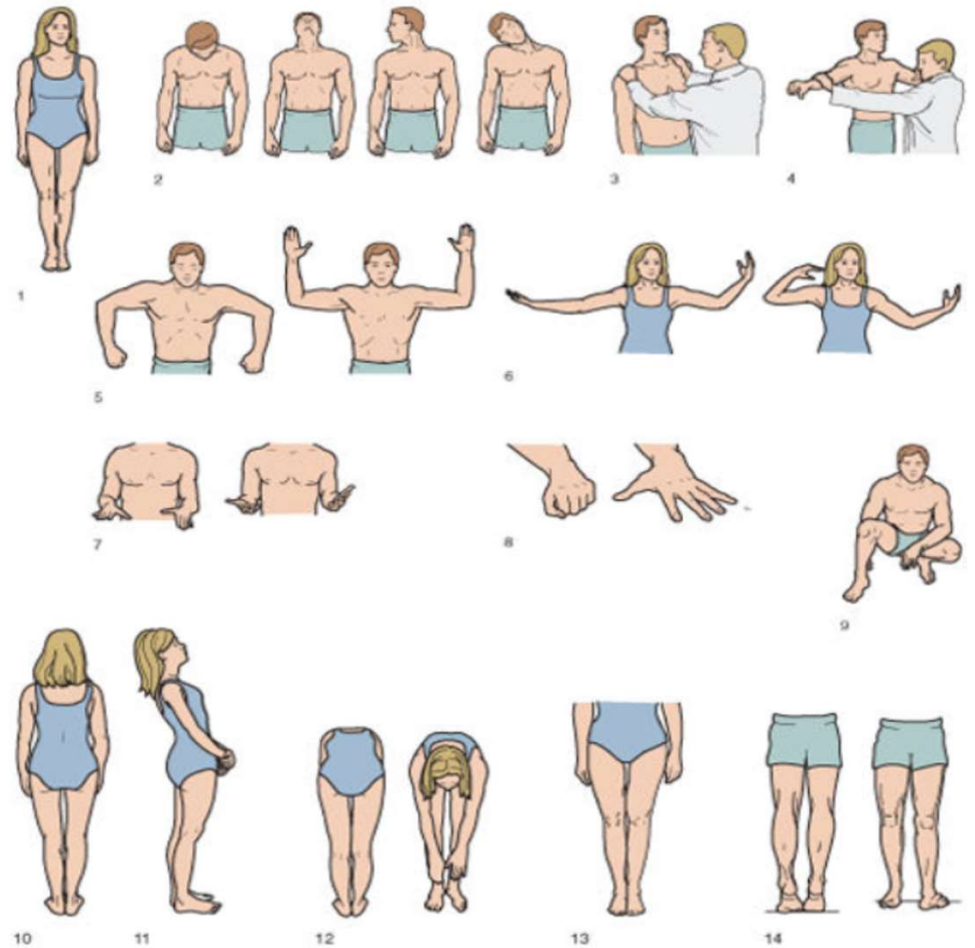


Traditional Workplace Wellness Programs: Costs/ROI

- Negative ROI after excluding **early RTW/injury prevention** (Baxter, 2014)⁷
- Healthcare savings average \$157, but incentives for workers to participate cost and average of \$650 (Mattke, 2013)⁸
- Wellness participants have lower medical expenses & healthier behaviors than non-participants (Jones, 2018)⁹ **Resources directed to Worried Well?**
- Self-report behaviors of regular exercise and active dietary management were main significant outcomes (Song et al, 2019)¹⁰
- Often include clinical biometrics for cardiovascular risks, but ignore musculoskeletal risks & physical function

Origin of Movement Exams

- **WWII Army Entrance Exams:** Army Regulation No. 40-105 Standards for Physical Exam specified a screen of active movements in 1923.¹⁴
- **Sports Participation Exams:** James G. Garrick, MD introduced brief orthopaedic screening exam in 1977.¹⁵ This is endorsed by American Academy of Pediatrics.¹⁶
- **Research:** Low sensitivity (50.8%) compared to brief orthopedic history (93%) by Gomez et al. in 1993.¹⁷



How are Movement Exams Different for Workers than Athletes?

- Most workers don't have vigorous job demands
 - Workers with sedentary jobs benefit from suitable physical activity
 - Workers with physically-demanding jobs benefit from exercise to alleviate symptoms.
- Most workers are reluctant to disclose medical history (deters wellness participation)
- Job candidates may only be rejected based on information relevant to job performance.

More emphasis on collecting baseline data that is relevant to physical activity prescription/rehabilitation

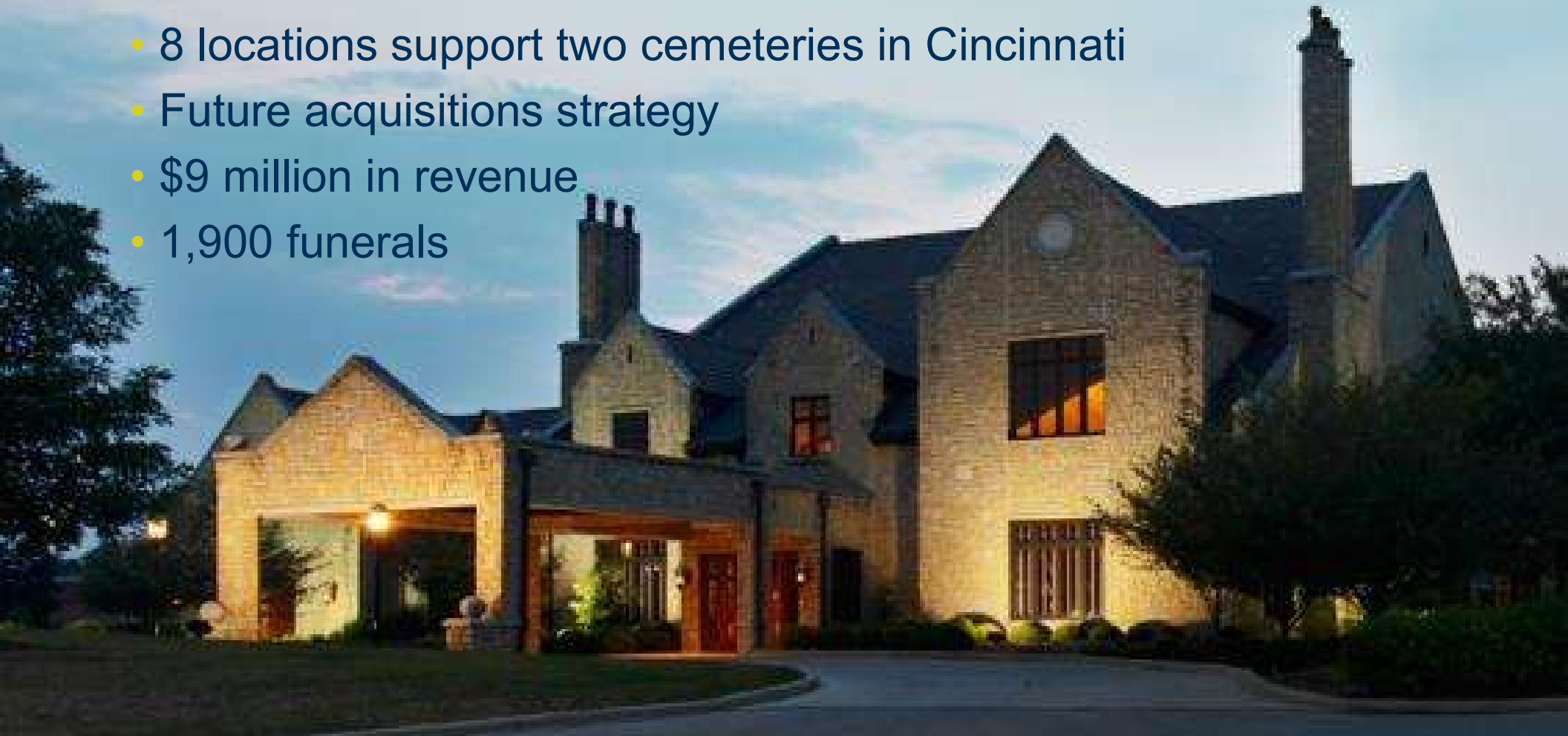
Spring Grove Cemetery

- 750 Acres / 450 Developed
- Founded 1845
- 240,000 Interments
- 1,300 services per year
- National Historic Landmark
- \$13 million budget



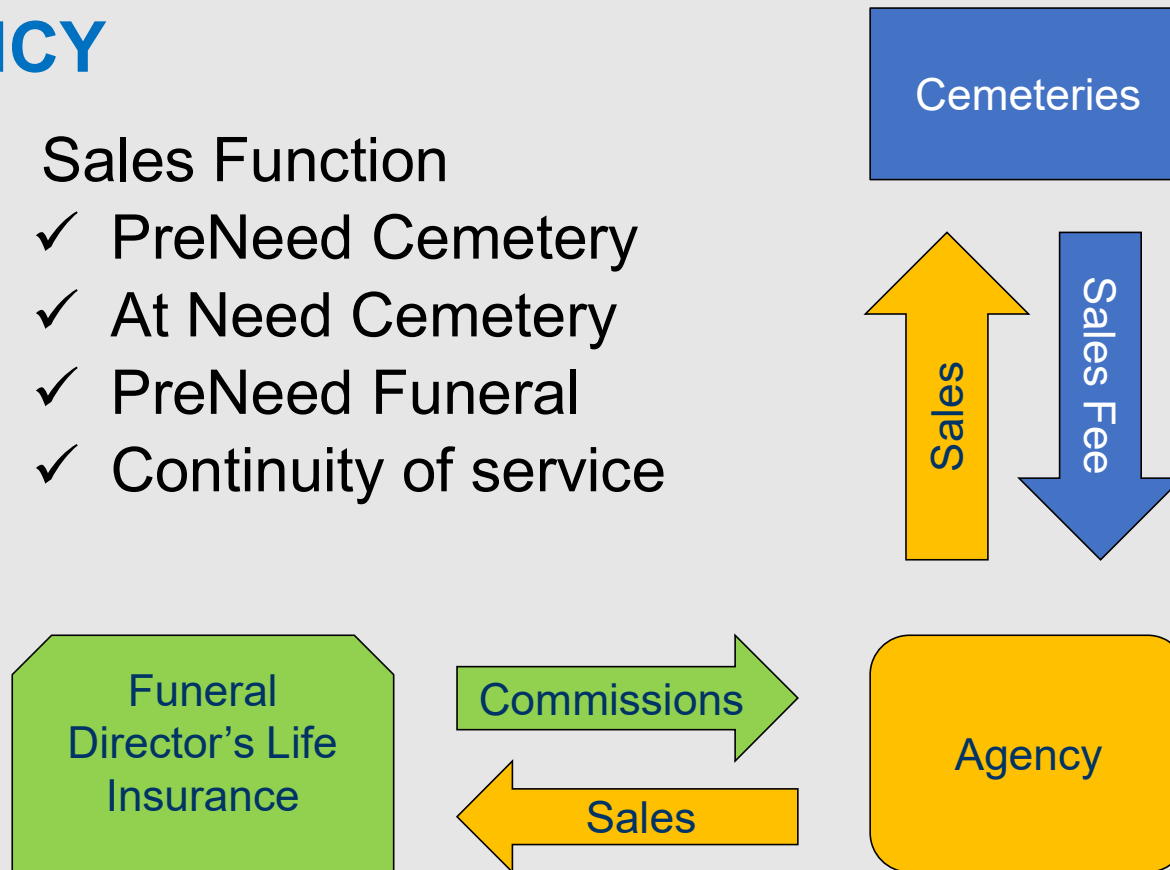
Spring Grove Funeral Homes

- 8 locations support two cemeteries in Cincinnati
- Future acquisitions strategy
- \$9 million in revenue
- 1,900 funerals



AGENCY

- Sales Function
 - ✓ PreNeed Cemetery
 - ✓ At Need Cemetery
 - ✓ PreNeed Funeral
 - ✓ Continuity of service



Health and Safety Programs

Health Plan: 90 of ~170 employees enrolled in 2022

Wellness Program:

- 66 participated in the wellness incentive
- 55 were low risk and received 100% of the incentive
- 11 were moderate risk and received 50%
- Movement screen intervention was inclusive of all employees

Safety Program

- No OSHA-recordable injuries for cemetery or agency in past 3 years.
- Emphasis on programs to reducing work injuries in Funeral Home

Ohio BWC 15k Program and Transitional Work¹⁶

- No work-related lost-time for any Ohio BWC policies in 5 years.

Funeral Home Ergonomic Improvements




Funding support through Ohio BWC Safety Intervention Grants!¹⁷

Logistics Consideration for a Workplace Wellness Event

Logistics	Traditional Biometrics	Lead with Movement Screens
Space/privacy	Large space to accommodate multiple stations/large groups	Small private conference room
Social distancing	Scheduled event a start of shift to meet fasting requirements	Examiner maintains 6 feet from participant, and virtual option
Scheduling	Events are held at start of shift to meet fasting requirements	Flexible 30-minute appointments any time during shift by Calendly
Productivity disruption	Production shuts down for group participation in event	Convenient shift times and location options reduces productivity loss
Feedback	Delayed biometrics report with general physical activity advice.	Immediate, individualized feedback about how to exercise better

WorkAbility Fitness Screen Methods

<https://workabilitysystems.com/>

 **WorkAbility Movement Survey**
Therapy Solutions for Work Performance

Name _____ Subject ID# _____ Date _____

What is your gender? Male Female What is your age? _____ years

What is your height? _____ inches What is your weight? _____ pounds

What is your Race/Ethnicity (EEO-1 Category)?

Hispanic/Latino Black (not Hispanic/Latino) Native Hawaiian or other Pacific Islander
 White (not Hispanic/Latino) Asian (not Hispanic/Latino) Two or more races (not Hispanic/Latino)

What is the highest level of formal education that you have completed?

Less than high school Some college Graduate school/degree
 High school diploma or GED College graduate Prefers not to disclose

Are you currently: (Please mark any categories that you feel apply.)

Working full time (35 or more hours per week) Disabled and unable to work
 Working part time (fewer than 35 hours per week) Retired
 Working with restrictions or other job accommodations Homemaker/keeping house
 With a job, but not working due to illness, vacation or strike Student
 Unemployed, laid off or looking for work Other _____

Limiting Health Problems

a. Do you have any health problems that may limit movement or get worse with physical activity? Yes No

b. Mark the boxes below to indicate any body areas that may give you trouble with movement or physical activity.

Head Neck Upper back Shoulder(s) Elbow(s) Wrist/Hand(s)
 Chest Abdomen Lower back Hip/thigh(s) Knee(s) Ankle(s)/Feet

c. Over the last 12 months, have you missed any time from work because of movement difficulty? Yes No

Fitness Monitoring

a. Mark one or more of the biomarker listed below that are out of range for you or require medications to control.

Blood pressure Cholesterol Triglycerides Blood sugar Unknown (not checked)

b. Do you use any technology devices or applications to monitor your fitness activity? Yes No

If Yes, briefly list the technology devices or applications: _____

c. How much of a priority is physical fitness for you on a scale of 0 to 10, with 10 being most interested? _____/10

© 2022 by WorkAbility Systems, Inc. Reprinted with permission solely for fitness, clinical and education purposes.
May not be modified or used for other commercial, marketing, or research purposes without prior permission.



Methods: Height and Weight

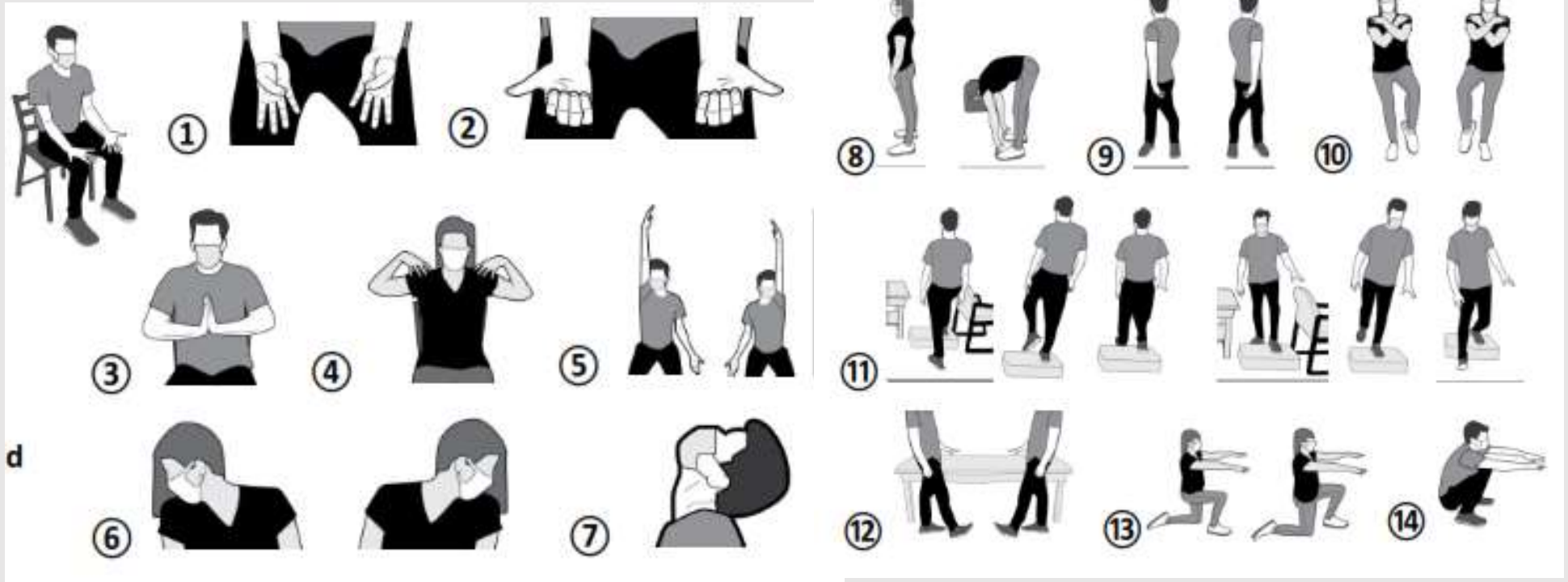
<https://workabilitysystems.com/>



- Linear relationship between BMI with incidence and severity of Workers' Compensation Claims. (Ostbye, 2007)¹⁸
- Justification for interventions targeting healthy eating and physical activity
- BMI is used to classify obesity, but waist-to-height ratio is more predictive of health risk¹⁹

Methods: Active Movement Scale

<https://workabilitysystems.com/>



Wickstrom et al (2022)¹⁹

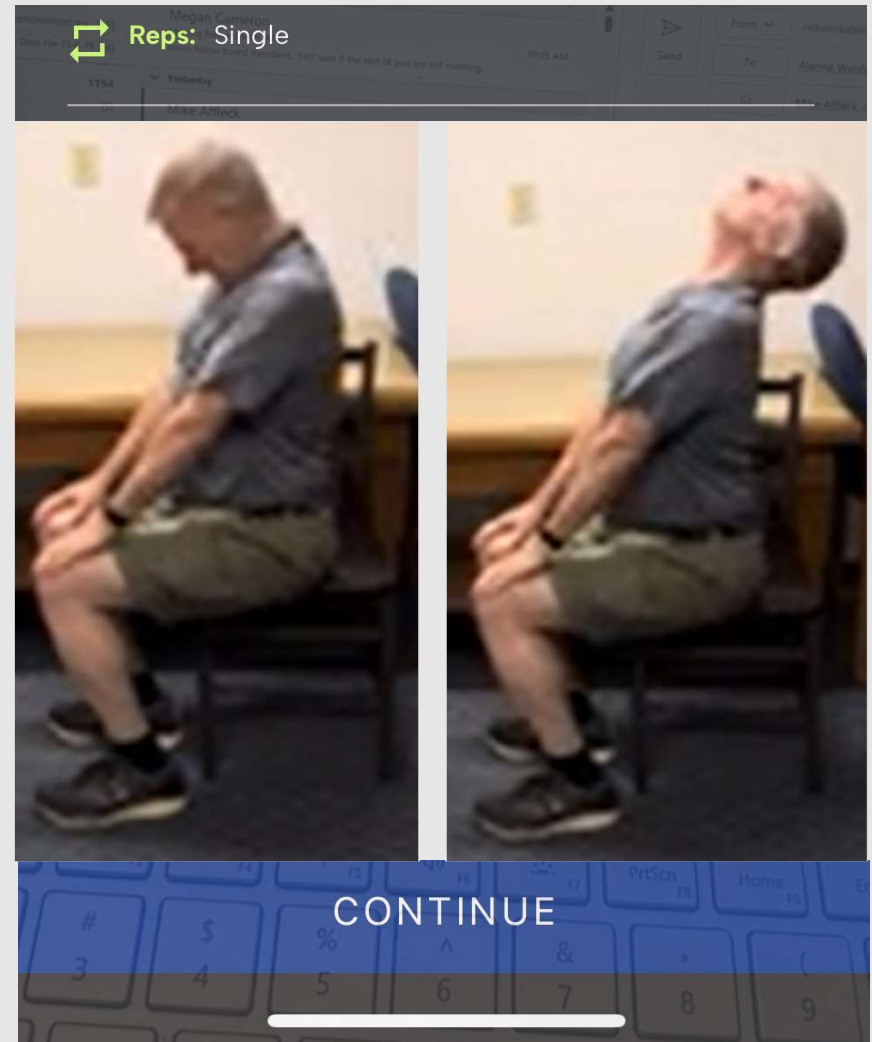
Set-Up: 12 x 10 Room



MOVEMENT INSTUCTIONS

Flex/Extend Neck

- a) *Sit sideways in the chair with your palms on your knees and arms extended.*
- b) *Hold this posture and try to bend your head to touch your chin to your chest.*
- c) *Then extend your head back as far as you can to look up.*



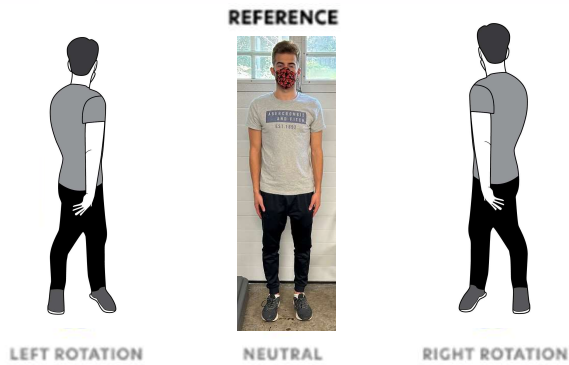
Name: Joe Sample
Video ID: 2818_msrot

Organization: Workability Systems
Height (in): 6' 4"

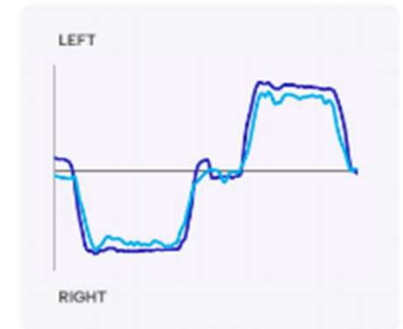
Date: Aug-09-2023
Weight (lb): 188

FAIL ❌ DN ❌ No Pain ✓

MULTI-SEGMENT ROTATION



	PELVIS ROTATION	TRUNK ROTATION	MOVEMENT SCORE
LEFT	81° AVG: --	93° AVG: --	57 /100
RIGHT	78° AVG: --	86° AVG: --	52 /100



MOVEMENT IMAGES

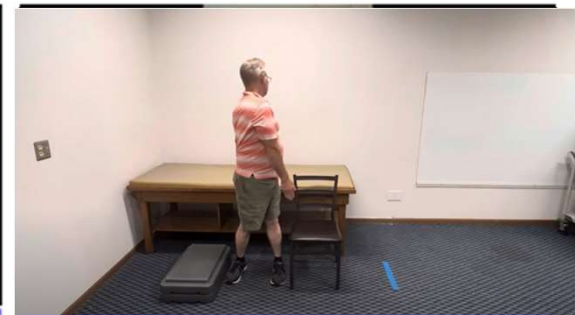
Start of Movement



Maximum Rotation (RIGHT)



Maximum Rotation (LEFT)



Methods: Two Square Agility Test



- Timed Test for stepping back and forth quickly across a marked tape for 5 complete cycles
- Relevant to fall risk and walking speed for task productivity
- Time may be converted to walk speed

Wickstrom et al (2019)²⁰

Immediate Feedback: Review of Recent Physical Activity

<https://workabilitysystems.com/>



Warm-up Option: Mountain Pose to Forward Fold

- Encourage job-relevant warm-up and stress relieve movements.
- Discourage recent physical activity habits that may cause harm.
- Highlight movements to target individual deficits.
- Problem solve about lifestyle habits to meet physical activity guidelines

Group Aggregate Reporting

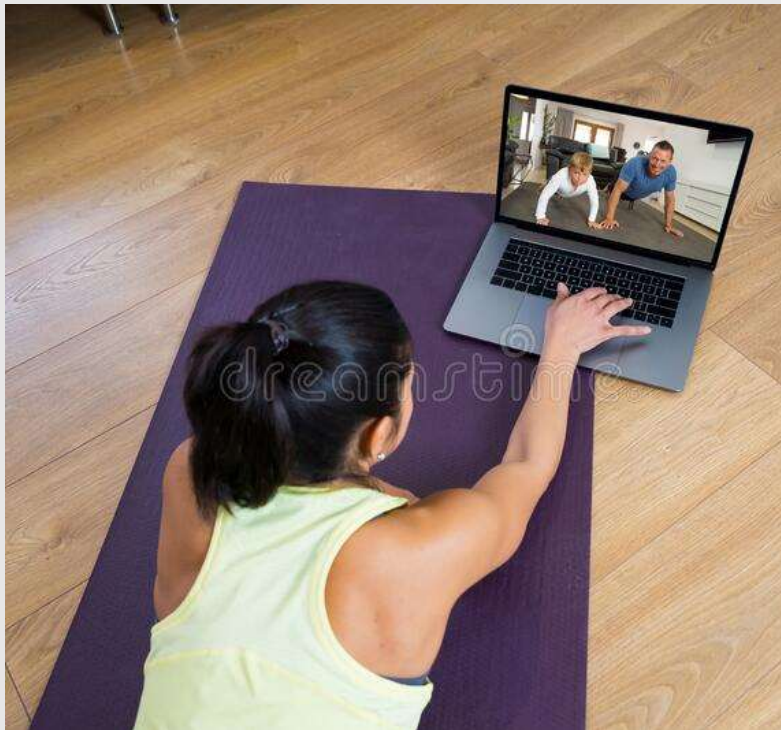
<https://workabilitysystems.com/>

- 30% meet strength training guidelines
- 58% meet aerobic exercise guidelines
- 69% received instruction to modify recent physical activity.
- 38% would benefit from diet management to reduce obesity
- 21% would benefit from fitness training to reduce movement deficits
- 48% accepted offer of virtual lifestyle fitness coaching
- None were recommended to have follow-up physical therapy consult

SAMPLE COMPANY LOGO		WorkAbility Movement Screen Group Report					
Project Name	Start Date - End Date	Workers	Male	Female	< 40 yr.	40-54 yr.	55+ yr.
Sample company name	02/11/22 - 03/29/22	61	29 (48%)	32 (52%)	24 (39%)	16 (26%)	21 (34%)
Limiting Health Issues	Count (%)	Body Mass Index	Count (%)	Movements \ Ratings	4	2 or 3	1 or 0
Limited activity	18 (30%)	Underweight	0 (0%)	1. Adduct thumbs	58 (95%)	2 (3%)	1 (2%)
Missed work	6 (10%)	Normal	17 (28%)	2. Flex fingers 2-5	59 (97%)	2 (3%)	0 (0%)
		Overweight	21 (34%)	3. Extend wrists	54 (89%)	7 (11%)	0 (0%)
Limiting Body Areas	Count (%)	Obese I	16 (26%)	4. Flex elbows back	56 (92%)	5 (8%)	0 (0%)
Head	1 (2%)	Obese II	6 (10%)	5. Elevate shoulders	53 (87%)	8 (13%)	0 (0%)
Neck	1 (2%)	Obese III	1 (2%)	6. Diagonal neck bend	42 (69%)	19 (31%)	0 (0%)
Upper back	3 (5%)			7. Extend neck up	52 (85%)	9 (15%)	0 (0%)
Shoulder(s)	4 (7%)	Abnormal/Medication	Count (%)	8. Forward bend over	51 (84%)	9 (15%)	1 (2%)
Elbow(s)	1 (2%)	Blood pressure	12 (20%)	9. Rotate torso	57 (93%)	4 (7%)	0 (0%)
Wrist(s)/hand(s)	3 (5%)	Cholesterol	10 (16%)	10. Single leg stance	59 (97%)	2 (3%)	0 (0%)
Chest	2 (3%)	Triglycerides	3 (5%)	11. Step up and over	59 (97%)	2 (3%)	0 (0%)
Abdomen	0 (0%)	Blood sugar	7 (11%)	12. Heel walking	56 (92%)	4 (7%)	1 (2%)
Lower back	8 (13%)	Not checked	10 (16%)	13. Lunge behind	42 (69%)	17 (28%)	2 (3%)
Hip(s)	3 (5%)			14. Active squat down	57 (93%)	2 (3%)	2 (3%)
Knee(s)	7 (11%)	Monitor Fitness Activity	Count (%)				
Ankle(s)/feet	5 (8%)	Uses app or technology	26 (43%)				
				Key: 4=Normal, 3=Guarded, 2=Fair, 1=Poor, 0=Unable			
Cardio Activity Level	Count (%)	Strength Activity Level	Count (%)	Health Promotion Recommended		Count (%)	
9: Vigorous 150+	0 (0%)	5: Extra heavy (>100#)	9 (15%)	None (Keep up the good work!)		5 (8%)	
8: Vigorous 75-150	11 (18%)	4: Heavy (51-100#)	16 (26%)	Modify recent physical activity		42 (69%)	
7: Vigorous 10-75	1 (2%)	3: Medium (26-50#)	26 (43%)	Supervised fitness training		13 (21%)	
6: Moderate 150+	23 (38%)	2: Light (11-25#)	6 (10%)	Weight loss management		23 (38%)	
5: Moderate 75-150	7 (11%)	1: Very light (1-10#)	3 (5%)	Physical therapy consult		0 (0%)	
4: Moderate 10-75	9 (15%)			Other health consultation		3 (5%)	
3: Stand Constant	3 (5%)	Strength Training	Count (%)				
2: Stand Frequent	5 (8%)	≥ 2 days per week	18 (30%)	Lifestyle Fitness Coaching		Count (%)	
1: Stand Occasional	1 (2%)	1 days per week	2 (3%)	Meets criteria for lifestyle fitness coaching		23 (37.7%)	
0: Sedentary	1 (2%)	None	40 (66%)	Accepted offer of lifestyle fitness coaching		11 (18.0%)	
Movement Health Risks (Criteria)	Mean	SD	Units	Low	Median	High	Risk # (%)
Body Mass Index (>=30)	28.4	5.3	n/a	18.9	27.8	40.5	23 (38%)
Two Square Agility Speed (<1.5)	2.3	0.5	m/sec	1.3	2.2	3.5	5 (8%)
Cardio Activity Level 0-9 (<4)	5.4	1.9	n/a	0	6	8	10 (16%)
Strength Activity Level 1-5 (<3)	3.4	1.1	n/a	0	3	5	10 (16%)
Total Body Movement (<90)	95.9	5.7	%	78.0	98.0	100.0	7 (11%)
Upper Body Movement (<90)	95.4	7.2	%	65.4	100.0	100.0	10 (16%)
Lower Body Movement (<90)	96.5	6.2	%	70.8	100.0	100.0	7 (11%)
Fitness Motivation 0-10 (<5)	8.5	1.8	n/a	5.0	9.5	10.0	0 (0%)

Follow-up Intervention: Lifestyle Fitness Coaching

<https://workabilitysystems.com/>



- Certified Coach reviews abnormal movement screen biometrics, with respecting HIPAA Privacy.
- If justified by biometrics, option to engage in 3-month program of fitness coaching to promote healthy physical activity, self-manage symptoms, or diet management
- Coaching at optimal times and communication methods (phone, email, video meeting)
- Facilitate care with preferred community resource providers

Employer-Directed *Lead With Movement* Benefits

<https://WorkabilitySystems.com/>

<i>Lead with Movement</i> Process	Employer/Worker Benefits
1. ALL employees incentivized to have a Musculoskeletal Movement Screen	<ul style="list-style-type: none">⊕ Convenient access options, no scheduling delays⊕ Promotes musculoskeletal fitness of ALL employees⊕ Employer receives group movement biometrics report
2. OPTION to screen for blood biometrics at workplace or a convenient lab collection site	<ul style="list-style-type: none">⊕ Cost savings from direct contracting with one lab⊕ May include other workers not covered by health plan⊕ Employer receives group blood biometrics report
3. Certified health coach reviews abnormal biometric results with worker	<ul style="list-style-type: none">⊕ Biometric findings justify follow-up recommended⊕ Direction to employer preferred health resources⊕ Cost savings from lower health care utilization/costs

Work-site or Near-site Care

- Physical Therapist triage for musculoskeletal concerns
- Nurse Practitioner triage for general medical issues
- Movement screen with lifestyle fitness coaching for musculoskeletal risks.
- Safety and fitness training to improve “work readiness” for high demand jobs



Questions/Feedback

- Do you have any experiences with movement screening in workplace wellness?
- What changes has your company made to improve the ROI of workplace wellness programs?

Follow-up inquiries:

workability.rick@gmail.com

References

<https://workabilitysystems.com/>

1. United States Bone and Joint Initiative: The Burden of Musculoskeletal Diseases in the United States (BMUS), Fourth Edition, 2020. Rosemont, IL. Available at <http://www.boneandjointburden.org>. Accessed on March 3, 2023.
2. American Physical Therapy Association. Access to physical therapists as entry-point practitioners for activity participation, wellness, health, and disability determination. HOD P08-22-12-14 [Position]. Accessed February 14, 2023. <https://www.apta.org/apta-and-you/leadership-and-governance/policies/access-entry-point-practitioners>
3. Chari R, Chang C-C, Sauter SL, et al. Expanding the paradigm of occupational safety and health. *J Occup Environ Med*. 2018;60(7):589-593. doi:10.1097/jom.0000000000001330
4. Sherman B. Employee social determinants of health—an essential consideration for business health and well-being programming. *Am J Health Promot*. 2019;33(1):144-147. doi:10.1177/0890117118812822a
5. Simoneau G, ed. *Bridging the Gap Between the Workplace and Therapy Clinic*. Academy of Orthopaedic Physical Therapy; 2022; Independent Study Course 32.4. <https://www.orthopt.org/course/32-4-bridging-the-gap-between-the-workplace-and-therapy-clinic>
6. Lambeek LC, Bosmans JE, Van Royen BJ, Van Tulder MW, Van Mechelen W, Anema JR. Effect of integrated care for sick listed patients with chronic low back pain: economic evaluation alongside a randomised controlled trial. *BMJ*. 2010;341:c6414. Published 2010 Nov 30. doi:10.1136/bmj.c641

References

<https://workabilitysystems.com/>

7. Baxter S, Sanderson K, Venn AJ, Blizzard CL, Palmer AJ. The relationship between return on investment and quality of study methodology in workplace health promotion programs. *Am J Health Promot.* 2014 Jul-Aug;28(6):347-63.
8. Mattke S., Liu H., Caloyeras J. P., et al., Workplace Wellness Programs Study, Santa Monica, Calif.: RAND Corporation, RR-254-DOL, 2013. As of May 1, 2015:
http://www.rand.org/pubs/research_reports/RR254.html
9. Jones D, Molitor D, and Reif J. What Do Workplace Wellness Programs Do? Evidence from the Illinois Workplace Wellness Study, Accessed 7/8/2018 from
http://www.nber.org/workplacewellness/s/IL_Wellness_Study_1.pdf, June 2018.
11. Song Z, Baicker K. Effect of a Workplace Wellness Program on Employee Health and Economic Outcomes: A Randomized Clinical Trial [published correction appears in JAMA. 2019 Apr 17]. *JAMA.* 2019;321(15):1491-1501. doi:10.1001/jama.2019.3307
12. Foster WB, Hellman IL, Hesford D, McPherson DG. *Physical Standards in World War II.* Anderson RS, Wiltse CM, eds. Washington, D.C. : Office of the Surgeon General, Department of the Army, 1967. Available at <https://apps-dtic-mil.uc.idm.oclc.org/sti/pdfs/ADA291761.pdf>. Accessed on March 3, 2023
13. Garrick JG. Sports medicine. *Pediatr Clin North Am.* 1977;24:737-747.

References

<https://workabilitysystems.com/>

14. Mirabelli MH, Devine MJ, Singh J, Mendoza M. The Preparticipation Sports Evaluation. *Am Fam Physician*. 2015 Sep 1; 92(5): 371-376.
15. Gomez JE, Landy GL, Bernhardt DT, Critical evaluation of the 2-minute orthopedic screening examination. *Am J Dis Child*. 1993; 147(10):1109-1113.
16. Ohio Bureau of Workers' Compensation. Transitional work bonus. Accessed February 14, 2023. <https://www.bwc.ohio.gov/employer/programs/TransitionalWork/TWBonusDescription.asp>
17. Ohio Bureau of Workers' Compensation. Safety Intervention Grant. Accessed February 14, 2023. <https://info.bwc.ohio.gov/for-employers/safety-and-training/safety-grants/safety-intervention-grant>
18. Ostbye T, Dement JM, Krause KM. Obesity and workers' compensation: results from the Duke Health and Safety Surveillance System. *Arch Intern Med*. 2007;167(8):766-773. doi:10.1001/archinte.167.8.766
19. Wickstrom R, Wang I, McDonough C. Reliability and validity of the Active Movement Scale in therapy clients with musculoskeletal disorders. CSM 2020 Academy of Orthopaedic Physical Therapy Platform Presentation Abstracts. *J Orthop Sports Phys Ther* 2022;52(1):CSM139–CSM140. doi:10.2519/jospt.2022.52.1.CSM55.
20. Wickstrom RJ, Wang YC, Wickstrom NE, Smith RL, Dunning KK. A new Two Square Agility Test for workplace health – Reliability, validity and minimal detectable change. *J Phys Ther Sci*. 2019; 31(10):823-830.

Biographical Information

Dr. Rick Wickstrom, PT, DPT, CPE, CME
President
WorkAbility Systems and WorkerFIT
7665 Monarch Court #109, West Chester, OH 45069
Office Phone 513-772-1026
Mobile 513-382-5818
Fax 513-672-2552
rick@workability.us or workability.rick@gmail.com

Dr. Rick Wickstrom, PT, DPT, CPE, CME is a Doctor of Physical Therapy, Certified Professional Ergonomist, and Certified Medical Examiner. He earned his Bachelor of Science degree in Physical Therapy from the Ohio State University, completed graduate coursework in occupational ergonomics at the University of Cincinnati College of Medicine, and obtained his doctoral degree in physical therapy from Alabama State University. As President and owner of WorkAbility Systems, Dr. Wickstrom has consulted in occupational health and ergonomics for over 30 years. He has published many articles and technical papers related to functional capacity evaluation, workplace health, work disability prevention and ergonomics. He regularly testifies as an expert on matters concerning the extent of physical disability, job analysis, fitness-for-duty and job accommodation. His diverse clinical practice includes transitional work-site therapy, functional capacity evaluation, worker accommodation studies, ergonomic job analysis, development of worker fitness screening and transitional work programs, product design, research, and training. Dr. Wickstrom has dedicated his career to preparing employers and occupational health professionals with skills and tools needed to assess job demands, evaluate worker fitness-for-duty, resolve worker performance barriers, and promote physical wellness.