

Leverage the Physical Workplace for Employee Wellness

April 2021

Nathan Jones, MD, MPH

- **Captain**, U.S. Air Force Medical Corps
- **Staff Physician**, U.S. Air Force Robins Air Force Base Occupational Medicine Clinic

Required Military Disclaimer

The views expressed are those of the author and do not reflect the official policy or position of the US Air Force, Department of Defense or the US Government.



Credentials



HARVARD
UNIVERSITY

Harvard T.H. Chan School of Public Health

- Occupational Medicine Residency Program
- Masters in Public Health (Occupational Safety and Health)



American Board of Preventive Medicine

- Board Certified in Occupational Medicine



AMERICAN COLLEGE OF
OCCUPATIONAL AND
ENVIRONMENTAL MEDICINE

American College of Occupational and Environmental
Medicine



American College of
Preventive Medicine

American College of Preventive Medicine



AMERICAN COLLEGE OF
Lifestyle Medicine

American College of Lifestyle Medicine

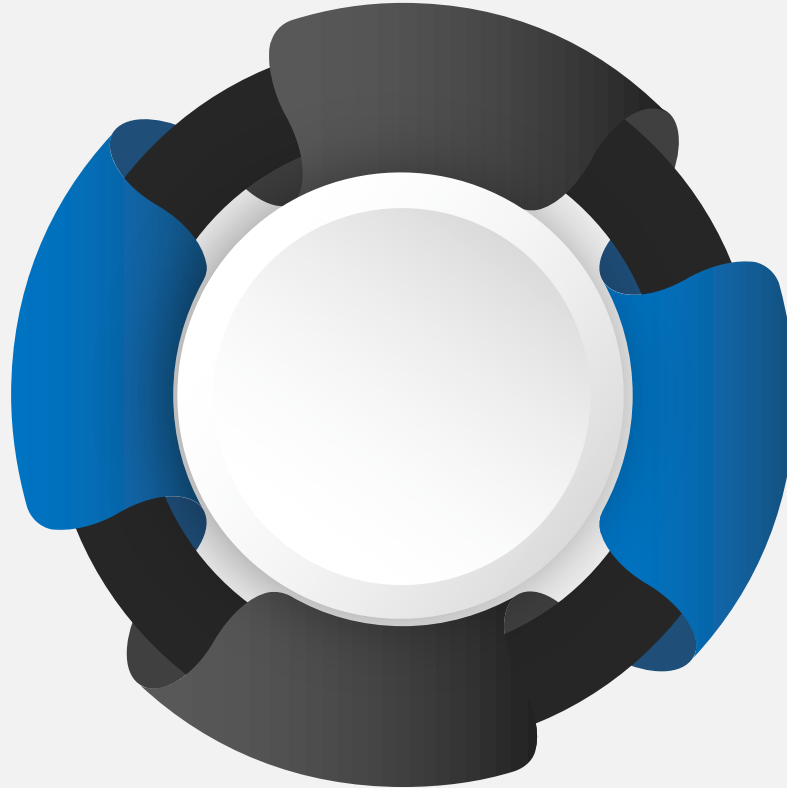
Objectives

01

Explore the benefits of providing a healthy Physical Workplace

02

Discuss the components of a healthy Physical Workplace



03

Identify a toolbox of evidence-based resources for future use

04

Review a case study of exploring the health of a Physical Workplace



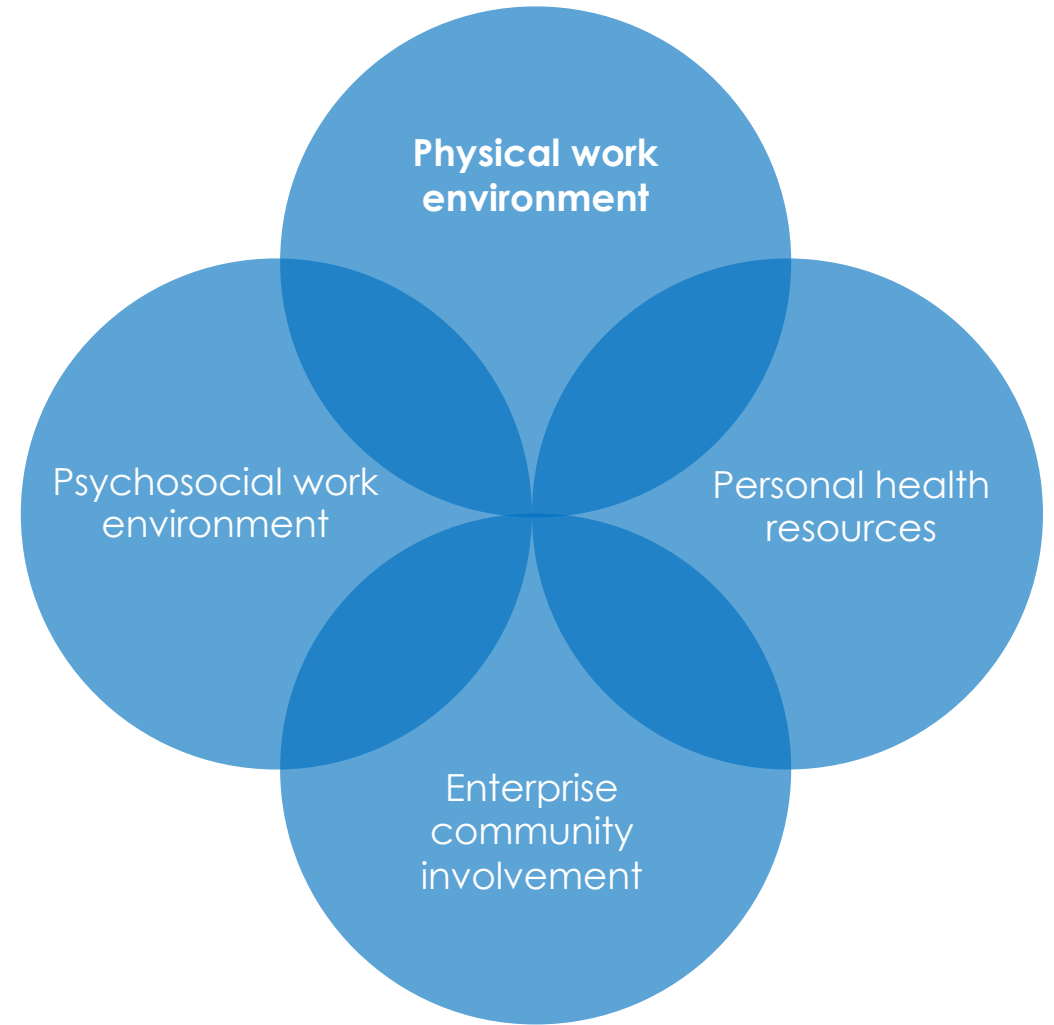
Benefits of a Healthy Physical Workplace

What is the Physical Workplace?



World Health Organization

“The structure, air, machinery, furniture, products, chemicals, materials, and production processes in the workplace.”



Time spent in the Built Environment

- 90% of our time is spent indoors
(Jrnl of Exposure Sci and Env Epi)
- If we were whales, buildings would be our water
(Harvard Professor Dr. John Spengler)
- “The person who designs and operates your building has a greater impact on your health than your doctor.”
(Harvard Professor Dr. Joseph Allen, PhD)



How does the Physical Workplace Influence Health and Wellness?



Vector for disease

- Infectious disease
- Asthma
- Allergies

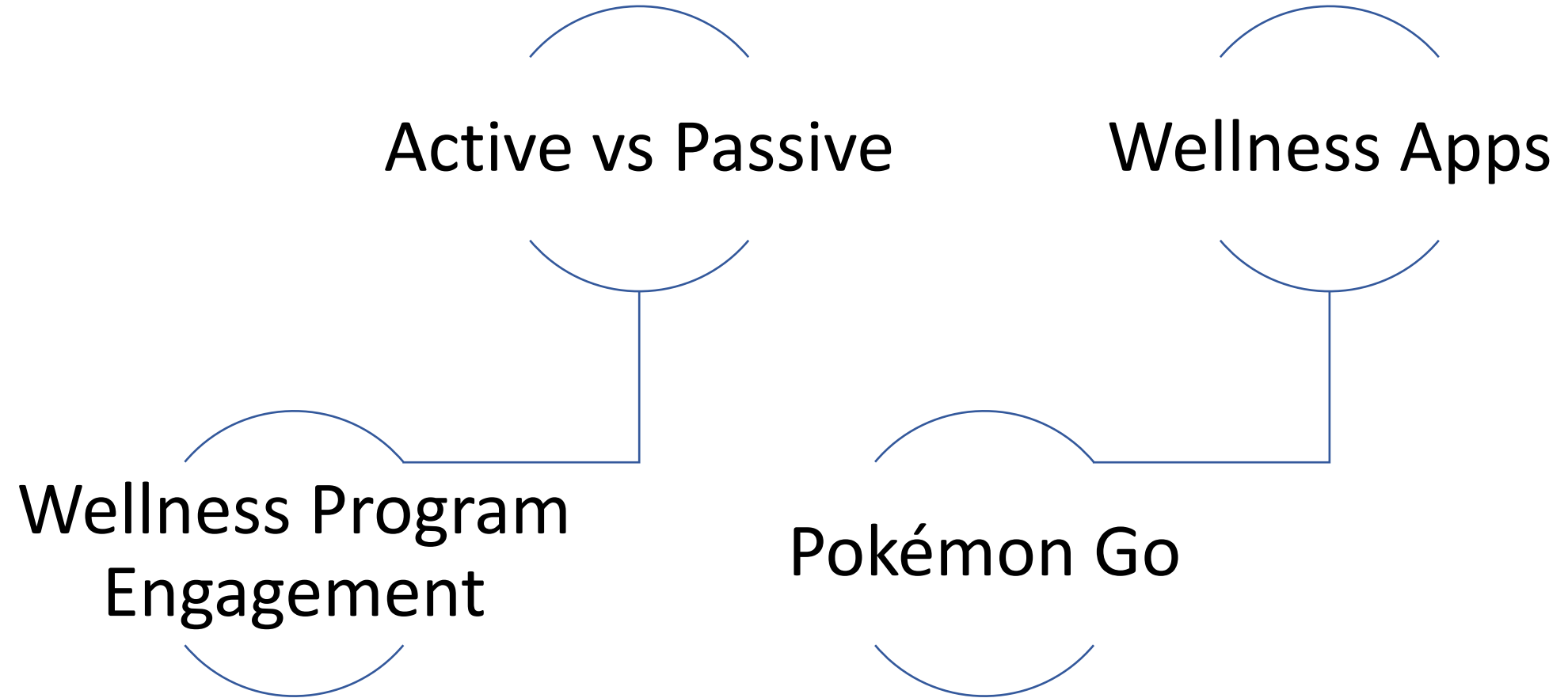
Promote healthy habits

- “The built environment... can influence individual health and behaviors such as physical activity and healthy eating.” (CDC)

Improve health, well-being, and PRODUCTIVITY

- Psychological wellness
- Cognitive performance and concentration
- Interactive employee connections

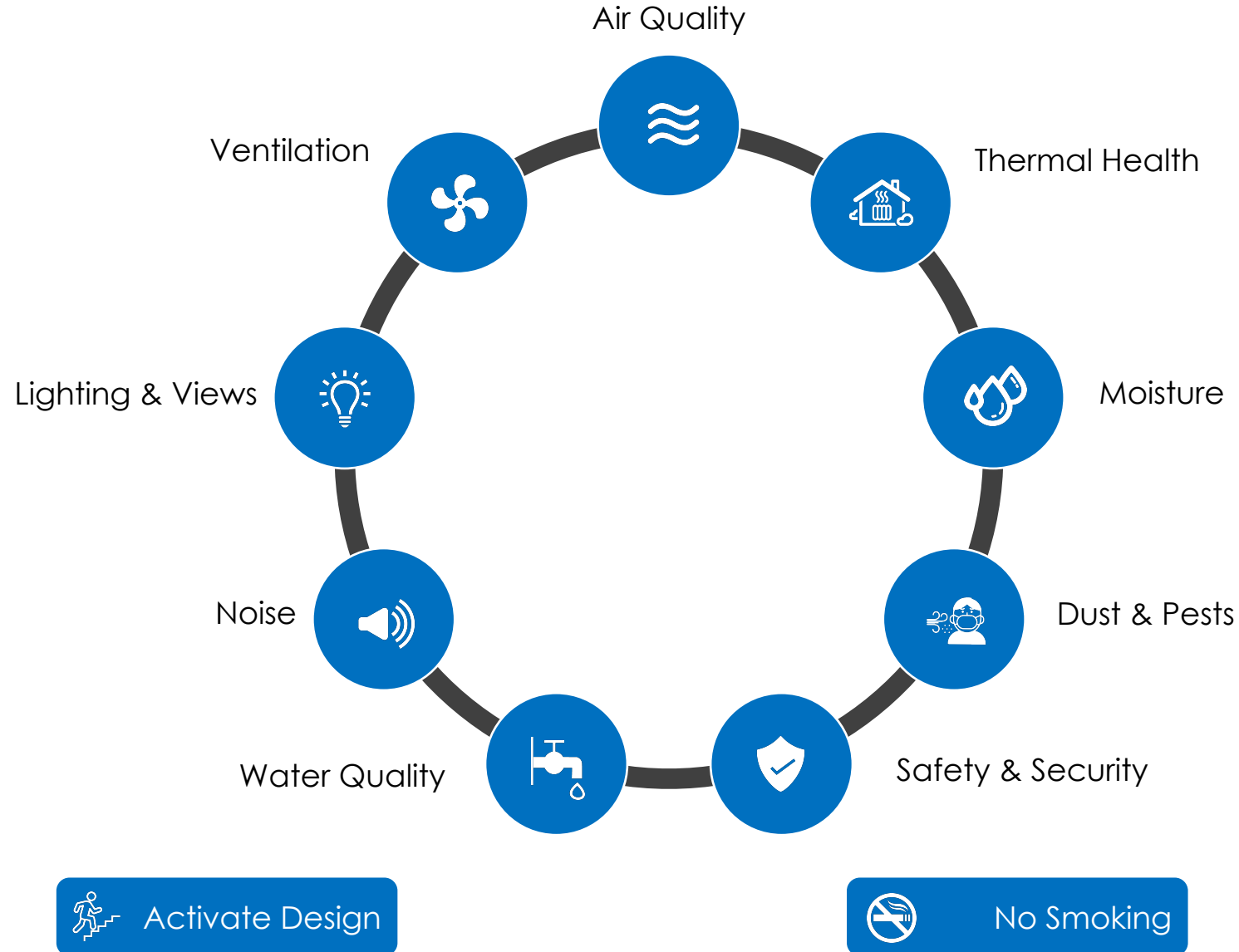
The PASSIVE Advantage of a Physical Workplace Approach





Components of a Healthy Physical Workplace

Foundations of a Healthy Building



- Components:
 - Air exchanges per hour
 - Cubic feet per minute
 - Filtration
- Potential negative outcomes
 - Subjective respiratory complaints
 - Infectious disease transmission
 - Sick leave
 - Cognitive performance



- Indoor air pollutants
 - Nitrogen oxides
 - Carbon monoxide
 - Volatile organic compounds
 - Biologics
- Potential negative outcomes
 - Respiratory irritation
 - Productivity implications
 - Asthma
 - Cancer
 - Infectious disease



- Components:
 - “Thermal comfort”
 - Humidity
- Potential negative outcomes
 - Fatigue and cognitive complaints
 - Infectious disease transmission
 - Cardiorespiratory conditions
 - Learning and performance





- Water-damage
 - Mold-growth
 - Spores
 - VOC's
- Potential negative outcomes
 - Mold-related asthma
 - Allergy symptoms
 - Other respiratory disease

- Nidus for inoculation vs independent hazard
 - Routes of exposure
 - Inhalation
 - Ingestion
 - Dermal absorption
- Potential negative outcomes
 - Allergic disease
 - Exacerbation of respiratory conditions





- Components:
 - Perception of risk
 - Previous acts of violence or crime
- Potential negative outcomes
 - Psychological stress
 - Triggers from past trauma
 - Altered physical activity levels
 - Distraction from primary objective

- Contaminants in drinking water
 - Microbes
 - Metals
 - Chemicals
- Waterborne illness
 - Infectious disease
 - Chronic toxicity from other contaminants



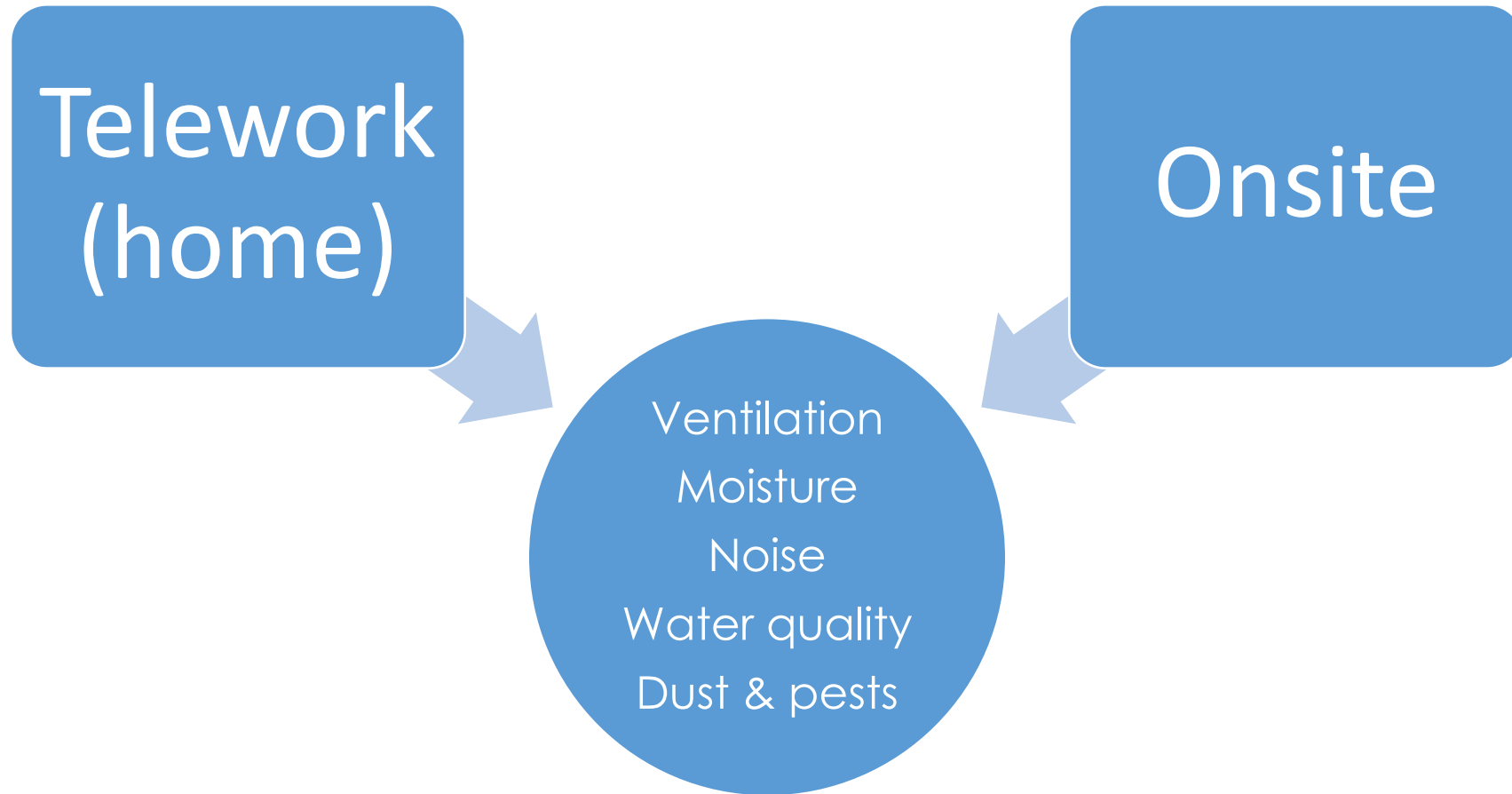


- “Unwanted or disturbing sound”
 - External vs internal sources (open office?)
- Potential negative outcomes
 - Noise-induced hearing loss
 - Communication barriers
 - Reduced concentration and focus
 - Stress, fatigue, hypertension
 - Worker satisfaction

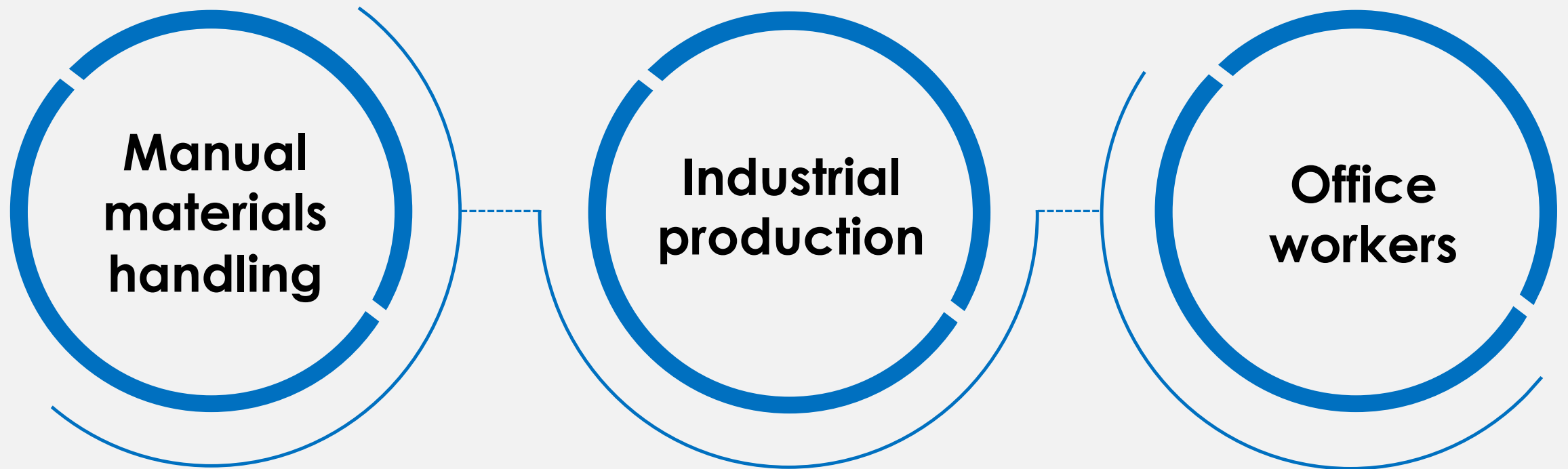
- Components:
 - Light-dark cycle
 - Natural vs artificial light
 - Views of natural landscapes
- Potential negative outcomes
 - Circadian rhythm disorders
 - Mood disorders
 - Alertness and concentration



The COVID-19 Physical Workplace



The safe and efficient interaction between people and things
(Merriam-Webster)



Healthy Habits in Healthy Buildings

Active Design

Stairs

Building
circulation
system

Amenities

Signage

Nutritional Environment

Available
foods

Incentives

Messaging

Organizational Environment





Build Your Toolbox

Evidence-based Resources

- Harvard Healthy Buildings Initiative (forhealth.org)
 - The 9 Foundations of a Healthy Building
 - Homes for Health
- Healthy Buildings (Harvard University Press, 2020)
- UC Berkeley Center for the Built Environment
- Certifications:
 - WELL
 - Fitwel
 - LEED: Indoor air quality
 - RESET
- Center for Active Design
- NYC Active Design Guidelines
- NIOSH Total Worker Health
- WHO Healthy Workplaces



Case Study

Study Setting & Design



- Transportation industry
- ~6500 employees (target pop. ~800)
- Breakroom evaluation
 - CDC Tool for Observation of Worksite Environment
 - UC Berkeley Indoor Environmental Quality Questionnaire
- Outcomes:
 - Physical activity
 - Dietary choices
 - Self-reported sick days
 - Depression

Study Results

- **Higher breakroom quality associated with:**
 - lower odds of depression
 - fewer sick days
- **33% more health-promoting resources in breakrooms could lead to:**
 - 75% lower odds of depression
 - 12% decrease in employee sick days (up to \$100K savings per month)
- **Most important indoor environmental quality subdomains:**
 - Maintenance
 - Furnishings
 - Cleanliness



Recap

- We spend 90% of our time indoors
- The physical workplace can impact our health by:
 - Serving as a vector for disease
 - Promoting healthy habits
 - Directly improving health and productivity
- There are tools!



References

- World Health Organization. *Healthy workplaces: a model for action*. 2010. https://www.who.int/occupational_health/publications/healthy_workplaces_model_action.pdf
- Klepeis N, et. al. *The National Human Activity Pattern Survey: a resource for assessing exposure to environmental pollutants*. Jnl of Exposure Sci and Env Epi (2001).
- Stenger K. *Designing Buildings for Health*. Behavioral Scientist (2020).
- Centers for Disease Control and Prevention. *Built Environmental Assessment*. <https://www.cdc.gov/nccdphp/dnpao/state-local-programs/built-environment-assessment/index.htm#:~:text=The%20built%20environment%20includes%20the,physical%20activity%20and%20healthy%20eating>.
- Allen J, et. al. *The 9 Foundations of a Healthy Building*. 2017. <https://9foundations.forhealth.org/>
- Allen J, et. al. *Homes for Health*. 2019. https://forhealth.org/wp-content/uploads/2020/02/Harvard_Healthy_Buildings_Program_Homes_for_Health_May-2019_R1.8.pdf
- Allen J, Macomber J. *Healthy Buildings*. Harvard University Press (2020).
- UC Berkeley Center for the Built Environment. <https://cbe.berkeley.edu/>
- NIOSH Total Worker Health. <https://www.cdc.gov/niosh/twh/default.html>
- WELL Building Standard. <https://www.wellcertified.com/>
- LEED Rating System. U.S. Green Building Council. <https://www.usgbc.org/leed>
- Fitwel Building Certification. <https://fitwel.org/>
- RESET International Standard. <https://www.reset.build/>
- Center for Active Design. <https://centerforactivedesign.org/>
- NYC Active Design Guidelines. <https://www1.nyc.gov/site/planning/plans/active-design-guidelines/active-design-guidelines.page>
- Jones N, et. al. *Associations Between the Breakroom Built Environment, Worker Health Habits, and Worker Health Outcomes: A Pilot Study Among Public Transit Rail Operators*. Jnl of Occ and Env Med (2020).

QUESTIONS?



nathanmerrittjones@gmail.com