Let’s Get Physical: Reducing Injuries & Costs through Post-Offer, Pre-Employment Physical Screenings

NTTC
Nashville, TN
June 20-22, 2017
• Pre-work Screens
  – Why screen
  – Validation and Development

• Legal Scrutiny
  – Applicable Law
    • ADA
    • GINA

• Results
• Questions
It’s about getting quality in...
It’s about organizational dollars…
Why Screen...

Injury Prevention

• Up to 2/3 of injuries occur within the first 12 to 24 months of hire

• $84,000 - $168,000 for a neck/back injury
Why Screen...

- Proactive solution to reduce work injuries and their associated costs
- Specific to large muscle Sprains and Strains
Pre-work Screen Development.
Screen Development…

Meet with Management to identify the Essential Functions of the job.

Pre-work Screen Development
Essential Functions...

- What is an Function Essential? Per the EEOC...
  - The position exists to perform the function. Removing the function would fundamentally alter the job.
• What is an Function Essential? Per the EEOC...
  – The position exists to perform the function. Removing the function would fundamentally alter the job.
  – There are not a number of other employees available to do the job or among who job tasks can be distributed
• **What is an Function Essential?** Per the EEOC...
  
  – The position exists to perform the function. Removing the function would fundamentally alter the job.
  
  – There are not a number of other employees available to do the job or among who job tasks can be distributed
  
  – The function requires a certain degree of skill or specialization that is needed on the job.
• It is important to understand:
  – The employer has the right to:
    • *Determine the essential functions*
    • *Determine the educational training requirements*
    • *Determine the performance standards of the job*
It is important to understand:

- The employer has the right to:
  - *Determine the essential functions*
  - *Determine the educational training requirements*
  - *Determine the performance standards of the job*

- As long as standards and requirements are consistently applied and are not established specifically to discriminate against people with disabilities.  
  
  (Baum, et al., 2004)
Screen Development

Meet with Management to identify the Essential Functions of the job.

Gather field data. Measurement the of Essential Functions over multiple inputs.

Pre-work Screen Development
Physical Demand:

- Stepping
- Pulling
- Balance
Physical Demand:
- Reaching
- Pulling
- Balance
- Gripping
- Bending
- Squatting
- Twisting
Physical Demand:

- Reaching
- Pulling
- Balance
- Gripping
- Climbing

Pre-Trip Inspection...
Physical Demand:

- Pushing
- Pulling
- Balance

Cranking the Dollies…
Physical Demand:
- Pushing
- Pulling
- Balance

Required Forces (Push / Pull)
- Range
  - 35 - 132 lbs
- Average
  - 77 - 81 lbs
Physical Demand:

- Pulling
- Bending
- Reaching
- Balance

Pulling the 5th Wheel…
Physical Demand:
- Pulling
- Bending
- Reaching
- Balance

Required Forces
- Range
  - 93 - 153 lbs
- Average
  - 121 lbs

Pulling the 5th Wheel...
Physical Demand:

- Lifting
- Pulling
- Pushing
- Bending
- Twisting

Hose Management...
Physical Demand:

- Lifting
- Pulling
- Pushing
- Bending
- Twisting
Physical Demand:

- Lifting
- Pulling
- Pushing
- Bending
- Twisting

Hose Management...
Hosel Management...

Hoses
2 inch  3 inch  4 inch
• Range in weight
  23-60 lbs.
Hose Management...
Traversing the Cat-walk...
“The Job” and its “Essential Functions”

- Single Tasks → Critical Demands
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- Single Tasks → Critical Demands
“The Job” and its “Essential Functions”

• Single Tasks → Critical Demands
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• Single Tasks → Critical Demands
### Con-way Freight: Essential Function Measurements

<table>
<thead>
<tr>
<th>Truck</th>
<th>Track / Trailer ID</th>
<th>Open Hood Front</th>
<th>Open Hood Side</th>
<th>Close Hood</th>
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</tbody>
</table>
**Physical Demands**

- Reaching
- Push / Pulling
- Twisting / Bending
- Squatting / Climbing
- Walking / Standing / Sitting
- Repetitive Hand / Wrist
- Fingering / Grasping
- Lifting / Carrying

**Critical Demands...**

<table>
<thead>
<tr>
<th>Activity</th>
<th>C</th>
<th>F</th>
<th>O</th>
<th>N</th>
<th>Essential Function</th>
<th>Comments</th>
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</thead>
<tbody>
<tr>
<td>Reach below / at / above shoulder</td>
<td></td>
<td></td>
<td>X</td>
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<td></td>
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<tr>
<td>Pushing / Pulling</td>
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<td>X</td>
<td></td>
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<td>Yes</td>
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<tr>
<td>Twisting / Bending</td>
<td>X</td>
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<td></td>
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<td>Squatting / Stooping</td>
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<td></td>
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<td></td>
<td>Yes</td>
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<td>Climbing Stairs</td>
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<td></td>
<td></td>
<td></td>
<td>Yes</td>
<td>General maintenance activities, taking samples</td>
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<tr>
<td>Climbing Ladders</td>
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<td>X</td>
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<td></td>
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<tr>
<td>Walking</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
<td>General maintenance activities, taking samples</td>
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<tr>
<td>Standing</td>
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<td>General maintenance activities, taking samples</td>
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<td>Sitting</td>
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<td></td>
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<tr>
<td>Repetitive Hand / Wrist Activities</td>
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<td></td>
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<td></td>
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<tr>
<td>Finger / Grasping / Handling</td>
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<td></td>
<td></td>
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<td></td>
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<tr>
<td>Balancing</td>
<td></td>
<td>X</td>
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<td></td>
<td>Yes</td>
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<tr>
<td>Lift / Carry / Lower 0 - 10 lbs.</td>
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<td></td>
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<td>Yes</td>
<td>General maintenance activities, taking samples</td>
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<tr>
<td>Lift / Carry / Lower 10 - 20 lbs.</td>
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<td>Yes</td>
<td>General maintenance activities; loading chemicals; shutdown activities</td>
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<tr>
<td>Lift / Carry / Lower 31 - 50 lbs.</td>
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<tr>
<td>Lift / Carry / Lower &gt; 50 lbs.</td>
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<td>X</td>
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<td></td>
<td>Yes</td>
<td>General maintenance activities; loading chemicals; shutdown activities</td>
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</tbody>
</table>
Physical Demands

- Reaching
- Push / Pulling
- Twisting / Bending
- Squatting / Climbing
- Walking / Standing / Sitting
- Repetitive Hand / Wrist
- Fingering / Grasping
- Lifting / Carrying

These measurements of the “Essential Functions” become the basis for Pre-work Screen
Meet with Management to identify the Essential Functions of the job.

Gather field data. Measurement the of Essential Functions over multiple inputs.

Validate the findings with Employees & Management. Develop “Draft Screen” and come to a consensus amongst all.

Pre-work Screen Development
Test Protocol...

Atlas Ergonomics
Pre-Work Screen Process

This Pre-Work Screen has been designed to reflect the physical demands associated with the work at Superior Bulk Logistics, Inc. Throughout the screening process your heart rate will be monitored. As a safety measure and per our testing procedure, your screen will be stopped if your heart rate meets or exceeds 90% of your age predicted maximum [220 - age] x 0.9] or if the screener assesses that you have the potential to jeopardize your health. This is considered a failed screen.

**Step Test (12” step)**
- 1 min.
- Ability to perform sustained work activities including: Handle & Position Hoses Walk to / from a Truck Stop Perform repetitive clutching Perform Pre-trip & Post-trip Inspections of the truck

**Squats**
- 10 reps
- Ability to: Step up to / down from the cab, the trailer, and car-walk Perform Pre-trip & Post-trip Inspections Hose Hook-ups

**One Arm Carry - 60 Feet**
- 30 lbs. X 1 rep
- Ability to: Handle & Position Hoses

**Floor to Waist Lift**
- 20 lbs. x 3 reps
- Ability to: Handle & Position Hoses

**Waist to Shoulder Lift**
- 40 lbs. X 3 reps
- Ability to: Handle & Position Hoses

**24” Step**
- (R) Leg
- (L) Leg
- 3 reps
- Ability to: Step up to / down from the cab, the trailer, and car-walk Climb ladder of tanker

**Horizontal Pull (100 lb. average)**
- Ability to: Crank the doilies Close / Lower tractor hood Enter the Tractor Climb to the top of the Tank Pull the 5th Wheel Handle & Position Hoses

**Horizontal Push (60 lb. average)**
- Ability to: Crank the doilies Handle & Position Hoses

**Crouch**
- 2 reps
- Ability to: Perform Pre-trip & Post-trip Inspections of the truck Hose Hook-ups

**Balance Beam**
- Forward Backward Slide to Side
- Ability to: "Right" yourself when your balance is challenged
• Documentation Trail
  – Must meet validation requirements (Dept. of Labor)
• Documentation Trail
  – Must meet validation requirements (Dept. of Labor)
  – Based on thorough job analysis
Validation & Consensus…

• Documentation Trail
  – Must meet validation requirements (Dept. of Labor)
  – Based on thorough job analysis
  – Employee / Management Review
• Documentation Trail
  – Must meet validation requirements (Dept. of Labor)
  – Based on thorough job analysis
  – Employee / Management Review
  – Validation is an ongoing process
• More on validation
  – Bi-annual review of Essential Functions

<table>
<thead>
<tr>
<th>Name</th>
<th>Signature</th>
<th>Date</th>
<th>Reviewed Essential Functions are representative of current work environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Richard K. Besso Jr.</td>
<td>Richard K. Besso</td>
<td>8/20/09</td>
<td>Yes / No YES</td>
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<tr>
<td>Tina E. Stone</td>
<td>Tina E. Stone</td>
<td>8/20/09</td>
<td>Yes / No YES</td>
</tr>
<tr>
<td>Joe Scipioni</td>
<td>Joe Scipioni</td>
<td>8/20/09</td>
<td>Yes / No YES</td>
</tr>
<tr>
<td>Dale French</td>
<td>Dale French</td>
<td>8/20/09</td>
<td>Yes / No DF</td>
</tr>
<tr>
<td>Lisa Fortun</td>
<td>Lisa Fortun</td>
<td>8/20/09</td>
<td>Yes / No LF</td>
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<tr>
<td>Paul Wedlock</td>
<td>Paul Wedlock</td>
<td>8/20/09</td>
<td>Yes / No FV</td>
</tr>
<tr>
<td>Wade Ness</td>
<td>Wade Ness</td>
<td>8/20/09</td>
<td>Yes / No FV</td>
</tr>
</tbody>
</table>
**Atlas Ergonomics**

**Pre-Work Screen Process**

This Pre-Work Screen has been designed to reflect the physical demands associated with the work at Superior Bulk Logistics, Inc. Throughout the screening process your heart rate will be monitored. As a safety measure and per our testing procedure, your screen will be stopped if your heart rate meets or exceeds 90% of your age predicted maximum [(220 - age) x 0.9] or if the screener assesses that you have the potential to jeopardize your health. This is considered a failed screen.

<table>
<thead>
<tr>
<th>Test Protocol</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td><strong>Step Test (12” step)</strong></td>
<td>1 min. Ability to perform sustained work activities including: Handle &amp; Position Hoses Walk to/from a Truck Stop Perform repetitive clutching Perform Pre-trip &amp; Post-trip Inspections of the truck</td>
</tr>
<tr>
<td><strong>24” Step</strong></td>
<td>Ability to: Step up to/down from the cab, the trailer, and catwalk Climb ladder of tanker</td>
</tr>
<tr>
<td><strong>Squats</strong></td>
<td>10 reps Ability to: Step up to/down from the cab, the trailer, and catwalk Perform Pre-trip &amp; Post-trip Inspections Hose Hook-ups</td>
</tr>
<tr>
<td><strong>One Arm Carry - 60 Feet</strong></td>
<td>30 lbs. X 1 rep Ability to: Handle &amp; Position Hoses</td>
</tr>
<tr>
<td><strong>Vertical Lift</strong></td>
<td>20 lbs. X 3 reps Ability to: Handle &amp; Position Hoses</td>
</tr>
<tr>
<td><strong>Floor to Waist Lift</strong></td>
<td>30 lbs. X 3 reps Ability to: Handle &amp; Position Hoses</td>
</tr>
<tr>
<td><strong>Waist to Shoulder Lift</strong></td>
<td>40 lbs. X 3 reps Ability to: Handle &amp; Position Hoses</td>
</tr>
<tr>
<td><strong>Horizontal Pull (100 lb. average)</strong></td>
<td>Ability to: Crank the doilies Close / Lower tractor hood Enter the Tractor Climb to the top of the Tank Pull the 5th Wheel Handle &amp; Position Hoses</td>
</tr>
<tr>
<td><strong>Horizontal Push (60 lb. average)</strong></td>
<td>Ability to: Crank the doilies Handle &amp; Position Hoses</td>
</tr>
<tr>
<td><strong>Crouch</strong></td>
<td>2 reps Ability to: Perform Pre-trip &amp; Post-trip Inspections of the truck Hose Hook-ups</td>
</tr>
<tr>
<td><strong>Balance Beam</strong></td>
<td>Forward Backward Side to Side Ability to: “Right” yourself when your balance is challenged</td>
</tr>
</tbody>
</table>
• Ability to perform sustained work activities:
  – Loading / unloading freight
  – Walk to / from a Truck Stop
  – Perform repetitive clutching
  – Perform Pre-trip & Post-trip inspections of the truck

• Requirement
  – 1 minute at a cadence of 96 beats per minute
• Ability to:
  – Step up to / down from the cab, the trailer, and cat-walk
  – Perform Pre-trip & Post-trip inspections

• Requirement
  – 10 reps
• Ability to:
  – Move & Position Hoses

• Requirement
  – 30 lbs x 60 feet
  – 60 lbs x 60 feet
Test Protocol...

- Ability to:
  - Move & Position Hoses

- Requirement
  - 30 lbs. x 3 reps
  - 60 lbs. x 3 reps
Test Protocol…

• Ability to:
  – Move & Position Hoses
  – Raise / Close the hood of the tractor

• Requirement
  – 20 lbs. X 3 reps
  – 40 lbs. X 3 reps
• Ability to:
  – Step up to and down from the cab, trailer and cat-walk

• Requirement
  – 24” step
  – 3 reps with Right Leg
  – 3 reps with Left Leg
Test Protocol…

• **Ability to:**
  – Move / Position Hoses
  – Crank the dollies
  – Open / Close trailer doors
  – Close / Lower tractor hood
  – Enter the tractor and trailer
  – Pull the 5th Wheel

• **Requirement**
  – 3 reps averaging ≥ 100 lbs.
Test Protocol…

- Ability to:
  - Move and Position Hoses
  - Crank the dollies
  - Open / Close trailer doors

- Requirement
  - 3 reps averaging ≥ 80 lbs.
Test Protocol…

- Ability to:
  - Perform Pre-trip & Post-trip inspections of the truck

- Requirement
  - 2 reps @ 20 seconds
• Ability to:
  – Negotiate catwalk
  – Demonstrate ability to “Right” yourself when balance is challenged

• Requirement
  – Cross 12 foot balance beam (6 inches wide), turn and return to start
Legal Considerations...
Legal issues arise when different perspectives and expectations collide.

Pre-Employment Screening

Employer  Employee
In order to run a safe & profitable business, we need to know the work capabilities of our employees.
In order to run a safe & profitable business, we need to know the work capabilities of our employees. My medical history, health, etc. are none of your business and I don’t want to be ruled out just because an employer is nervous or doesn’t understand my condition.
In order to run a safe & profitable business, we need to know the work capabilities of our employees. My medical history, health, etc. are none of your business and I don’t want to be ruled out just because an employer is nervous or doesn’t understand my condition.

Employers’ rights to gather and use information about an applicant or employee’s physical/mental health history, current status, capabilities and genetic information is closely regulated.
In order to run a safe & profitable business, we need to know the work capabilities of our employees. My medical history, health, etc. are none of your business and I don't want to be ruled out just because an employer is nervous or doesn't understand my condition.

Enter ADA & GINA

Employers' rights to gather and use information about an applicant or employee's physical/mental health history, current status, capabilities and genetic information is closely regulated.
| **American with Disability Act**  
| (“ADA”)                      | **Genetic Information Nondiscrimination Act**  
| (“GINA”)                      |
| ---                           | ---                                           |
| - Prohibits discrimination against qualified individuals who have, are regarded as having, or have a record of having a disability. | - Prohibits employers from using genetic information in making employment decisions. |
| - Regulates the sequence of an employer’s hiring practices. | - Restricts employers from requesting, requiring, or purchasing genetic information. |
• Many employers have an overly simplistic view of the ADA, namely, that it prohibits “discrimination against disabled people”…
  – So long as they do not have an active prejudice against disabled people, they will have no ADA legal issues.
  – Neither are true.
The ADA is a very complex and nuanced law that tries to strike a delicate balance between…

– An individual's right to employment despite having (or being perceived to having) a physical or mental condition and…
– An employer’s right to insure that all employees can safely and adequately perform their jobs.
Let’s look more specifically at the ADA, relative to pre-employment screening programs.

ADA only protects QUALIFIED individuals with a DISABILITY.

- A QUALIFIED disabled person is one who can still perform the ESSENTIAL FUNCTIONS (with or without “reasonable accommodation”) of his/her job despite the DISABILITY.
• This extra adjective, QUALIFIED, is very important to understand.

• Said another way, in order to be protected by the ADA - an individual can be:
  – (1) disabled but
  – (2) not too disabled

• Understand… pre-employment screening helps an employer decide who NOT to hire, hence, the screening cannot set a bar that is higher than the ADA’s.
• Under the ADA, it is only permissible to deny someone with a disability a work opportunity when he/she is unable to perform one or more of the ESSENTIAL FUNCTIONS of the particular job(s) being sought, as that term is defined by the ADA.
### Atlas Ergonomics

**Pre-Work Screen Process**

This Pre-Work Screen has been designed to reflect the physical demands associated with the work at Superior Bulk Logistics, Inc. Throughout the screening process, your heart rate will be monitored. As a safety measure and per our testing procedure, your screen will be stopped if your heart rate meets or exceeds 90% of your age predicted maximum [(220 - age) x 0.9] or if the screener assesses that you have the potential to jeopardize your health. This is considered a failed screen.

<table>
<thead>
<tr>
<th>Task Description</th>
<th>Reps</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step Test (12” step)</strong></td>
<td>1 min.</td>
</tr>
<tr>
<td>Ability to perform sustained work activities including: Handle &amp; Position Hoses, Walk to/from a Truck Stop, Perform repetitive lifting, Perform Pre- &amp; Post-trip Inspections of the truck</td>
<td>3 reps</td>
</tr>
<tr>
<td><strong>Squats</strong></td>
<td>10 reps</td>
</tr>
<tr>
<td>Ability to: Step up to/down from the cab, the trailer, and catwalk, Perform Pre- &amp; Post-trip Inspections of the truck, Hose Hook-ups</td>
<td>1 rep</td>
</tr>
<tr>
<td><strong>30 lbs. X 1 rep</strong></td>
<td>30 lbs. X 1 rep</td>
</tr>
<tr>
<td>Ability to: Handle &amp; Position Hoses</td>
<td>1 rep</td>
</tr>
<tr>
<td><strong>Floor to Waist Lift</strong></td>
<td>60 lbs. X 3 reps</td>
</tr>
<tr>
<td>Ability to: Handle &amp; Position Hoses</td>
<td>2 reps</td>
</tr>
<tr>
<td><strong>Crouch</strong></td>
<td>2 reps</td>
</tr>
<tr>
<td>Ability to: Perform Pre- &amp; Post-trip Inspections of the truck, Hose Hook-ups</td>
<td>3 reps</td>
</tr>
<tr>
<td><strong>Weight to Shoulder Lift</strong></td>
<td>40 lbs. X 3 reps</td>
</tr>
<tr>
<td>Ability to: Handle &amp; Position Hoses</td>
<td>3 reps</td>
</tr>
<tr>
<td><strong>Balance Beam</strong></td>
<td>3 reps</td>
</tr>
<tr>
<td>Ability to: “Right” yourself when your balance is challenged</td>
<td>3 reps</td>
</tr>
</tbody>
</table>

**Horizontal Push (60 lb. average)**

| Ability to: Crank the doilies, Close/Lower truck | 60 lbs. X 3 reps |
| Enter the truck, Climb to the top of the cab, Pull the fifth wheel, Handle & Position Hoses | 60 lbs. X 3 reps |
| **Horizontal Pull (100 lb. average)** | 60 lbs. X 3 reps |
| Ability to: Crank the doilies, Close/Lower truck, Enter the truck | 3 reps |

Again...

You, as the Employer, gets to determine these “Essential Functions”...
Prohibited Pre-Employment Inquiries:

- GINA prohibits employers from acquiring genetic information about applicants and defines “genetic information” to include information about a candidate’s family medical history.

- The EEOC recently filed three lawsuits against employers under GINA relating to medical questionnaires that asked about the applicant’s family medical history. All cases settled; the most recent one for $370,000 plus other forms of relief (posting of notices, policy revisions, training of employees, etc.).
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• Equal Employment Opportunity Commission (EEOC) Review
• Equal Employment Opportunity Commission (EEOC) Review
  o Discriminatory testing protocol against a protected class
    ✓ Gender
    ✓ Age
    ✓ Race
    ✓ Religion
Equal Employment Opportunity Commission (EEOC) Review

- Discriminatory testing protocol against a protected class
  - Gender
  - Age
  - Race
  - Religion
EEOC: Disparagdent Impact…

Threshold Testing

100 Males

100 Females
EEOC: Disparagent Impact…

Threshold Testing
Females must pass at 80% of the Male pass rate…
EEOC: Disparagant Impact...

**Threshold Testing**

Females must pass at 80% of the Male pass rate...
EEOC: Disparagent Impact…

Threshold Testing
Females must pass at 80% of the Male pass rate…
# Atlas Ergonomics

## Post-offer Pre-employment Screen Performance Data for Van Drivers

Data for Program Start through September 30, 2009

### Participant Demographics

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
<th>Percentage of Total Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total applicants presented</td>
<td>791</td>
<td></td>
</tr>
<tr>
<td>Applicants failing BP</td>
<td>4</td>
<td>1%</td>
</tr>
<tr>
<td>Total participants tested</td>
<td>787</td>
<td></td>
</tr>
<tr>
<td>Total male participants</td>
<td>754</td>
<td>96%</td>
</tr>
<tr>
<td>Total female participants</td>
<td>33</td>
<td>4%</td>
</tr>
<tr>
<td>Average height (inches)</td>
<td>72</td>
<td></td>
</tr>
<tr>
<td>Average weight (pounds)</td>
<td>227</td>
<td></td>
</tr>
<tr>
<td>Average BMI</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td>American Indian participants</td>
<td>1</td>
<td>0%</td>
</tr>
<tr>
<td>African American participants</td>
<td>61</td>
<td>8%</td>
</tr>
<tr>
<td>Asian participants</td>
<td>2</td>
<td>0%</td>
</tr>
<tr>
<td>Hispanic participants</td>
<td>9</td>
<td>1%</td>
</tr>
<tr>
<td>Pacific Islander participants</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>White participants</td>
<td>688</td>
<td>87%</td>
</tr>
<tr>
<td>Other Race participants</td>
<td>1</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Average age</strong></td>
<td></td>
<td><strong>45.3</strong></td>
</tr>
<tr>
<td>20 - 30 years old</td>
<td>89</td>
<td>11%</td>
</tr>
<tr>
<td>31 - 39 years old</td>
<td>139</td>
<td>18%</td>
</tr>
<tr>
<td>40 - 50 years old</td>
<td>314</td>
<td>40%</td>
</tr>
<tr>
<td>51 - 60 years old</td>
<td>215</td>
<td>27%</td>
</tr>
<tr>
<td>61+ years old</td>
<td>30</td>
<td>5%</td>
</tr>
<tr>
<td>40+ years old</td>
<td>567</td>
<td>72%</td>
</tr>
</tbody>
</table>

### Overall Failure Data and Demographics

<table>
<thead>
<tr>
<th>Failure Description</th>
<th>Count</th>
<th>Percentage of Total Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participants failed test</td>
<td>88</td>
<td>11%</td>
</tr>
<tr>
<td>Participants failed multiple tests</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Male participants failed</td>
<td>81</td>
<td>11%</td>
</tr>
<tr>
<td>Female participants failed</td>
<td>7</td>
<td>21%</td>
</tr>
<tr>
<td>39 or less year old participants failed</td>
<td>12</td>
<td>5%</td>
</tr>
<tr>
<td>40 or greater year old participants failed</td>
<td>76</td>
<td>13%</td>
</tr>
<tr>
<td>American Indian/Alaskan Native participants failed</td>
<td>1</td>
<td>100%</td>
</tr>
<tr>
<td>Black/African American participants failed</td>
<td>2</td>
<td>3%</td>
</tr>
<tr>
<td>Asian participants failed</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Hispanic/Latino participants failed</td>
<td>1</td>
<td>11%</td>
</tr>
<tr>
<td>Native Hawaiian/Pacific Islander participants failed</td>
<td>0</td>
<td>#DIV/0!</td>
</tr>
<tr>
<td>White participants failed</td>
<td>75</td>
<td>12%</td>
</tr>
<tr>
<td>Two or More Race participants failed</td>
<td>0</td>
<td>0%</td>
</tr>
</tbody>
</table>

### Site Information

- **Marshfield failure rate**: 16%
- **Gary failure rate**: 7%
- **Atlanta failure rate**: 6%

### Failure by Test Step

<table>
<thead>
<tr>
<th>Test Step</th>
<th>Total Count</th>
<th>Failure Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crouch (20 seconds)</td>
<td>3</td>
<td>0%</td>
</tr>
<tr>
<td>Male</td>
<td>3</td>
<td>0%</td>
</tr>
<tr>
<td>Female</td>
<td>0</td>
<td>0%</td>
</tr>
</tbody>
</table>
• Flags us to take further action…
  o Confirm that the Essential Functions are valid??
  o Confirm that the measurements correct??
Physical Demand:
- Lifting
- Pulling
- Pushing
- Bending
- Twisting
• Four year data set
  – 2 years prior to the implementation of Pre-work Screen
  – 2 years post implementation of Pre-work Screen

• Key Measures
  – Number of Injuries
  – Total Cost of Injuries
  – Average Cost of Injuries
  – Lost Work Day Cases
  – Lost Work Days
  – Injuries Types
  – Causation
Background Information…

Bar chart showing the incidence rate and number of musculoskeletal disorder cases among different job categories. The categories include:

- Nursing aides, orderlies, and attendants: 252 cases, 24,340 incidents
- Emergency medical technicians and paramedics: 179 cases, 2,230 incidents
- Laborers and freight, stock, and material movers: 149 cases, 2,000 incidents
- Reservation and transportation ticket agents: 132 cases, 1,900 incidents
- Light or delivery services truck drivers: 117 cases, 10,460 incidents
- Heavy and tractor-trailer truck drivers: 101 cases, 16,470 incidents
- Bus, truck, diesel mechanics: 83 cases, 9,200 incidents
- Maids and housekeeping cleaners: 80 cases, 6,950 incidents
- Janitors and cleaners: 80 cases, 3,010 incidents
- Construction laborers: 77 cases, 1,910 incidents
- Driver/sales workers: 76 cases, 2,780 incidents
- Industrial machinery mechanics: 76 cases, 2,780 incidents
- Welders, cutters, solderers, and brazers: 76 cases, 2,780 incidents

Legend:
- Orange bar: MSD Incidence rate (Private industry MSD rate = 35)
- Blue bar: MSD cases (Total = 335,390)
Background Information…

- Nursing aides, orderlies, and attendants: 252 cases, 24,340 MSD cases.
- Emergency medical technicians and paramedics: 179 cases, 2,230 MSD cases.
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- MSD Incidence rate:
  - Private industry MSD rate = 35

- Number of musculoskeletal disorder cases:
  - Total = 335,390
20% Reduction in Number of Injuries
PWS Outcomes...

Number of Injuries by Type

- Sprain & Strain
- Bruise/Contusion
- Fracture
- Laceration/Cut
- Multiple Injuries
- Pulled/Torn Muscle
- Inflammation/Swelling
- Hernia/Rupture
- Tendon/Cartilage Damage
- Pinched Nerve

Pre-PWS

Post-PWS
PWS Outcomes...

Causation of Injury

- Slip/Fall
- Loading Freight
- Cranking Dollies
- Sliding TRLR Tandems
- WorkGW/Equipment
- Pushing/Pulling
- Reaching/Climbing
- Caught Under/Between
- Pulling 5th Wheel

Pre-PWS
Post-PWS
Causation of Injury

- SLIP / FALL
- LOADING FREIGHT
- CRANKING DOLLIES
- SLIDING TRLR TANDEM
- WORKGW/EQUIPMENT
- PUSHING/PULLING
- REACHING/CLIMBING
- CAUGHT UNDER/BETWEEN
- PULLING 5TH WHEEL

Pre-PWS
Post-PWS
PWS Outcomes…

Causation of Injury (Minus Slips / Falls)

- LOADING FREIGHT
- CRANKING DOLLIES
- SLIDING TRLR/TANDEMS
- WORKG W/EQUIPMENT
- PUSHING/PULLING
- REACHING/CLIMBING
- CAUGHT UNDER/BETWEEN
- PULLING 5TH WHEEL

Pre-PWS
Post-PWS
24% Reduction in the Number of LWDs
7% Reduction in the Number of LWDC
Questions…

Drew Bossen – Exec. VP
Atlas Injury Prevention Solutions
Cell: 319-430-3382
Email: dbossen@atlas-ips.com