MaineGeneral Medical Center Workplace Health

Fitness for Duty for Human Resource Professionals

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disclosures

- no personal financial gain from methods in presentation
- personal preference for good evidence in making decisions

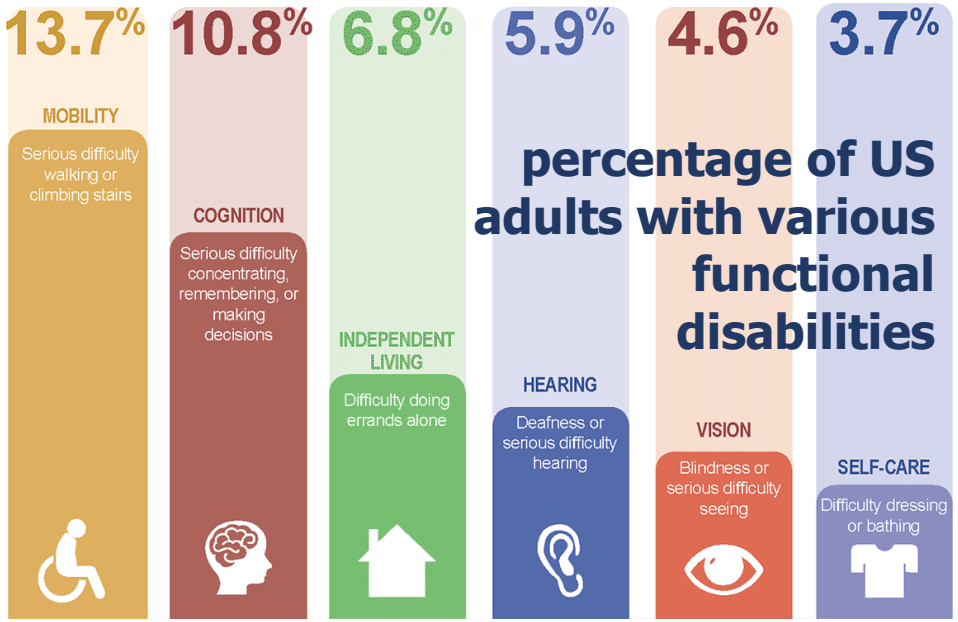
Fitness for Duty – Extent of Problem

Worker claims of injury from or intolerance of their job

About

- 26% of Americans and 12% of Americans in the workforce claim a disability,
- 3 workers in 1000 claim musculoskeletal conditions caused by work annually.

Each workplace injury, on average, involves 14 days away from work and costs over $32,000 for medical evaluation and treatment and indemnity.



Fitness for Duty

Questions

- How do we assess likelihood of an employee fulfilling the requirements (and minimizing the risks) of the job?
- What are the employee's job requirements (and risks)?
- How can we be sure that the employee can do his or her job?
- Are there portions of the job that the employee cannot do or cannot do safely?
- If there are portions of the job that the employee cannot do, how long might the limitation last?

Fitness for Duty

Seminar Organization

1. Terminology
2. Reasons for fitness for duty assessment
3. Components of the fitness for duty assessment
4. Job descriptions and workplace conditions
5. Fitness for duty – historical aspects
6. Fitness for duty – physical aspects
   a. strength
   b. endurance
   c. respirator fitness
7. Fitness for duty – safety sensitive positions and tasks
8. Specification of activity restrictions and accommodations
9. Concerns with and limitations of fitness for duty assessments
10. Summary and recommendations

Terminology

Terms and Definitions

Provisions of the Americans with Disabilities Act

fitness for duty – the ability to perform the essential functions of a job in the absence of the employee posing a direct threat

essential job functions:

- the primary reasons for existence of the position,
- with its task regularly and appropriately performed,
- without workplace disruption.

Terms and Definitions

Provisions of the Americans with Disabilities Act

- disability:
  - a physical or mental impairment that substantially limits one or more major life activities;
  - a record of or being regarded as having such an impairment
- major life activities – include but are not limited to caring for oneself, performing manual tasks, seeing, hearing, eating, sleeping, walking, standing, sitting, reaching, lifting, bending, speaking, breathing, learning, reading, concentrating, thinking, communicating, interacting with others, and working
- reasonable accommodation – work modification to enable an individual with a disability to have an equal opportunity to get and successfully perform their job to the same extent as people without disabilities.

Reasons for Fitness for Duty Assessment

Reasons for Assessment

Fitness for duty assessment is to ensure that employees are able to perform the essential functions of their jobs safely.

Assessments may be performed for employees

- when required by regulation or specified in guidelines
- at an employer's request

Employees who are mismatched with their work have an impact on

- productivity
- workplace harmony
- longevity
- propensity for job dissatisfaction and grievances, and medical claims.

surveillance examinations – detection of development of disease

Job Descriptions and Workplace Conditions

Job Descriptions and Workplace Conditions

The fitness for duty evaluation must be appropriate for the job
Physical and psychosocial workplace conditions should be evaluated.

Job descriptions:

- specify essential functions of the job
- form the basis for fitness for duty testing
- must be accurate.

Suboptimal workplace conditions are barriers to harmonious, safe, sustained employment.

Job Descriptions and Workplace Conditions

Workplace conditions – jobs should be as safe and tolerable as possible

Evaluation of the workplace environment and physical conditions

- compliance with appropriate regulations
- material handling (lifting, carrying, pushing, pulling)
- upper extremity tasks
- workstation configuration (for example, computer workstations)
- lighting
- noise
- temperature
- air quality
- toxic substances
- biohazards

Refer to appropriate regulations and guidelines.

Use appropriate assessment methods.

Job Descriptions and Workplace Conditions

Workplace conditions – US Department of Labor categorization of work by weight lifted

	duration as portion of an eight-hour workday			approximate portion of worker in rating category
	occasional	frequent	constant	
rating ↓	weight lifted (pounds)			
sedentary	**0 to 10**	–	–	**29**
light	**0 to 20**	0 to 10	0	**32**
medium	**20 to 50**	10 to 25	0 to 10	**29**
heavy	**50 to 100**	25 to 50	10 to 20	**8**
very heavy	**over 100**	over 50	over 20	**2**

Job Descriptions and Workplace Conditions

Workplace conditions

Evaluation of physical conditions: acceptable lifting weights for males

height of lift ↓	percent that finds weight acceptable	seconds			minutes				hours
		5	9	14	1	2	5	30	8
		maximum acceptable weight of lift for males (pounds)							
floor to knuckle height	90	13.2	15.4	19.8	24.2	28.6	30.8	30.8	37.4
	75	19.8	24.2	28.6	35.2	41.8	44.0	46.2	52.8
	50	26.4	33.0	37.4	48.4	55.0	59.4	61.6	70.4
knuckle to shoulder height	90	17.6	22.0	26.4	**28.6**	**30.8**	**30.8**	**35.2**	37.4
	75	22.0	30.8	35.2	**39.6**	**39.6**	**41.8**	**46.2**	50.6
	50	28.6	37.4	44.0	**48.4**	**50.6**	**52.8**	**57.2**	63.8
shoulder height to arm reach	90	13.2	17.6	19.8	22.0	22.0	24.2	26.4	28.6
	75	17.6	22.0	26.4	30.8	30.8	30.8	35.2	37.4
	50	22.0	28.6	33.0	37.4	37.4	39.6	44.0	48.4

Components of the Fitness for Duty Assessment

Components of the Fitness for Duty Assessment

Assessments may include

1. review of job applications, credentials, and references
2. interviews with job applicants and employees
3. determination of whether the employee problems are performance or ability/disability issues
4. health screening questionnaires
5. medical/health history
6. physical examination
7. review of records
8. diagnostic tests

Components of the Fitness for Duty Assessment

Ability to perform cognitive and social aspects of work
Assurance of adequate credentials, training, and cognitive and social skills is the employer’s responsibility.

Fitness for Duty
Historical Aspects

Historical Aspects

Ability to perform physical aspects of work

Medical history and chances of recurrence of musculoskeletal or pain problem

Measure – problem in the same body region	Score based on measure (in points)		
	0	1	2
lost work time in preceding 12 month due to symptoms	0 (none)	1-3 days	over 3 days
number of prior episodes	0 (none)	1-3	more than 3
duration since last episode	0 (none)	1-3 years	less than 1 year
prior work restrictions	0 (none)	temporary	permanent
prior testing (for example, MRI, CT, or bone scans, or electrophysiological studies)	less than 3 years	2-3 years	within 2 years
prior to the latest claim, ongoing visits for care received	up to twice in last 3 years	3-6 times in last 3 years	over 6 times in last three years

Points	Risk for Recurrence	Recommendations
0-3	minimal	
3-6	moderate	institute administrative, ergonomic, and/or engineering safeguards
over 7	high	do not return to prior level of work (assign activity restrictions)

Fitness for Duty
Physical Aspects

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Physical Aspects

Physical abilities tests

- Individuals performing job-related tasks and/or
- undergo physical abilities tests for strength, muscular flexibility, and stamina, including tests of:
  - muscular tension and power
  - muscular endurance
  - cardiovascular endurance
  - flexibility
  - balance and coordination

Physical Aspects – Strength

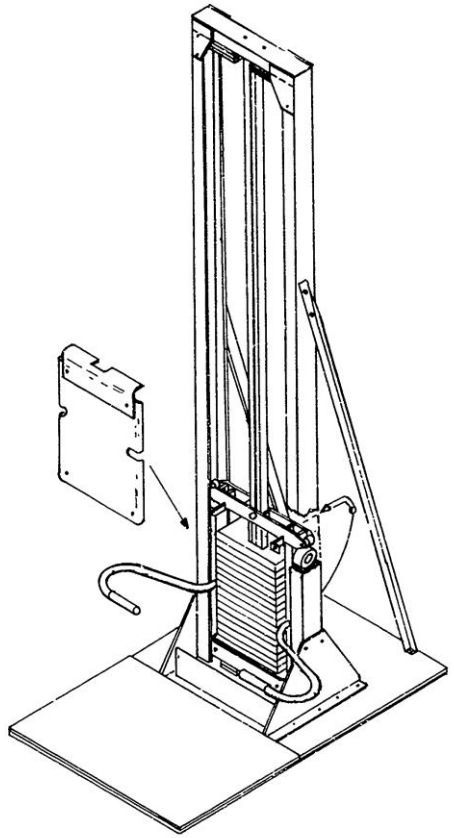
Physical aspects of fitness for duty testing
published methods for testing strength include the:

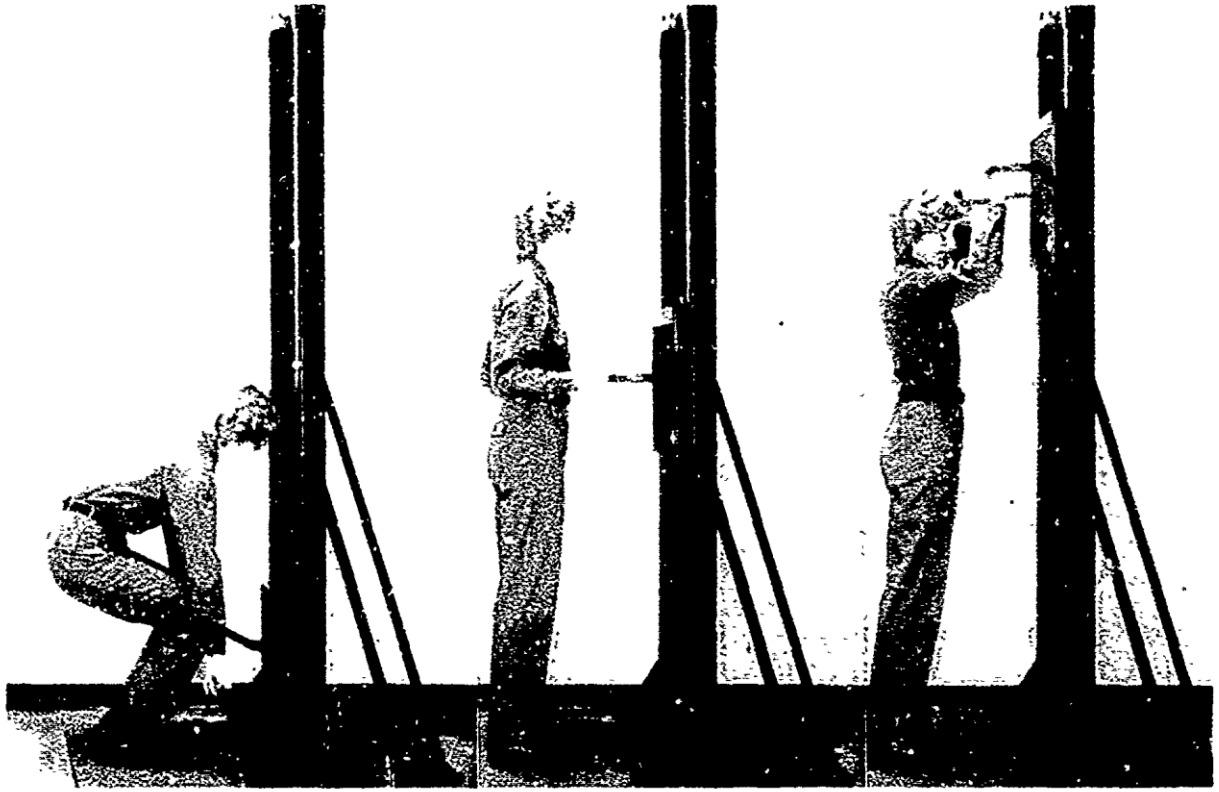
- maximal isoinertial strength testing (MIST)
- progressive isoinertial lumbar lifting evaluation (PILE)

Physical Aspects – Strength

Tests of strength

The maximal isoinertial strength test (MIST) – measures maximum safe weight lift capability

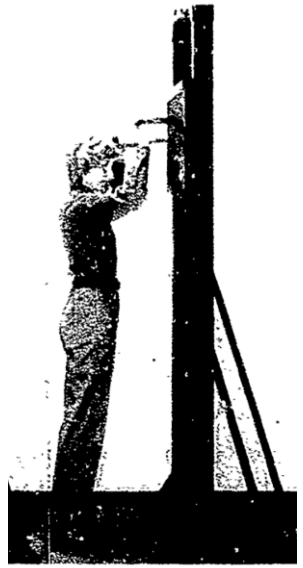


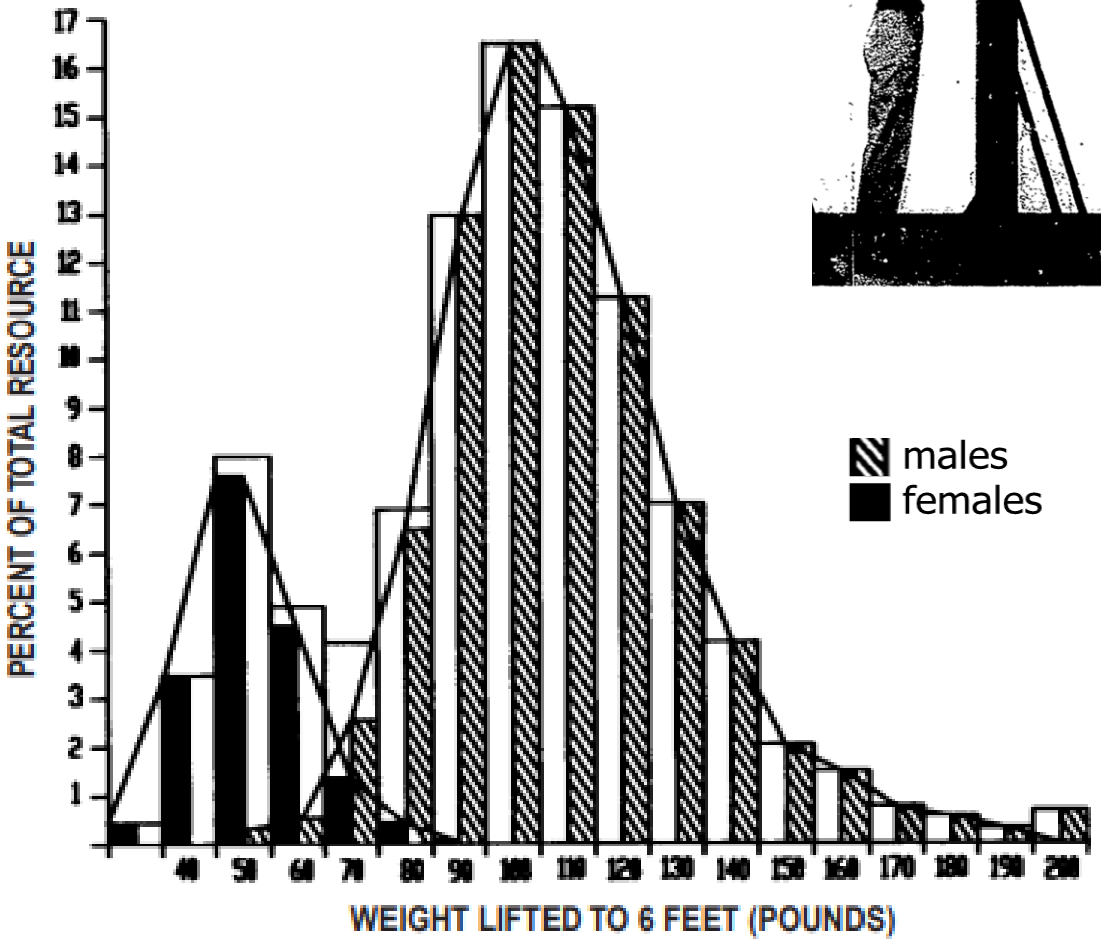


Physical Aspects – Strength

Tests of strength – Results of MIST incremental weight lift to six feet

- average weights lifted
  - 114 pounds for men
  - 57 pounds for women
- lifting ranges
  - 50 to over 200 pounds for men
  - under 40 to 90 pounds for women

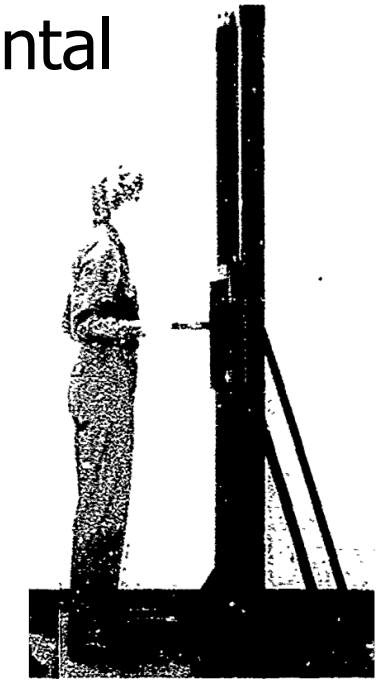




Physical Aspects – Strength

Tests of strength – results of MIST incremental weight lift to elbow height

- average weights lifted
  - 129 pounds for men
  - 68 pounds for women
- lifting ranges
  - 50 to over 200 pounds for men
  - 40 to 110 pounds for women



Physical Aspects – Strength

Tests of strength

The progressive isoinertial lifting evaluation (PILE)

lumbar test from floor to waist (0 to 30 inches)

cervical-shoulder girdle-upper extremity test from waist to shoulder height (30 to 54 inches)

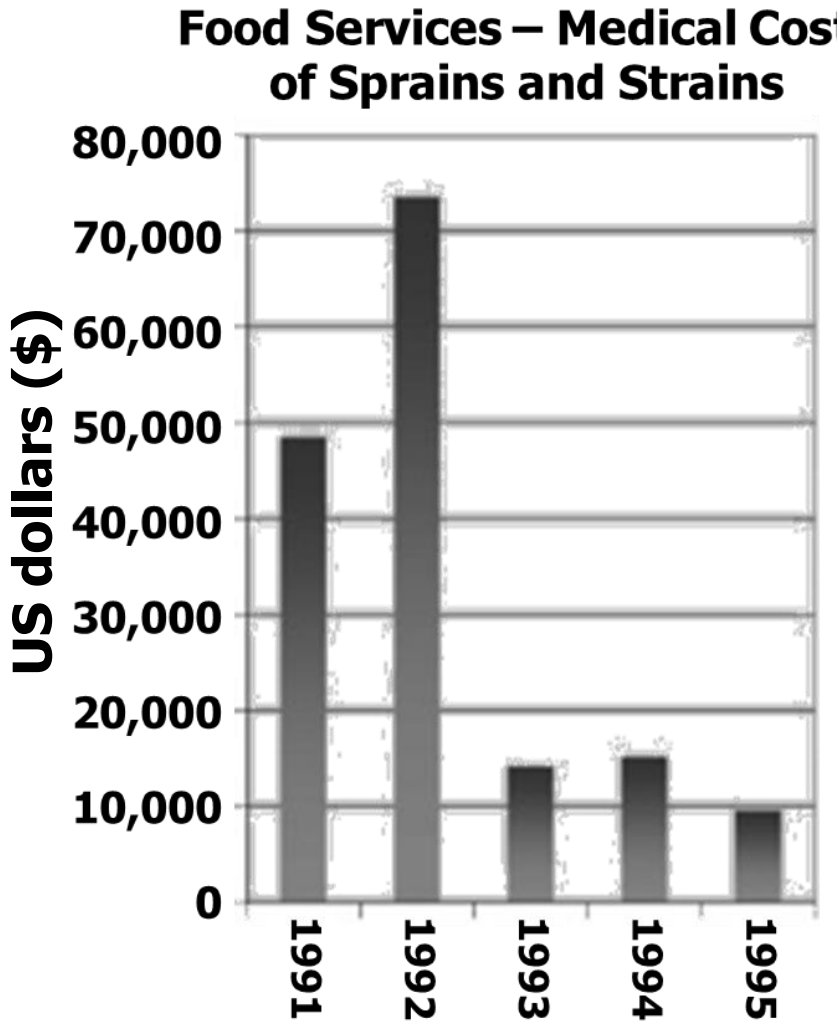
Weight is lifted four time in 20 seconds
and increased

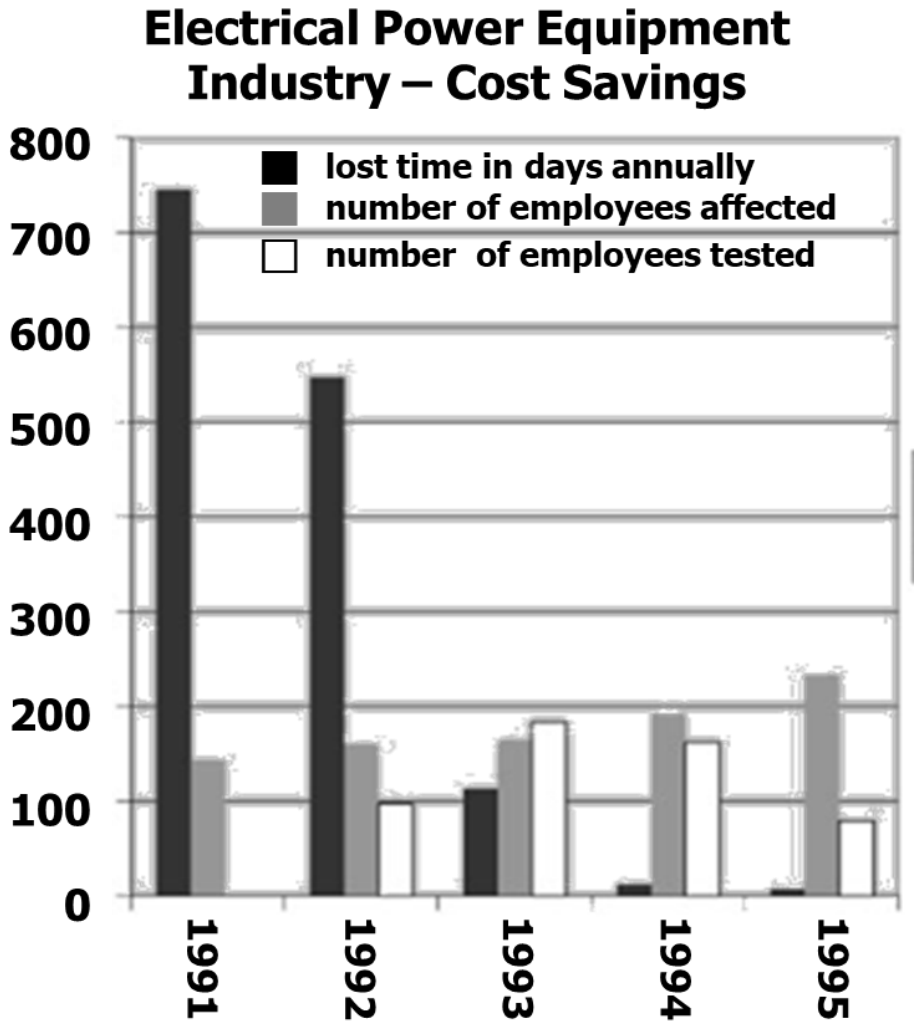
- 5 pounds for women,
- 10 pounds for men

every 20 seconds

Physical Aspects – Strength

Workers' compensation medical costs and lost time before and after testing program implementation:
Hiring 110 employees annually - $690 saving/employee tested and hired, not including employees not missing work.





Endurance

Endurance or cardiopulmonary fitness tests
Subjects perform activities that engage large groups of muscles in a sustained fashion until exhaustion to determine aerobic capacity.

Examples of cardiovascular fitness tests include:

- Åstrand cycle test
- Chester step test
- Harvard step test
- Shuttle, “beep,” or “bleep” test
- Bruce treadmill test

Endurance

Human energy consumption and cardiopulmonary fitness

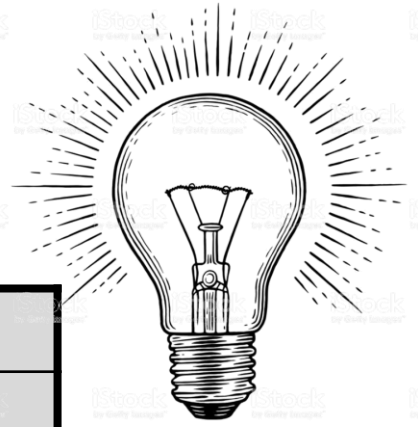
At rest (sitting quietly), a 70-kg (154-pound) person uses about:

- 72 kilocalories (energy) hourly,
- 1700 kcal (energy) daily, or
- 17.5 Watts (power).

Energy consumption can be expressed as "metabolic equivalents" (METs). One MET is our basic, resting metabolic rate.

Activity adds extra energy expenditure.

Endurance

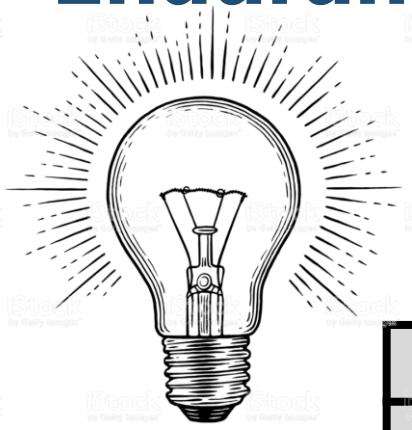


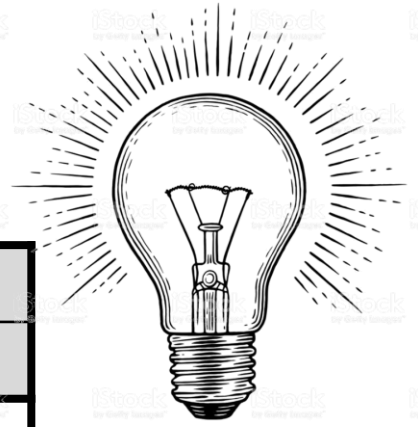
Energy expenditure of various activities

Five-level classification of physical activity in terms of exercise intensity

		Energy Expenditure	
	Level of Activity	**Watts**	**METs**
Men	**light**	28 to 69	1.6 to 3.9
	moderate	70 to 104	4.0 to 5.9
	heavy	105 to 139	6.0 to 7.9
	very heavy	140 to 174	8.0 to 9.9
	unduly heavy	at least 175	at least 10.0
Women	**light**	21 to 48	1.2 to 2.7
	moderate	49 to 76	2.8 to 4.3
	heavy	77 to 104	4.4 to 5.9
	very heavy	105 to 132	6.0 to 7.5
	unduly heavy	at least 133	at least 7.6

Endurance





Energy expenditure of various activities

approximate metabolic costs of activities

activity		energy expenditure Watts	energy expenditure METs
walking on a level surface	1.8 miles/hour	32	1.8
	3 miles/hour	56	3.2
	4.2 miles/hour	93	5.3
walking upstairs		82	4.7
running on a level surface	7.8 miles/hour	226	12.9
	9 miles/hour	256	14.6
weight-lifting		53 to 123	3 to 7
weight training		191	10.9
washing floors		58	3.3
making beds		53 to 88	3 to 5
shoveling snow		89	5.1

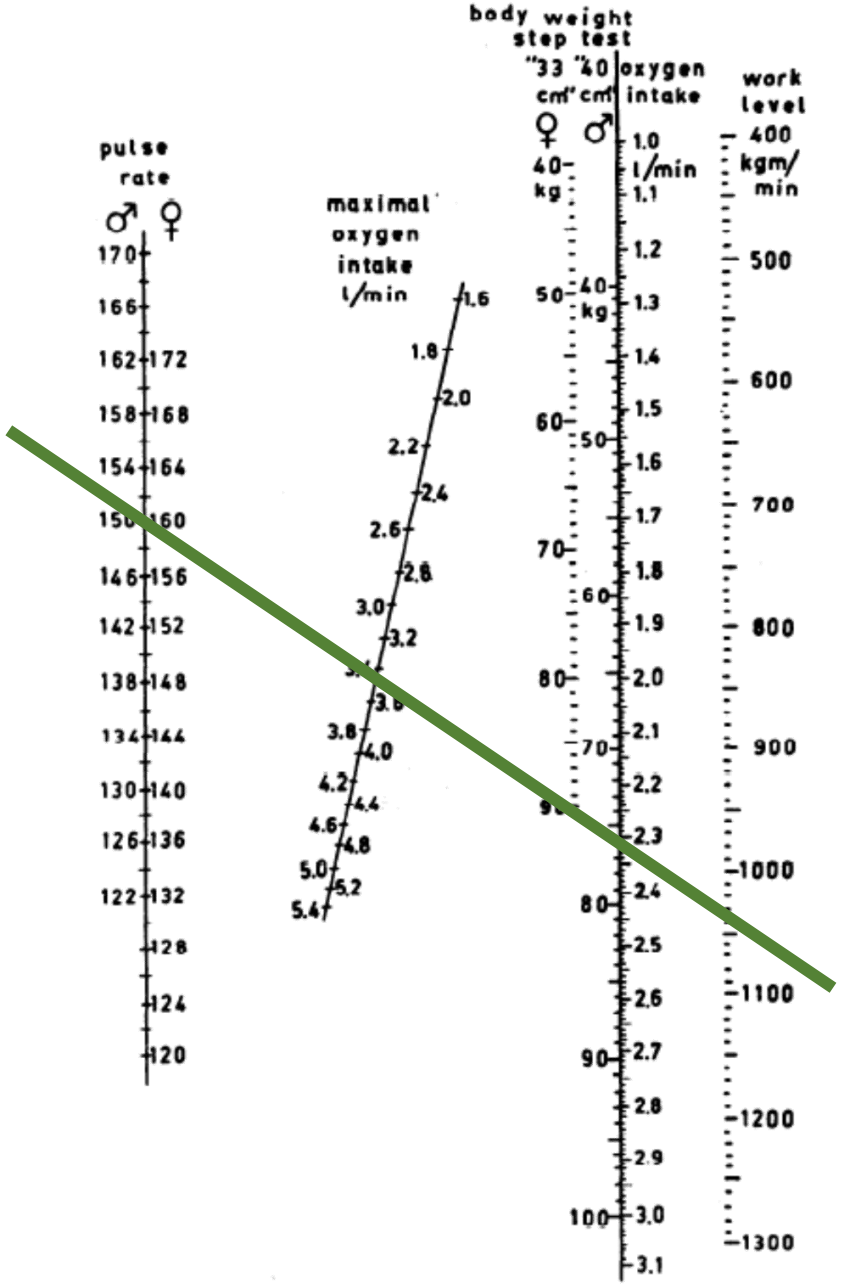
Endurance

Åstrand cycle test – the subject:

- wears a heart monitor;
- cycles 50 revolutions/minute on a cycle ergometer;
- starts with a workload of 50 Watts for one minute
- has the workload increased every minute by
  - 50 Watts for males
  - 25 Watts for females

  until a heart rate of approximately 130 beats/minute is attained; and
- cycles at the same workload for three minutes;
- a final heart rate is taken that, with the final workload, is used to predict aerobic capacity from a nomogram.

Endurance



Åstrand cycle test – results are reported in estimated maximal oxygen intake (liters/minute).

At rest, a 70-kg person at rest consumes:

- oxygen – about 0.245 liters O_2/minute
- energy rate (power) – about
  - one MET
  - 1.2 kilocalories/minute,
  - 72 kilocalories/hour,
  - 17.5 Watts,
  - 0.34 kgm/min.

about 3.4 liters O_2/minute or 14 METs

Respirator Fitness

Types of respirators:

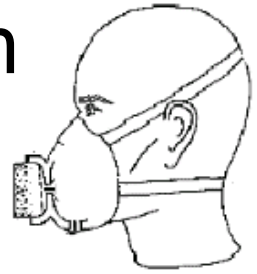
- air-purifying respirators
- supplied air respirators; and
- self-contained breathing apparatus (SCBA)

Respirator facepieces can be:

- full

- half (under chin to above nose)

- quarter (top of chin to top of nose)

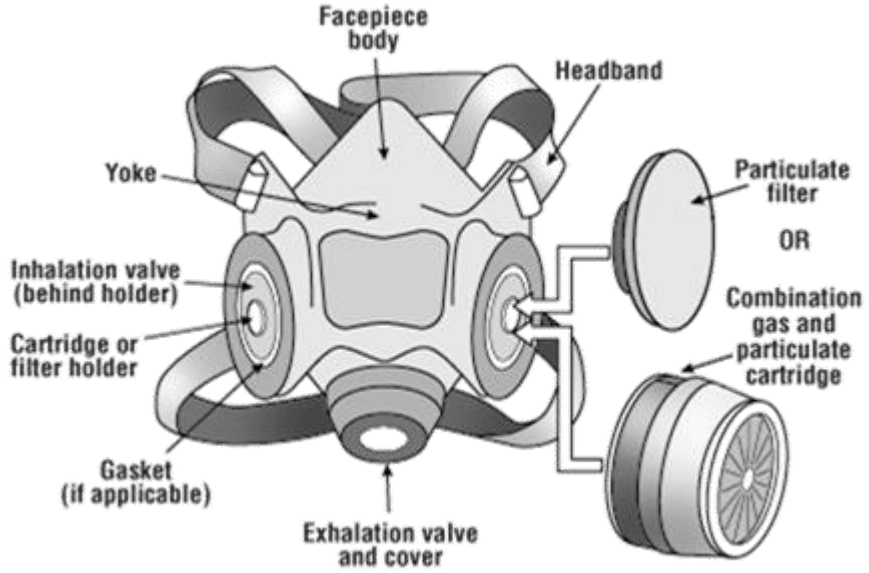


- paper and N-95 mask

Respirator Fitness

Physical assessment for respirator use

Respirator function and associated equipment



half-face cartridge air-purifying respirators

self-contained breathing apparatus

encapsulation suit

Respirator Fitness

Physical assessment for respirator use
Federal regulations require employers to assure that employees using respirators undergo a medical evaluations at the start of respirator use and at intervals specified by a physician or other licensed healthcare professional.

Respirator Fitness

Physical assessment for respirator use

Issues with respirator use include:

- increased work of breathing
- increased respiratory dead space, which leads to increased carbon dioxide and decreased oxygen in breathed air,
  - oxygen deficit with heavier activity leading to anerobic metabolism, and
  - increased humidity of inspired air.

(continued)

Respirator Fitness

Physical assessment for respirator use

Issues with respirator use include (continued):

- decreased heat dissipation from
  - respirator, and
  - protective equipment and clothing;
- equipment weight and discomfort
  - contact surface pressure and rubbing, and
  - inability to address itching, coughing, and sneezing;
- interference with communications and vision.

Respirator Fitness

Physical assessment for respirator use

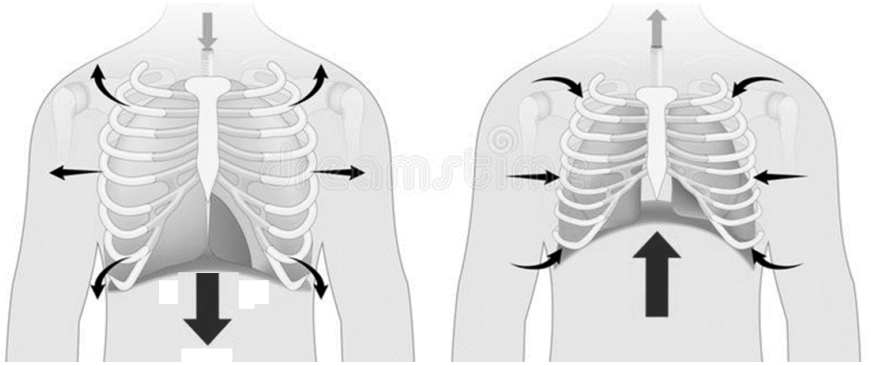
Firefighting turnout gear:

- helmet;
- hood;
- turnout coat and pants;
- boots;
- gloves;
- SCBA (air pack), facemask, and various tools typically weighs 45 and 80 pounds.

Respirator Fitness

Burden of respirator use

Proportion of total body oxygen (energy) consumption for breathing is about:



- 1–2% at rest;
- 8–10% with intense activity; and
- can be 18–20 % at rest in persons with obstructive lung disease (such as asthma or chronic obstructive lung disease – COPD).

Respirator Fitness

Burden of respirator use

- paper masks (for example, surgical mask and N95) – small affect on healthy people
- cartridge, supplied air respirators, and SCBA – likely to limit activities that are more than light and persons with respiratory disorders

Respirator Fitness

Issue with respirator use

Anticipate tolerance:

- for light work
  - small effect on fit workers with respirator alone
  - as much as 25% decrement wearing a respirator and encapsulation suit
- medium to heavy duty work
  - 25% decrement wearing a respirator alone
  - around decrements of 50% to over 90% with respirator and encapsulation suit

Respirator Fitness

Issue with respirator use

- High wearer variability.
- A powered air purifying respirator (PAPR) may be tolerated by persons who have difficulty with use of a canister or pressure demand respirator.
- Endurance and other fitness for duty evaluation should be considered with persons who have heavier tasks, medical conditions, or show difficulty with tasks.

Safety Sensitive Positions and Tasks

Excellence at Work

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Safety Sensitive Positions and Tasks

A person is not qualified to perform safety-sensitive work if they have any condition that interferes with their ability to perform the job safely (or pose a direct threat to themselves or others).

Recall definition of direct threat: a significant risk of substantial harm that cannot be reasonably eliminated or reduced.

Safety Sensitive Positions and Tasks

Risk of incapacitation

Incapacitation may be:

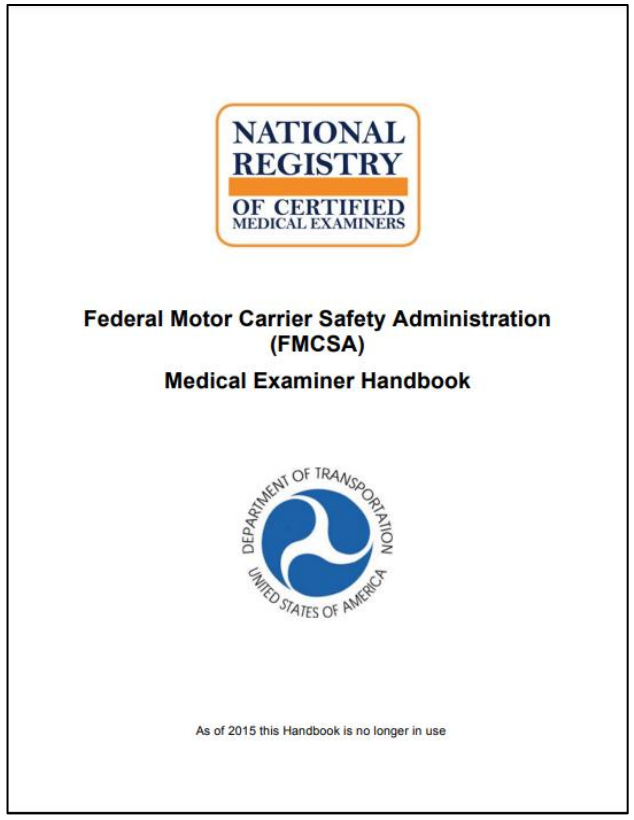
- sudden – abrupt onset of loss of control of physical or mental function with an acceptable level of risk for persons performing safety-sensitive work is no higher than one percent (1%) annually.
- subtle – insidious, initially imperceptible, impairment of physical and/or mental function that is likely to result in performance or management deficiencies.

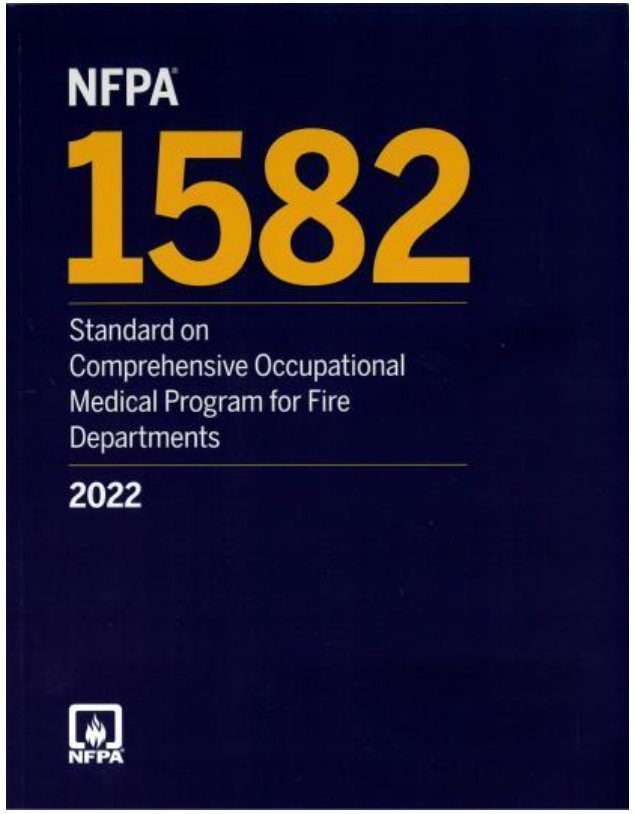
Safety Sensitive Positions and Tasks

Ability of perform work safely – models for determination

Well defined models for determination of fitness for duty for safety-sensitive positions include

- commercial drivers
- firefighters
- law enforcement officers





Guidance for the
Medical Evaluation of Law Enforcement Officers
provided by **ACOEM**

Safety Sensitive Positions and Tasks

Safety-sensitive work – assessment

- medical history and physical examination, including
  - vision
  - hearing
  - cardiovascular system
  - coordination
  - balance
- review of medical and employment safety records
- diagnostic studies as specified by the examiner

Safety Sensitive Positions and Tasks

Safety-sensitive work – example of evaluation: heart disease in commercial drivers

Federal regulations state: "A person is physically qualified to drive a commercial motor vehicle… if that person…. [h]as no current clinical diagnosis of myocardial infarction, angina pectoris, coronary insufficiency, thrombosis, or any other cardiovascular disease… known to be accompanied by syncope, dyspnea, collapse, or congestive cardiac failure."

Safety Sensitive Positions and Tasks

Safety-sensitive work – example of evaluation: heart disease in commercial drivers

Evaluation:

- drivers should
  - have controlled heart rate
  - comply and not be adversely affected by treatment
  - undergo regular ETTs after diagnosis of treatment for coronary artery disease, myocardial infarction, or coronary bypass operation

(continued)

Safety Sensitive Positions and Tasks

Safety-sensitive work – example of evaluation: heart disease in commercial drivers (continued)

Evaluation:

- should not have
  - unstable or potentially disabling symptoms
  - an implantable cardiac defibrillator
  - condition that may cause loss of consciousness or other compromise of cerebral function

(continued)

Safety Sensitive Positions and Tasks

Safety-sensitive work – example of evaluation: heart disease in commercial drivers

Evaluation:

- echocardiography must show adequate heart function – left ventricular ejection fraction of at least 40% (normal is 55 to 70%)
- demonstrate a work capacity greater than 6 METs by exercise tolerance (treadmill) test (ETT – usually test up to 15 or more METs)

Activity Restrictions and Accommodations

Activity Restrictions and Accommodation

Specification of activity restrictions and accommodation
Health care personnel specify activity restrictions and employers decide if reasonable accommodations can be provided.

Activity restrictions should include details:

- material handling limitations (lifting, carrying, pushing, pulling)
- restrictions on frequency and duration of certain activities, for example,
  - overhead use of a specific arm
  - repetitive and forceful use of a hand
  - crawling
- duration of activity restrictions (permanent or temporary)

Summary and Recommendations

Summary and Recommendations

Aspects of fitness for duty assessments, and associated concerns with and limitations

- fitness for duty assessments in medical clinics reliably cover certain medical physical aspects of work:
  - history
  - strength
  - endurance
  - safety-sensitive aspects of medical conditions
  - spine and shoulder flexibility
  - respirator fitness

(continued)

Summary and Recommendations

Aspects of fitness for duty assessments, and associated concerns with and limitations (continued)

- choice of appropriate fitness for duty evaluation is based on workplace conditions
- job descriptions must be accurate
- competent evaluation of workplace conditions is essential

(continued)

Summary and Recommendations

Aspects of fitness for duty assessments, and associated concerns with and limitations (continued)

- beyond evaluation of
  - significant historical problems,
  - back and shoulders,
  - aerobic capacity, and
  - safety aspects of work

  predictive value of evaluations are limited.

Summary and Recommendations

Issues with physical assessment

- Accuracy of and access to information usually often limited.
- There is
  - variability of examinee's physical condition and ability to perform work, and
  - an uncertain length of validity after fitness for duty assessment.

MaineGeneral Medical Center Workplace Health
Fitness for Duty for Human Resource Professionals

Completed

- ✓ Terminology
- ✓ Reasons for fitness for duty assessment
- ✓ Components of the fitness for duty assessment
- ✓ Job descriptions and workplace conditions
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- ✓ Fitness for duty – physical aspects
- ✓ Fitness for duty – safety sensitive positions and tasks
- ✓ Specification of activity restrictions and accommodations
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- ✓ Summary and recommendations

Questions and discussion