ACOEM Commercial Driver Medical Examiner Training Program

Module 5 Musculoskeletal, Other Diseases

Musculoskeletal — 49 CFR 391.41(b)(1)(2)(7)

49 CFR 391.41(b)(1)
"A person is physically qualified to drive a commercial motor vehicle if that person —
Has no loss of a foot, a leg, a hand, or an arm, or has been granted a skill performance evaluation certificate pursuant to §391.49."

49 CFR 391.41(b)(2)
"Has no impairment of:
(i) A hand or finger which interferes with prehension or power grasping; or
(ii) An arm, foot, or leg which interferes with the ability to perform normal tasks associated with operating a commercial motor vehicle; or any other significant limb defect or limitation which interferes with the ability to perform normal tasks associated with operating a commercial motor vehicle; or has been granted a skill performance evaluation certificate pursuant to §391.49."

49 CFR 391.41(b)(7)
"Has no established medical history or clinical diagnosis of rheumatic, arthritic, orthopedic, muscular, neuromuscular, or vascular disease which interferes with his/her ability to control and operate a commercial motor vehicle safely."

Relevance to Driving
Disorders of the musculoskeletal system affect driving ability and functionality necessary to perform heavy labor tasks associated with the job of commercial driving. Medical certification means the driver is physically able to safely drive and perform nondriving tasks as described in the driver role section of the Federal Motor Carrier Safety Administration (FMCSA) Medical Examination Report form.

Drivers have a multitude of job demands. The least physically demanding part may be the actual driving. For example, the duties of a commercial driver may include loading and unloading, making multiple stops, driving cross-country and in heavy city traffic, working with load securement devices, and changing tires.

Other common driving tasks include:
• Manipulating the wheel.
• Shifting gears.
• Maintaining pressure on the pedals.
• Braking.
• Monitoring traffic.
Other job tasks include:
• Performing pre- and post-trip safety checks.
• Ensuring the vehicle is loaded properly.
• Securing the load.
• Evaluating and managing vehicle breakdowns.
• Responding to emergency situations.

Health History and Physical Examination
The general purpose of the history and physical examination is to detect the presence of physical, mental, or organic conditions of such character and extent as to affect the ability of the driver to operate a commercial motor vehicle (CMV) safely. This examination is for public safety determination and is considered by FMCSA to be a “medical fitness for duty” examination.

As a medical examiner, your fundamental obligation during the musculoskeletal assessment is to establish whether a driver has the musculoskeletal strength, flexibility, dexterity, and balance to maintain control of the vehicle and safely perform nondriving tasks.

The examination is based on information provided by the driver (history), objective data (physical examination), and additional testing requested by the medical examiner. Your assessment should reflect physical, psychological, and environmental factors.

Medical certification depends on a comprehensive medical assessment of overall health and informed medical judgment about the impact of single or multiple conditions on the whole person.

During the physical examination, you should ask the same questions as you would for any individual who is being assessed for musculoskeletal concerns. Adapt the observation, inspection, palpation, and screening tests of the general musculoskeletal examination to ensure that the physical demands of commercial driving are assessed (e.g., rotation of the outstretched arms against resistance as if turning a large steering wheel, movement of the legs in braking and clutching, etc.).

The FMCSA Medical Examination Report form includes health history questions. Additional questions should be asked to supplement information requested on the form. You may ask about musculoskeletal symptoms. Any musculoskeletal or neuromuscular condition should be evaluated for the nature and severity of the condition, the degree of limitation present, the likelihood of progressive limitation, and the potential for gradual or sudden incapacitation.

You must review and discuss with the driver any "yes” answers

Does the driver have:
- A muscular disease?
- A missing hand, arm, foot, leg, finger, or toe?
- A nonfunctioning or dysfunctional hand, arm, foot, leg, finger, or toe?
- An injury or disease of the spine?
- Chronic low back pain?

Questions that you may ask include

Does the driver:
- Have physical limitations caused by weakness, pain, or decreased mobility and range of motion (nature and degree)?
- Use musculoskeletal agents (effects and/or side effects)?
- Have mild, moderate, or severe chronic musculoskeletal pain (frequency and intensity)?

You must evaluate if the driver has:
- A missing or impaired leg, foot, toe, arm, hand, or finger?
- Sufficient power grasp andprehension of hands and fingers to maintain steering wheel grip?
- Sufficient strength and mobility in lower limbs to operate pedals properly?
- A perceptible limp?
- Signs of previous spine or other musculoskeletal surgery?
• Deformities of the spine and/or torso?
• Sufficient mobility and strength of spine and/or torso to drive safely and perform other job tasks?
• Limitations of motion of the spine and/or torso?
• Spine, torso, and/or other musculoskeletal tenderness?

**NOTE:** As a medical examiner, you determine if the severity of a reversible or progressive musculoskeletal disease interferes with driving ability. If findings so dictate, radiology and other examinations should be used to diagnose congenital or acquired defects or spondylolisthesis and scoliosis.

Examination by a neurologist or physiatrist who understands the functions and demands of commercial driving may be required to assess the status of the disease. However, as a medical examiner, it is your responsibility to determine certification status.

You must document discussion with the driver about
• Any affirmative musculoskeletal history, including if available:
  o Onset date and diagnosis.
  o Medication(s), dose, and frequency.
  o Any current limitation(s).
• Potential negative effects of medication used while driving, including over-the-counter medication.
• Any abnormal finding(s), noting:
  o Effect on driver ability to operate a CMV safely.
  o Necessary steps to correct the condition as soon as possible, particularly if the untreated condition could result in more serious illness that might affect driving.
• Any additional tests and evaluation.

Medical fitness for duty includes the ability to perform strenuous labor. Overall requirements for commercial drivers as well as the specific requirements in the job description of the driver should be deciding factors in the certification process.

**Musculoskeletal Topics**

**Neuromuscular Diseases**

As a group, neuromuscular diseases are usually insidious in onset and slowly progressive. The rate of progression will vary and is generally measured in months to years. Rare neuromuscular diseases may be episodic producing weakness over minutes to hours.

You must consider the effects of neuromuscular conditions on the physical abilities of the driver to initiate and maintain safe driving including steering, braking, clutching, getting in and out of vehicles, and reaction time.

Examination by a neurologist or physiatrist who understands the functions and demands of commercial driving may be required to assess the status of the disease. As the medical examiner, you determine certification status.
**Autonomic Neuropathy** - Autonomic neuropathy affects the nerves that regulate vital functions, including the heart muscle and smooth muscles.

**Conditions Associated with Abnormal Muscle Activity** - This group of disorders is characterized by abnormal muscle excitability caused by abnormalities either in the nerve or in the muscle membrane.

**Congenital Myopathies** - Congenital myopathies are a group of disorders that may be distinguished from others because of specific, well-defined structural alterations of the muscle fiber and may be progressive or nonprogressive.

These disorders include:
- Central core disease.
- Centronuclear myopathy.
- Congenital muscular dystrophy.
- Rod (nemaline) myopathy.
- Inflammatory myopathies are acquired muscle diseases that may be treated. These disorders include:
  - Dermatomyositis.
  - Inclusion body myositis.
  - Polymyositis.

**Metabolic Muscle Diseases** - Metabolic muscle diseases are a group of disorders comprised of conditions affecting the energy metabolism of muscle or an imbalance in the chemical composition either within or surrounding the muscle. Conditions may affect glycogen and glycolytic metabolism, lipid metabolism, mitochondrial metabolism, or potassium balance of the muscle. Unlike most other neuromuscular disorders, these conditions may either be insidiously progressive or episodic.

**Motor Neuron Diseases** - This group of disorders includes:
- Hereditary spinal muscular atrophy in both juvenile and adult forms.
- Acquired amyotrophic lateral sclerosis conditions producing degeneration of the motor nerve cells in the spinal cord.

As a group these are debilitating, insidiously progressive conditions that interfere with the ability to drive commercial vehicles.

**Muscular Dystrophies** - Muscular dystrophies are hereditary, progressive, degenerative diseases of the muscle that interfere with safe driving.

**Neuromuscular Junction Disorders** - This group of disorders includes:
- Myasthenia gravis.
- Myasthenic syndrome.

In addition to limb muscle weakness, vision is often affected and easy fatigability is a common manifestation.

**Peripheral Neuropathies** - This group of disorders consists of hereditary and acquired conditions where the nerves, including the axon and myelin or the myelin selectively outside the spinal cord, are affected. These conditions may affect the sensory or motor nerves individually, or both may be affected.
Peripheral neuropathy may be a complication of diabetes mellitus. You should evaluate the sensory modalities of pain, light touch, position, and vibratory sensation in the toes, feet, fingers, and hands for signs of peripheral neuropathy.

**Fixed Deficit of an Extremity**

When the loss of (hand, foot, leg, or arm) or a fixed impairment to an extremity may interfere with the ability of the driver to operate a commercial motor vehicle (CMV) safely, you are responsible for determining if the driver is otherwise medically fit to drive. A driver may be allowed to drive if the qualification requirements for a Skill Performance Evaluation (SPE) certificate under 49 CFR 391.49 are met.

NOTE: As a medical examiner, you determine if the severity of a fixed deficit that is less than the whole hand is medically disqualifying unless the driver has an SPE certificate pursuant to 49 CFR 391.49. The SPE is applicable only for fixed deficits of the extremities.

In order to legally operate a CMV, the driver must carry an SPE certificate and a valid medical examiner's certificate. The driver is responsible for ensuring that both certificates are renewed prior to expiration.

**Skill Performance Evaluation — 49 CFR 391.49** - Alternative physical qualification standards for the loss or impairment of limbs

(a) A person who is not physically qualified to drive under §391.41(b)(1) or (b)(2) and who is otherwise qualified to drive a commercial motor vehicle, may drive a commercial motor vehicle, if the Division Administrator, FMCSA, has granted a Skill Performance Evaluation (SPE) Certificate to that person. ...

(d) The letter of application for an SPE certificate shall be accompanied by:

(d)(1) A copy of the results of the medical examination performed pursuant to §391.43;
(d)(2) A copy of the medical certificate completed pursuant to §391.43(h);
(d)(3) A medical evaluation summary completed by either a board qualified or board certified physiatrist (doctor of physical medicine) or orthopedic surgeon. The co applicant motor carrier or the driver applicant shall provide the physiatrist or orthopedic surgeon with a description of the job-related tasks the driver applicant will be required to perform.

(d)(3)(i) The medical evaluation summary for a driver applicant disqualified under §391.41(b)(1) shall include:

(d)(3)(i)(A) An assessment of the functional capabilities of the driver as they relate to the ability of the driver to perform normal tasks associated with operating a commercial motor vehicle; and
(d)(3)(i)(B) A statement by the examiner that the applicant is capable of demonstrating precision prehension (e.g., manipulating knobs and switches) and power grasp prehension (e.g., holding and maneuvering the steering wheel) with each upper limb separately. This requirement does not apply to an individual who was granted a waiver, absent a prosthetic device, prior to the publication of this amendment.

(d)(3)(ii) The medical evaluation summary for a driver applicant disqualified under §391.41(b)(2) shall include:

(d)(3)(ii)(A) An explanation as to how and why the impairment interferes with the ability of the applicant to perform normal tasks associated with operating a
commercial motor vehicle;
(d)(3)(ii)(B) An assessment and medical opinion of whether the condition will likely remain medically stable over the lifetime of the driver applicant; and
(d)(3)(ii)(C) A statement by the examiner that the applicant is capable of demonstrating precision prehension (e.g., manipulating knobs and switches) and power grasp prehension (e.g., holding and maneuvering the steering wheel) with each upper limb separately. This requirement does not apply to an individual who was granted an SPE certificate, absent an orthotic device, prior to the publication of this amendment.

(d)(4) A description of the driver applicant's prosthetic or orthotic device worn, if any."

See 49 CFR 391.49 for the complete text of alternate standard qualification, maintenance, and renewal requirements.

**Relevance to Driving**

This is an alternate standard allowing a driver with certain fixed deficits of the extremities to drive a commercial motor vehicle (CMV) when medical certification is accompanied by a valid SPE certificate.

The driver may be able to safely operate a CMV by use of technology, medical aids, and/or equipment modifications. The state director for the Federal Motor Carrier Safety Administration (FMCSA) determines when individual SPE certificates must include restrictions to be consistent with safety and the public interest. The driver and the employing motor carrier are subject to appropriate penalties if the driver operates a CMV in interstate or foreign commerce without a current SPE certificate.

An SPE certificate is required when the severity of a fixed deficit of an extremity includes the loss or impairment of a hand, arm, foot, or leg. The driver who is not physically qualified to drive under 49 CFR 391.41(b)(1) or (b)(2) must be otherwise medically qualified to drive a CMV. The letter of application for an SPE certificate must be accompanied by a copy of:

- Medical examiner's certificate indicating "accompanied by Skill Performance Evaluation Certificate (SPE)."

The SPE certificate is valid for a period not to exceed 2 years from date of issue and may be renewed 30 days prior to the expiration date.

When on duty, the driver must carry the SPE certificate (or a legible copy) and a valid medical examiner's certificate. The driver is responsible for ensuring that both certificates are renewed prior to expiration.

Contact information for the appropriate SPE service center in your geographic area can be accessed from Skill Performance Evaluation (SPE) on the FMCSA Web site.

**Key Points for Musculoskeletal Examination with SPE Considerations**

The SPE is applicable only for fixed deficits of the extremities. The underlying cause for the fixed deficit (e.g., trauma, cerebral palsy, or a birth defect) does not affect eligibility to apply for an SPE. However, the location of the deficit must be an extremity, not the neck or torso. SPE certification cannot be used as an alternative standard for deficits caused by progressive diseases.

You must determine if a driver who fails to meet the qualifications of 49 CFR 391.41(b)(1) or (b)(2) is otherwise medically qualified by meeting all other physical requirements of 49 CFR 391.41. You may then medically certify the driver with the stipulation that the driver also meets the requirements of alternate standard 49 CFR 391.49.
Assess the unaffected extremities in the same manner as you would the driver who does not have a fixed deficit of an extremity.

NOTE: As a medical examiner, you determine if the severity of a fixed deficit that is less than a hand or foot is medically disqualifying unless the driver has an SPE certificate pursuant to 49 CFR 391.49.

During the physical examination, you should ask the same questions as you would any individual who is being assessed for musculoskeletal concerns. Adapt the observation, inspection, palpation, and screening tests of the general musculoskeletal examination to ensure the physical demands of commercial driving are assessed (e.g., rotation of the outstretched arms against resistance as if turning a large steering wheel, movement of the legs in braking and clutching, etc.).

Examiners must:

• Document the effect that the deficit has on the ability of the driver to safely operate a CMV.
• Provide a copy of the Medical Examination Report form and medical examiner's certificate for an SPE initial or renewal application.
• Ensure that the driver with an existing SPE certificate is complying with medical requirements.
• Review the evaluation of the specialist for changes in medical status that may affect recertification status.
• Document discussion with the driver about
  o Requirement to carry both a valid SPE certificate and medical examiner's certificate when operating a CMV.
  o Driver responsibilities, including:
    ▪ Obtaining/maintaining SPE certification.
  o Providing compliance documentation at commercial driver medical examinations

Examiners must mark the "Skill Performance Evaluation (SPE) Certificate" box (page 3 of the Medical Examination Report form) and the “accompanied by a Skill Performance Evaluation Certificate (SPE)” box on the medical examiner's certificate.

The driver must then apply to or renew the SPE certificate as needed with the FMCSA service center for the geographic area in which the driver has legal residence under 49 CFR 391.49.

Musculoskeletal Tests

Detection of an undiagnosed musculoskeletal finding during the physical examination may indicate the need for further testing and examination to adequately assess medical fitness for duty.

Diagnostic-specific testing may be required to detect the presence and/or severity of the musculoskeletal condition. The additional testing may be ordered by the medical examiner, primary care physician, or musculoskeletal specialist (e.g., orthopedic surgeon, physiatrist).

When requesting additional evaluation, the specialist must understand the role and function of a driver; therefore, it is helpful if you include a description of the role of the driver and a copy of the applicable medical standard(s) and guidelines with the request.

Record additional tests in the Medical Examination Report form, "6. LABORATORY AND OTHER TEST FINDINGS" section and/or attach additional test reports.
Grip Strength Tests

The Federal Motor Carrier Safety Administration does not require any specific test for assessing grip power. Examples of grip strength tests include:

- Dynamometer designed to measure grip strength.
- Sphygmomanometer used as a screening test for grip by having the applicant repeatedly squeeze the inflated cuff while noting the maximum deflection on the gauge.

Remember the driver must have sufficient grasp and prehension to control an oversize steering wheel, shift gears using a manual transmission, and maneuver a vehicle in crowded areas.

Other Diseases — 49 CFR 391.41(b)(9)

"A person is physically qualified to drive a commercial motor vehicle if that person — Has no mental, nervous, organic, or functional disease or psychiatric disorder likely to interfere with his/her ability to drive a commercial motor vehicle safely."

Relevance to Driving

The fundamental question when deciding if a commercial driver should be certified is whether the driver has a condition that so increases the risk of sudden death or incapacitation that the condition creates a danger to the safety and health of the driver, as well as to the public sharing the road.

The qualification standards cover 13 areas that directly relate to the driving function; however, on a case-by-case basis, use your clinical skills and knowledge of the Federal Motor Carrier Safety Administration (FMCSA) physical qualification standards to evaluate the overall medical fitness for duty of the driver.

The medical advisory criteria for 49 CFR 391.41(b)(9) includes examples of how medical conditions might interfere with operation of a commercial motor vehicle (CMV). You are expected to assess the nature and severity of the medical condition and determine certification outcomes on a case-by-case basis and with knowledge of the demands of commercial driving.

- "Emotional or adjustment problems contribute directly to an individual’s level of memory, reasoning, attention, and judgment. These problems often underlie physical disorders."
- "A variety of functional disorders can cause drowsiness, dizziness, confusion, weakness, or paralysis that may lead to incoordination, inattention, loss of functional control, and susceptibility to crashes while driving."
- "Physical fatigue, headache, impaired coordination, recurring physical ailments, and chronic 'nagging' pain may be present to such a degree that certification for commercial driving is inadvisable."

Disorders of the genitourinary and gastrointestinal systems have not been widely associated with significant impact on driving ability for drivers as a group but may, on a case-by-case basis, interfere with
safe driving. You should not certify the driver until the etiology is confirmed, and treatment has been shown to be adequate/effective, safe, and stable.

*Health History and Physical Examination*

As the medical examiner, your fundamental obligation during the medical assessment is to establish whether a driver has any disease or disorder that increases the risk for sudden death or incapacitation, thus endangering public safety.

The examination is based on information provided by the driver (history), objective data (physical examination), and additional testing requested by the medical examiner. Your assessment should reflect physical, psychological, and environmental factors.

Medical certification depends on a comprehensive medical assessment of overall health and informed medical judgment about the impact of single or multiple conditions on the whole person.

The FMCSA Medical Examination Report form includes health history questions and physical examination checklists. Additional questions should be asked, to supplement information requested on the form, to adequately assess medical fitness for duty of the driver. You should ask about and document any other conditions that might impact the ability to safely operate a CMV.

The Medical Examiner must review and discuss with the driver any "yes" answers.

Does the driver have:
- Any illness or injury in the last 5 years?
- Kidney disease, dialysis?
- Liver disease?
- Digestive problems?

The Medical Examiner may ask if the driver have:
- Medical therapy that requires monitoring?
- Any current limitation?

The Medical Examiner must evaluated whether the driver has:
- Abnormal urinalysis?
- Enlarged liver?
- Enlarged spleen?
- Masses?
- Bruits?
- Hernia?
- Significant abdominal wall muscle weakness?

The Medical Examiner must document discussion with the driver about:
- Any affirmative history, including if available:
  - Onset date, diagnosis.
  - Medication(s), dose, and frequency.
  - Any current limitation(s).
- Potential negative effects of medication use, including over-the-counter medications, while driving.
- Any abnormal finding(s), noting:
  - Effect on driver ability to operate a CMV safely.
Necessary steps to correct the condition as soon as possible, particularly if the untreated condition could result in more serious illness that might affect driving.

- Any additional cardiovascular tests and evaluation.

Remember that medical fitness for duty includes the ability to perform strenuous labor. Overall requirements for commercial drivers, as well as the specific requirements in the job description of the driver, should be deciding factors in the certification process.

**Urinalysis**

You are required to perform a urinalysis (dip stick) as a part of every driver certification and recertification medical examination and to record test results for:

- Specific gravity.
- Protein.
- Blood.
- Glucose.

Proteinuria, hematuria, or glycosuria may be an indication for further testing to rule out any underlying medical problem.

You should advise the driver of any abnormal findings and when indicated, encourage the driver to seek primary care provider evaluation, particularly if an abnormal urinalysis could indicate the presence of a medical condition that if left untreated could result in a serious illness that might affect driving.

When an abnormal urinalysis is indicative of a medical condition that endangers the safety and health of the driver and the public, you should not certify the driver until the etiology is confirmed and treatment has been shown to be adequate/effective, safe, and stable.