Tentative Interim Amendment

NFPA® 1582

Standard on Comprehensive Occupational Medical Program for Fire Departments

2022 Edition

Reference: Various
TIA 22-2
(SC 23-11-13/ TIA Log #1761)

Pursuant to Section 5 of the NFPA *Regulations Governing the Development of NFPA Standards*, the National Fire Protection Association has issued the following Tentative Interim Amendment to NFPA 1582, *Standard on Comprehensive Occupational Medical Program for Fire Departments*, 2022 edition. The TIA was processed by the Technical Committee on Emergency Responders Occupational Heath and was issued by the Standards Council on November 30, 2023, with an effective date of December 20, 2023.

1. Delete 2.3.2 and renumber accordingly:

~~**2.3.2 IAFF/IAFC Publications.**~~
~~International Association of Fire Fighters, 1750 New York Avenue, Suite 300, NW, Washington, DC 20006-5395;~~
~~International Association of Fire Chiefs, 4025 Fair Ridge Drive, Suite 300, Fairfax, VA 22033-2868. http://www.iafc.org~~
~~*The Fire Service Joint Labor Management Wellness-Fitness Initiative,* 4th edition, 2018.~~

2.3.2~~3~~ US Government Publications. […]

2.3.3~~4~~ Other Publications. […]

2. Add a new definition for "Symptom Limiting Exercise Stress Test with Imaging" and associated Annex material to read as follows:

3.3.X* Symptom-Limiting Exercise Stress Test with Imaging. An exercise test protocol that is discontinued only in the event of limiting symptoms, exertional hypotension, or ventricular tachycardia, without respect to peak heart rate.

A.3.3.X Symptom-Limiting Exercise Stress Test with Imaging. Specifically, in the absence of the conditions listed in 3.3.X, the test should not be discontinued upon reaching 85 percent predicted maximum heart rate, as is frequently done when the evaluation is for ischemic heart disease.

3. Revise Section 8.2 (as amended by TIA 22-1) and associated Annex material to read as follows:

8.2 Annual Fitness Evaluation.

8.2.1 General.

8.2.1.1 A mandatory fitness evaluation that is not punitive or competitive shall be conducted annually as part of an individualized program.

8.2.1.~~1~~2 All component results of the mandatory fitness evaluation shall be used to establish an individual's baseline or measured against the individual's previous assessments and not against any standard or norm.

~~8.2.2~~8.2.1.3* The mandatory fitness evaluation shall include a mandatory pre-evaluation procedure and the components in 8.2.2 ~~8.2.2.1~~ and 8.2.3 ~~8.2.2.2~~. ~~*(For additional information, see The Fire Service Joint Labor Management Wellness-Fitness Initiative.)*~~

A.8.2.1.3 For additional information, see *The Fire Service Joint Labor Management Wellness-Fitness Initiative*.

8.2.2 Aerobic Capacity.

8.2.2.1* An evaluation of aerobic capacity shall be performed to assess cardiorespiratory fitness after ~~appropriate~~ medical evaluation.

A.8.2.2.1 ~~An appropriate target level should be to a predicted level of 12 METs or greater, which is necessary for firefighting activities.~~ Cardiorespiratory fitness equal to the 50th percentile of the general population standardized for age and biological sex is an appropriate target level.

~~**8.2.2.1.1**~~**8.2.2.2*** Testing shall be conducted ~~using an appropriate~~ with a maximal or submaximal protocol using an empirically validated measure of cardiorespiratory fitness.

~~**A.8.2.2.1.1**~~**A.8.2.2.2** See *ACSM's Guidelines for Exercise Testing and Prescription*.

Bicycle ergometry is appropriate as a measurement of aerobic capacity if it directly measures oxygen uptake (VO2). An exercise stress test using bicycle ergometry is a maximal symptom-limited study performed on an electromagnetically-braked bicycle ergometer using a customized linear ramp protocol. The protocol consists of pedaling against a customized continuously increasing work rate in a ramp pattern to elicit fatigue within 8 to 12 minutes of exercise initiation. A 12-lead electrocardiogram is continuously monitored, and blood pressure is manually assessed every 2 minutes. All responses are monitored throughout rest, exercise, and recovery and graphically displayed. The study is performed under supervision of a physician by a trained exercise physiologist or technician.

Refer to *The Fire Service Joint Labor Management Wellness-Fitness Initiative* or other authoritative resources for alternative validated aerobic capacity protocols, including stairmill tests, step tests, and run tests.

~~**8.2.2.1.2*** At levels below 12 METs and not less than 10 METs, a member shall be counseled to improve his/her fitness.~~

~~**A.8.2.2.1.2** A prescribed aerobic program might be a consideration.~~

~~**8.2.2.1.3*** At levels less than 10 METs and greater than 8 METs, the fire department physician shall do both of the following:~~

~~(1) After performing an individualized evaluation to determine if the firefighter can safely and effectively perform essential job tasks 1, 2, 4, 5, 6, 7, 8, 9, and 13, recommend to the AHJ any applicable job restrictions associated with these specific essential job tasks that cannot be safely and effectively performed by the member due to a medical condition(s) or physical fitness~~

~~(2) Require the member to participate in a prescribed aerobic fitness program~~

~~**A.8.2.2.1.3** An individualized evaluation is based on the physical intensity level typically required to perform the essential job tasks in that jurisdiction. Such evaluations could include a simulated work evaluation, such as a candidate physical ability test (CPAT), or a functional skills test that mirrors the tasks performed in that jurisdiction.~~

~~**8.2.2.1.4** At levels at or below 8 METs, the fire department physician shall do both of the following:~~

~~(1) Recommend to the AHJ that the member is restricted from performing essential job tasks 1, 2, 4, 5, 6, 7, 8, 9, and 13~~

~~(2) Require the member to participate in a prescribed aerobic fitness program~~

8.2.2.3* For an individual whose cardiorespiratory fitness levels are above the 35th percentile but below the 50th percentile for the general population standardized by biological sex and age *[see Tables 8.2.2.3(a) and 8.2.2.3(b)]*, the fire department physician shall require participation in a prescribed cardiorespiratory (aerobic) fitness program without job restrictions.

Table 8.2.2.3(a) Cardiorespiratory Fitness and Aerobic Capacity Standard for Firefighters, Adjusted for Age and Biological Sex of the Individual (50th Percentile), Using Treadmill Protocol

Age	METs	
	Male	Female
20–29	13.7	10.7
30–39	12.1	8.6

40–49	10.8	7.6
50–59	9.3	6.7
60–69	8.1	5.7

Tables 8.2.2.3(b) Cardiorespiratory Fitness and Aerobic Capacity Standard for Firefighters, Adjusted for Age and Biological Sex of the Individual (50th Percentile), Using Cycle Ergometer Protocol

Age	METs	
	Male	Female
20–29	12.0	8.9
30–39	8.6	6.2
40–49	7.7	5.5
50–59	7.1	4.9
60–69	6.4	4.6

A.8.2.2.3 A reasonable aerobic cardiorespiratory fitness threshold for the safe and effective performance of physically demanding firefighting activities is at least the 50th percentile for the general population, based on the selected exercise protocol and the individual's biological sex and age. Standardized threshold levels of aerobic capacity (in METs) correspond to the 50th percentile of cardiorespiratory fitness for the general population (based on age and biological sex) and are categorized as "fair" cardiorespiratory fitness levels. See *ACSM's Guidelines for Exercise Testing and Prescription*.

The prescribed cardiorespiratory (aerobic) fitness program would be developed for the individual in consultation with the individual's personal doctor and/or the AHJ's health and wellness team. The individual would meet at a frequency identified during this consultation for appropriate follow-up and possible adjustment to the cardiorespiratory fitness program.

8.2.2.4* For an individual whose cardiorespiratory fitness falls below the 35th percentile for the general population standardized by biological sex and age *[see Tables 8.2.2.4(a) and 8.2.2.4 (b)]*, the fire department physician shall do both of the following:

(1) Recommend to the AHJ that the individual be restricted from performing essential job tasks 1, 2, 4, 5, 6, 7, 8, 9, and 13

(2) Require the individual to participate in a prescribed cardiorespiratory (aerobic) fitness program

Table 8.2.2.4(a) Minimum Cardiorespiratory Fitness and Aerobic Capacity Standard for Firefighters, Adjusted for Age and Biological Sex of the Individual (35th Percentile), Using Treadmill Protocol

Age	METs	
	Male	Female
20–29	12.4	9.6
30–39	11.0	7.8
40–49	9.9	6.9
50–59	8.4	6.1
60–69	7.3	5.3

Tables 8.2.2.4(b) Minimum Cardiorespiratory Fitness and Aerobic Capacity Standard for Firefighters, Adjusted for Age and Biological Sex of the Individual (35th Percentile), Using Cycle Ergometer Protocol

Age	METs

	Male	Female
20–29	10.7	7.6
30–39	7.9	5.6
40–49	7.1	5.1
50–59	6.6	4.6
60–69	6.0	4.3

A.8.2.2.4 The minimum acceptable aerobic cardiorespiratory fitness threshold for the safe and effective performance of physically demanding firefighting activities is at least the 35th percentile for the general population, based on the selected exercise protocol and the individual's biological sex and age. Adjusted minimum threshold levels of aerobic capacity (in METs) correspond to the 35th percentile of cardiorespiratory fitness for the general population (based on age and biological sex) and are categorized as "poor" cardiorespiratory fitness levels. See *ACSM's Guidelines for Exercise Testing and Prescription.*

The prescribed cardiorespiratory (aerobic) fitness program would be developed for the individual in consultation with the individual's personal doctor and/or the AHJ's health and wellness team. The individual would meet at a frequency identified during this consultation for appropriate follow-up and possible adjustment to the cardiorespiratory fitness program.

~~**8.2.2.2**~~**8.2.3* Strength, Endurance, and Flexibility.** An evaluation of muscular strength, endurance, and flexibility shall be conducted ~~in accordance with *The Fire Service Joint Labor Management Wellness-Fitness Initiative*~~.

A.8.2.3 Evaluation protocols can be found in *The Fire Service Joint Labor Management Wellness-Fitness Initiative*.

4. Replace 9.3.4 and associated Annex material to read as follows (as amended by TIA 22-1):

~~**9.3.4** Medical evaluations that require the individual to undergo physical exertion shall be conducted in accordance with the following:~~
~~(1) Testing shall be conducted using an appropriate maximal or submaximal protocol. *(See A.8.2.2.1.1.)*~~
~~(2) The workload/oxygen consumption level for the exercise shall be the individual's maximum aerobic capacity.~~
~~(3) For individuals with an aerobic capacity greater than 12 metabolic equivalents (METs), the evaluation shall be permitted to stop after a workload/oxygen consumption level of 12 METs is achieved.~~
~~(4) *For individuals with an aerobic capacity less than 10 METs and greater than 8 METs, the fire department physician shall, after performing an individualized evaluation to determine if the individual is able to safely and effectively perform essential job tasks 1, 2, 4, 5, 6, 7, 8, 9, and 13, recommend to the AHJ any applicable job restrictions associated with these specific essential job tasks that cannot be safely and effectively performed by the individual due to a medical condition(s) or physical fitness. (*See Table 9.7, Condition (21)*.)~~

~~**A.9.3.4(4)** An individualized evaluation is based on the physical intensity level typically required to perform the essential job tasks in that jurisdiction. Such evaluations could include a simulated work evaluation, such as a candidate physical ability test (CPAT), or a functional skills test that mirrors the tasks performed in that jurisdiction.~~

~~(5) * For individuals with an aerobic capacity at or below 8 METs, the fire department physician shall recommend to the AHJ that the individual is restricted from performing essential job tasks 1, 2, 4, 5, 6, 7, 8, 9, and 13.~~

~~**A.9.3.4(5)** If an individual with an aerobic capacity at or below 8 METs is a candidate, the fire department physician's recommendation to the AHJ can be to restrict the candidate from performing essential job tasks 1, 2, 4, 5, 6, 7, 8, 9, and 13 during an academy training program. In accordance with 9.4.7, the AHJ determines the candidate's employment status.~~

9.3.4* For an individual who has any of the medical conditions identified in Table 9.6, Table 9.7, and Table 9.8, an aerobic cardiorespiratory fitness capacity equal to the 50th percentile for the general population based on the selected exercise protocol and the individual's biological sex and age shall be required.

A.9.3.4 Certain medical conditions can place an individual at higher risk for sudden cardiorespiratory incapacitation and therefore require higher cardiorespiratory fitness to safely and effectively perform the essential job tasks for firefighting.

9.3.4.1* For an individual whose cardiorespiratory fitness falls below the 50th percentile for the general population based on the selected exercise protocol and the individual's biological sex and age *[see Tables 9.3.4.1(a) and 9.3.4.1(b)]*, the fire department physician shall do both of the following:

1) Recommend to the AHJ that the individual be restricted from performing essential job tasks 1, 2, 4, 5, 6, 7, 8, 9, and 13
2) Require the individual to participate in a prescribed cardiorespiratory fitness program

Table 9.3.4.1(a) Minimum Cardiorespiratory Fitness and Aerobic Capacity Standard for Firefighters, Adjusted for Age and Biological Sex of the Individual (50th Percentile), Using Treadmill Protocol

Age	METs	
	Male	Female
20–29	13.7	10.7
30–39	12.1	8.6
40–49	10.8	7.6
50–59	9.3	6.7
60–69	8.1	5.7

Table 9.3.4.1(b) Minimum Cardiorespiratory Fitness and Aerobic Capacity Standard for Firefighters, Adjusted for Age and Biological Sex of the Individual (50th Percentile), Using Cycle Ergometer Protocol

Age	METs	
	Male	Female
20–29	12.0	8.9
30–39	8.6	6.2
40–49	7.7	5.5
50–59	7.1	4.9
60–69	6.4	4.6

A.9.3.4.1 Adjusted threshold levels of aerobic capacity (in METs) correspond to the 50th percentile for the general population (based on age and biological sex) and are categorized as as "fair" cardiorespiratory fitness levels. See *ACSM's Guidelines for Exercise Testing and Prescription.*

The prescribed cardiorespiratory (aerobic) fitness program would be developed for the individual in consultation with the individual's personal doctor and/or the AHJ's health and wellness team. The individual would meet at a frequency identified during this consultation for appropriate follow-up and possible adjustment to the cardiorespiratory fitness program.

5. Revise the following rows of Table 9.6, Medical Conditions Involving the Lungs, Chest, and Respiratory System (as amended by TIA 22-1):

Condition	Special Criteria for Restriction	Special Provisions for No Restriction	Affected Essential Job Task(s)
(5)* Chronic obstructive pulmonary disease (COPD)	Has pulmonary function tests with an absolute FEV_1/FVC ratio less than 0.70 and an FEV_1 less than 70%	Meets all the following provisions annually or at the frequency indicated:	1, 2, 3, 4, 5, 6, 7, 8, 9, 13, 15

Condition	Special Criteria for Restriction	Special Provisions for No Restriction	Affected Essential Job Task(s)
	predicted measured off all bronchodilators on the day of testing	(a) Has 60% or greater of predicted FEV_1 and no bronchodilator response (i.e., an increase in FEV_1 from baseline by at least 12% and at least 200 ml), measured off all bronchodilators on the day of testing (b) Has no bronchospasm and does not use or require bronchodilator rescue medications during exertion; temperature or humidity extremes; irritant exposures; or fire suppression, hazmat, or training activities (c) Has not required systemic corticosteroids, emergency room treatment, or hospital admission for COPD or other pulmonary disease in the past 2 years (d) Has experienced continuous tobacco cessation for more than 3 months (e) Does not have a chronic cough that compromises the performance of the essential job tasks *[see (4)]* (f) Every 2 to 3 years, as medically indicated, has no exercise-induced evidence of any of the following when a symptom-limited imaging stress test is performed to at least 85% maximum predicted heart rate and to a MET level of at least the 50th percentile cardiorespiratory fitness level for the general population based on the selected exercise protocol and the individual's biological sex and age [*see Table 9.3.4.1(a) and Table 9.3.4.1(b)] ~~(see 9.3.4)~~*: i. Bronchospasm ii. A decline in FEV_1 to less than 60% predicted iii. Oxygen desaturation (i.e., a fall in oxygen saturation on room air by 4% from baseline or to below 90%) iv. Cardiac ischemia or toxic arrhythmias (g) Has a signed statement and medical records from a	

Condition	Special Criteria for Restriction	Special Provisions for No Restriction	Affected Essential Job Task(s)
		pulmonary specialist, indicating that the individual meets the criteria specified in (a) through (f) and can safely and effectively perform the essential job tasks	
(7) Exertional-related oxygen desaturation	Has either of the following: (a) An oxygen saturation of 90% to 94%, corrected to sea level on room air, at rest (b) A drop in oxygen saturation by 4% from baseline during exercise or physical exertion	Meets all the following provisions annually or at the frequency indicated: (a) Every 2 to 3 years, as medically indicated, has no exercise-induced evidence of any of the following when a symptom-limited imaging stress test is performed to at least 85% maximum predicted heart rate and to a MET level of at least the 50th percentile cardiorespiratory fitness level for the general population based on the selected exercise protocol and the individual's biological sex and age *[see Table 9.3.4.1(a) and Table 9.3.4.1(b)]* ~~*(see 9.3.4)*~~: i. Bronchospasm ii. A decline in FEV_1 to less than 60% predicted iii. Oxygen desaturation (i.e., a fall in oxygen saturation on room air by 4% from baseline or to below 90%) iv. Cardiac ischemia or toxic arrhythmias (b) Has a signed statement and medical records from a pulmonary specialist, indicating that the individual meets (a) and can safely and effectively perform the essential job tasks	1, 2, 3, 4, 5, 6, 7, 9, 13, 15
(9)* Pulmonary hypertension	Has mean pulmonary arterial pressure greater than 20 mm Hg	Meets all the following provisions annually or at the frequency indicated: (a) Has 60% or greater of predicted FVC without the use of bronchodilators (b) Has 60% or greater of predicted diffusing capacity (DLCO) (c) Is not hypoxemic at rest *[see (6) and (7)]* (d) Every 2 to 3 years, as medically indicated, has no exercise-induced evidence of any of the following when a symptom-	1, 2, 3, 4, 5, 6, 7, 8, 9, 13, 15

Condition	Special Criteria for Restriction	Special Provisions for No Restriction	Affected Essential Job Task(s)
		limited imaging stress test is performed to at least 85% maximum predicted heart rate and to a MET level of at least the 50th percentile cardiorespiratory fitness level for the general population based on the selected exercise protocol and the individual's biological sex and age [*see Table 9.3.4.1(a) and Table 9.3.4.1(b)] ~~(see 9.3.4)~~*: i. Bronchospasm ii. A decline in FEV_1 to less than 60% predicted iii. Oxygen desaturation (i.e., a fall in oxygen saturation on room air by 4% from baseline or to below 90%) iv. Cardiac ischemia or toxic arrhythmias (e) Has a signed statement and medical records from a pulmonary or cardiology specialist, indicating that the individual meets (a) through (d) and can safely and effectively perform the essential job tasks	
(10) Tracheal stenosis or tracheomalacia	Has pulmonary function (FVC or FEV_1) less than 70% predicted without the use of bronchodilators	Meets all the following provisions annually or at the frequency indicated: (a) Has 60% or greater of predicted FEV_1 without the use of bronchodilators (b) Inspiratory flow volume loop and inspiratory flow rates normal or minimally reduced. (c) Every 2 to 3 years, as medically indicated, has no exercise-induced evidence of any of the following when a symptom-limited imaging stress test is performed to at least 85% maximum predicted heart rate and to a MET level of at least the 50th percentile cardiorespiratory fitness level for the general population based on the selected exercise protocol and the individual's biological sex and age [*see Table 9.3.4.1(a) and Table 9.3.4.1(b)] ~~(see 9.3.4)~~*:	1, 2, 3, 4, 5, 6, 7, 8

Condition	Special Criteria for Restriction	Special Provisions for No Restriction	Affected Essential Job Task(s)
		i. Bronchospasm ii. A decline in FEV_1 to less than 60% predicted iii. Oxygen desaturation (i.e., a fall in oxygen saturation on room air by 4 percent from baseline or to below 90 percent) iv. Cardiac ischemia or toxic arrhythmias (d) Has a signed statement and medical records from a pulmonary specialist, indicating that the individual meets (a) through (c) and can safely and effectively perform the essential job tasks	
(11) Pulmonary resection surgery, chest wall surgery, or pneumothorax	Meets any of the following criteria: (a) Has not had time for healing and pain resolution (typically 3 months) (b) Has pulmonary function tests (FVC or FEV_1) less than 70% predicted without the use of bronchodilators (c) Has hypoxemia *[see (8)]* (d) Has diffusing capacity (DLCO) less than 60% predicted (e) Has not received clearance by a thoracic surgeon or pulmonary specialist	Meets all the following provisions annually or at the frequency indicated, after time for healing and pain resolution (typically 3 months) and with clearance by a thoracic surgeon or pulmonary specialist: (a) Has 60% or greater of predicted FVC without the use of bronchodilators (b) Has 60% or greater of predicted diffusing capacity (DLCO) (c) Is not hypoxemic at rest *[see (6) and (7)]* (d) Every 2 to 3 years, as medically indicated, has no exercise-induced evidence of any of the following <u>when a symptom-limited imaging stress test is performed to at least 85% maximum predicted heart rate and to a MET level of at least the 50th percentile cardiorespiratory fitness level for the general population based on the selected exercise protocol and the individual's biological sex and age [*see Table 9.3.4.1(a) and Table 9.3.4.1(b)]* ~~*(see 9.3.4)*~~</u>: i. Bronchospasm ii. A decline in FEV_1 to less than 60% predicted iii. Oxygen desaturation (i.e., a fall in oxygen saturation on room air by 4% from baseline or to below 90%)	1, 2, 4, 5, 6, 7, 13

Condition	Special Criteria for Restriction	Special Provisions for No Restriction	Affected Essential Job Task(s)
		iv. Cardiac ischemia or toxic arrhythmias	
(16) Interstitial lung diseases	Meets any of the following criteria: (a) Has pulmonary function (FVC or FEV_1) less than 70% of predicted without the use of bronchodilators (b) Has hypoxemia *[see (8)]* (c) Has diffusing capacity (DLCO) less than 60% of predicted	Meets all the following provisions annually or at the frequency indicated: (a) Has 60% or greater of predicted FVC without the use of bronchodilators (b) Has 60% or greater of predicted diffusing capacity (DLCO) (c) Has no hypoxemia *[see (6) and (7)]* (d) Does not have a chronic cough that compromises the performance of the essential job tasks *[see (4)]* (e) Every 2 to 3 years, as medically indicated, has no exercise-induced evidence of any of the following when a symptom-limited imaging stress test is performed to at least 85% maximum predicted heart rate and to a MET level of at least the 50th percentile cardiorespiratory fitness level for the general population based on the selected exercise protocol and the individual's biological sex and age [*see Table 9.3.4.1(a) and Table 9.3.4.1(b)] ~~(see 9.3.4)~~*: i. Bronchospasm ii. A decline in FEV_1 to less than 60% of predicted iii. Oxygen desaturation (i.e., a fall in oxygen saturation on room air by 4% from baseline or to below 90%) iv. Cardiac ischemia or toxic arrhythmias (f) Has a signed statement and medical records from a pulmonary specialist, indicating that the individual meets the criteria specified in (a) through (d) and can safely and effectively perform the essential job tasks	1, 2, 3, 4, 5, 6, 7, 8

6. Revise the following rows of Table 9.7, Medical Conditions Involving the Cardiovascular System, and Annex A.9.7 (as amended by TIA 22-1):

Condition	Special Criteria for Restriction	Special Provisions for No Restriction	Affected Essential Job Task(s)
(1)* Coronary artery disease	-	Meets the following provisions annually or at the frequency indicated: (a) Has absence of angina pectoris, even if relieved by medication (b) Has absence of stenosis in any coronary artery (i.e., greater than 70% lumen diameter narrowing) following treatment (c) Every 2 to 3 years, as medically indicated, has normal left ventricular ejection fraction as measured by radionuclide scan, contrast ventriculography, or echocardiography (d) Every 2 to 3 years, as medically indicated, has no exercise-induced evidence of ischemia, toxic arrhythmias, hypoxia, exercise hemoglobin oxygen desaturation, left ventricular dysfunction, or abnormal blood pressure response when a symptom-limited imaging stress test is performed to at least 85% maximum predicted heart rate and to a MET level of at least the 50th percentile cardiorespiratory fitness level for the general population based on the selected exercise protocol and the individual's biological sex and age ~~observed by radionuclide stress test~~ *[see Table 9.3.4.1(a) and Table 9.3.4.1(b)]* ~~*(see 9.3.4)*~~ (e) Has control of modifiable risk factor(s) for acute coronary plaque rupture (f) Had no myocardial infarction within the previous 6 months (g) Had no coronary artery bypass surgery within the previous 6 months (h) Had no angioplasty, with or without stent placement, within the previous 3 months (i) Is not currently prescribed anticoagulation medication, regardless of dose *(see Section 9.13 for anticoagulation medication)*	1, 2, 4, 5, 6, 7, 8, 13, 15

Condition	Special Criteria for Restriction	Special Provisions for No Restriction	Affected Essential Job Task(s)
		(j) Has completed cardiac rehab, if indicated (k) Has a signed statement and medical records from a cardiologist, indicating that the individual meets the provisions specified in (a) through (j) and can safely and effectively perform the essential job tasks	
(2) Myocardial infarction or coronary revascularization procedure	-	Meets the following provisions: (a) Has no exercise-induced myocardial ischemia, toxic arrhythmias, hypoxia, exercise hemoglobin oxygen desaturation, left ventricular dysfunction, or abnormal blood pressure response when a symptom-limited imaging stress test is performed to at least 85% maximum predicted heart rate and to a MET level of at least the 50th percentile cardiorespiratory fitness level for the general population based on the selected exercise protocol and the individual's biological sex and age ~~when a radionuclide stress test is performed~~ *[see Table 9.3.4.1(a) and Table 9.3.4.1(b)]* ~~*(see 9.3.4)*~~ (b) Is not currently prescribed anticoagulation medication, regardless of dose *(see Section 9.13 for anticoagulation medication)*	1, 2, 4, 5, 6, 7, 8, 13, 15
(3) Congestive heart failure (CHF)	Has CHF due to any etiology, including any disease leading to a lower than normal left or right ventricular ejection fraction, even if corrected by medication	Meets the following provisions every 2 to 3 years, as medically indicated: (a) Has no structural abnormalities as demonstrated by cardiac imaging (b) Has normal left ventricular function as demonstrated by cardiac imaging (c) Has no exercise-induced evidence of ischemia, toxic arrhythmias, hypoxia, exercise hemoglobin oxygen desaturation, left ventricular dysfunction, or abnormal blood pressure response when a symptom-limited imaging stress test is performed to at least 85% maximum predicted heart rate	1, 2, 4, 5, 6, 7, 8, 13, 15

Condition	Special Criteria for Restriction	Special Provisions for No Restriction	Affected Essential Job Task(s)
		and to a MET level of at least the 50th percentile cardiorespiratory fitness level for the general population based on the selected exercise protocol and the individual's biological sex and age *[see Table 9.3.4.1(a) and Table 9.3.4.1(b)]* ~~*(see 9.3.4)*~~ (d) Has a signed statement and medical records from a cardiologist, indicating that the individual meets the provisions specified in (a) through (c) and can safely and effectively perform the essential job tasks If due to a reversible process (e.g., hyperthyroidism, anemia), has no abnormality in cardiac performance off all cardiac medications	
(4) Restrictive cardiomyopathy and constrictive pericarditis	Has heart failure	Meets the following provisions every 2 to 3 years, as medically indicated: (a) Has no structural abnormalities as demonstrated by cardiac imaging (b) Has normal left ventricular function as demonstrated by cardiac imaging (c) Has no exercise-induced evidence of toxic arrhythmias, hypoxia, exercise hemoglobin oxygen desaturation, left ventricular dysfunction, or abnormal blood pressure response when a symptom-limited imaging stress test is performed to at least 85% maximum predicted heart rate and to a MET level for at least the 50th percentile cardiorespiratory fitness level for the general population based on the selected exercise protocol and the individual's biological sex and age *[see Table 9.3.4.1(a) and Table 9.3.4.1(b)]* ~~*(see 9.3.4)*~~ (d) Has a signed statement and medical records from a cardiologist, indicating that the individual meets the provisions specified in (a) through (c) and	1, 2, 4, 5, 6, 7, 8, 9, 13, 15

Condition	Special Criteria for Restriction	Special Provisions for No Restriction	Affected Essential Job Task(s)
		can safely and effectively perform the essential job tasks	
(5)* Acute pericarditis, acute endocarditis, and acute myocarditis	-	Meets the following provisions every 2 to 3 years, as medically indicated: (a) Has no structural abnormalities as demonstrated by cardiac imaging (b) Has normal left ventricular function as demonstrated by cardiac imaging (c) Has no exercise-induced evidence of toxic arrhythmias, hypoxia, exercise hemoglobin oxygen desaturation, left ventricular dysfunction, or abnormal blood pressure response when a symptom-limited imaging stress test is performed to at least 85% maximum predicted heart rate and to a MET level of at least the 50th percentile cardiorespiratory fitness level for the general population based on the selected exercise protocol and the individual's biological sex and age *[see Table 9.3.4.1(a) and Table 9.3.4.1(b)]* ~~*(see 9.3.4)*~~ (d) Has a signed statement and medical records from a cardiologist, indicating that the individual meets the provisions specified in (a) through (c) and can safely and effectively perform the essential job tasks	1, 2, 4, 5, 6, 7, 8, 13, 15
(6) Chronic pericarditis, endocarditis, or myocarditis	Has heart failure, valvular incompetence, or arrhythmias	Meets the following provisions every 2 to 3 years, as medically indicated: (a) Has no structural abnormalities as demonstrated by cardiac imaging (b) Has normal left ventricular function as demonstrated by cardiac imaging (c) Has no exercise-induced evidence of toxic arrhythmias, hypoxia, exercise hemoglobin oxygen desaturation, left ventricular dysfunction, or abnormal blood pressure response when a symptom-limited imaging stress test is	1, 2, 4, 5, 6, 7, 8, 13, 15

Condition	Special Criteria for Restriction	Special Provisions for No Restriction	Affected Essential Job Task(s)
		performed to at least 85% maximum predicted heart rate and to a MET level of at least the 50th percentile cardiorespiratory fitness level for the general population based on the selected exercise protocol and the individual's biological sex and age *[see Table 9.3.4.1(a) and Table 9.3.4.1(b)]* ~~*(see 9.3.4)*~~ (d) Has a signed statement and medical records from a cardiologist, indicating that the individual meets the provisions specified in (a) through (c) and can safely and effectively perform the essential job tasks	
(7)* Hypertrophic obstructive cardiomyopathy	-	Meets the following provisions annually or at the frequency indicated: (a) Has no history of syncope (b) Has no history of cardiac arrest (c) Has no history of toxic arrhythmias, including recent monitoring by Holter or loop recorder (d) Has left ventricle thickness of less than 30 mm as demonstrated by cardiac imaging (e) Every 2 to 3 years, as medically indicated, has no exercise-induced evidence of toxic arrhythmias, hypoxia, exercise hemoglobin oxygen desaturation, left ventricular dysfunction, or abnormal blood pressure response when a symptom-limited imaging stress test is performed to at least 85% maximum predicted heart rate and to a MET level of at least the 50th percentile cardiorespiratory fitness level for the general population based on the selected exercise protocol and the individual's biological sex and age *[see Table 9.3.4.1(a) and Table 9.3.4.1(b)]* ~~*(see 9.3.4)*~~ (f) Has a signed statement and medical records from a cardiologist, indicating that the	1, 2, 4, 5, 6, 7, 8, 13, 15

Condition	Special Criteria for Restriction	Special Provisions for No Restriction	Affected Essential Job Task(s)
		individual meets the provisions specified in (a) through (e) and can safely and effectively perform the essential job tasks	
(9)* Pacemaker or automatic implantable defibrillator	-	Meets the following provisions annually or at the frequency indicated: (a) Is no longer dependent on the pacemaker or automatic defibrillator (even if still implanted) (b) Is not currently prescribed cardiac anti-arrhythmic medication and has no inducible toxic arrhythmias as determined by a cardiologist with testing (e.g., 24-hour or longer duration loop recorders, or electrophysiology testing) (c) Has no structural abnormalities as demonstrated by cardiac imaging (d) Has normal left ventricular function as demonstrated by cardiac imaging (e) Every 2 to 3 years, as medically indicated, has no exercise-induced evidence of ischemia, toxic arrhythmias, hypoxia, exercise hemoglobin oxygen desaturation, left ventricular dysfunction, or abnormal blood pressure response when a symptom-limited imaging stress test is performed to at least 85% maximum predicted heart rate and to a MET level of at least the 50th percentile cardiorespiratory fitness level for the general population based on the selected exercise protocol and the individual's biological sex and age *[see Table 9.3.4.1(a) and Table 9.3.4.1(b)]* ~~*(see 9.3.4)*~~ (f) Has a signed statement and medical records from a cardiologist, indicating that the individual meets the provisions specified in (a) through (e) and can safely and effectively perform the essential job tasks	13

Condition	Special Criteria for Restriction	Special Provisions for No Restriction	Affected Essential Job Task(s)
(16)* Toxic arrhythmias	Has supraventricular arrhythmias, atrial fibrillation, atrial flutter, or paroxysmal atrial tachycardias where persistent or recurrent	Meets the following provisions annually or at the frequency indicated: (a) Has normal function and no structural abnormalities as demonstrated by cardiac imaging (b) Is not currently prescribed cardiac anti-arrhythmic medication and has no toxic arrhythmias present as determined by a cardiologist with testing (e.g., 24-hour or longer duration loop recorders, or electrophysiology testing) (c) Is not currently prescribed anticoagulation medication (d) Every 2 to 3 years, as medically indicated, has no exercise-induced evidence of ischemia, toxic arrhythmias, exercise hemoglobin oxygen desaturation, left ventricular dysfunction, or abnormal blood pressure response when a symptom-limited imaging stress test is performed to at least 85% maximum predicted heart rate and to a MET level of at least the 50th percentile cardiorespiratory fitness level for the general population based on the selected exercise protocol and the individual's biological sex and age~~when subjected to stress testing with imaging~~, off cardiac medications *[see Table 9.3.4.1(a) and Table 9.3.4.1(b)] ~~(see 9.3.4)~~* (e) Has a signed statement and medical records from a cardiologist, indicating that the individual meets the provisions specified in (a) through (d) and can safely and effectively perform the essential job tasks	8, 13
	Has ventricular arrhythmias (e.g., ventricular tachycardia and ventricular fibrillation) where persistent or recurrent or frequent toxic appearing ectopy	Meets the following provisions annually or at the frequency indicated: (a) Has normal function and no structural abnormalities as demonstrated by cardiac imaging	13

Condition	Special Criteria for Restriction	Special Provisions for No Restriction	Affected Essential Job Task(s)
		(b) Is not currently prescribed cardiac anti-arrhythmic medication and has no toxic arrhythmias present as determined by a cardiologist with testing (e.g., 24-hour or longer duration loop recorders, or electrophysiology testing) (c) Every 2 to 3 years, as medically indicated, has no exercise-induced evidence of ischemia, toxic arrhythmias, hypoxia, exercise hemoglobin oxygen desaturation, left ventricular dysfunction, or abnormal blood pressure response when a symptom-limited imaging stress test is performed to at least 85% maximum predicted heart rate and to a MET level of at least the 50th percentile cardiorespiratory fitness level for the general population based on the selected exercise protocol and the individual's biological sex and age ~~when subjected to stress testing with imaging~~, off cardiac medications *[see Table 9.3.4.1(a) and Table 9.3.4.1(b)]* ~~*(see 9.3.4)*~~ (d) Every 2 to 3 years, as medically indicated, shows that ventricular ectopy, if present, resolves with increasing levels of exercise (e) Has a signed statement and medical records from a cardiologist, indicating that the individual meets the provisions specified in (a) through (d) and can safely and effectively perform the essential job tasks	
(17) Atrioventricular block	Has third-degree or complete atrioventricular block	Meets the following provisions annually or at the frequency indicated: (a) Has no structural abnormalities as demonstrated by cardiac imaging (b) Has normal left ventricular function as demonstrated by cardiac imaging (c) Has no evidence for sinus pause greater than 3 seconds	13

Condition	Special Criteria for Restriction	Special Provisions for No Restriction	Affected Essential Job Task(s)
		(d) Has normal increase in heart rate with exercise in the absence of a mechanical pacemaker (e) Every 2 to 3 years, as medically indicated, has no exercise-induced evidence of ischemia, toxic arrhythmias, hypoxia, exercise hemoglobin oxygen desaturation, left ventricular dysfunction, or abnormal blood pressure response when a symptom-limited imaging stress test is performed to at least 85% maximum predicted heart rate and to a MET level of at least the 50th percentile cardiorespiratory fitness level for the general population based on the selected exercise protocol and the individual's biological sex and age ~~when subjected to stress testing with imaging~~ *[see Table 9.3.4.1(a) and Table 9.3.4.1(b)]* ~~*(see 9.3.4)*~~	
(18)* Hypertension, moderate to severe	Has systolic pressure greater than or equal to 160 mm Hg or diastolic pressure greater than or equal to 100 mm Hg	Meets the following provisions annually or at the frequency indicated: (a) Has controlled normal blood pressure as demonstrated by three normal readings over at least a 30-day period (b) Has a risk of ASCVD under 10% as determined by the ACC/AHA Heart Risk Calculator (c) Every 2 to 3 years, as medically indicated, has no exercise-induced evidence of left ventricular systolic dysfunction, ischemia, toxic arrhythmias, hypoxia, exercise hemoglobin oxygen desaturation, or abnormal blood pressure response when a symptom-limited imaging stress test is performed to at least 85% maximum predicted heart rate and to a MET level of at least the 50% cardiorespiratory fitness level for the general population based on the selected exercise protocol and the individual's biological sex and age ~~when subjected to stress~~	1, 2, 4, 5, 6, 7, 9, 13, 15

Condition	Special Criteria for Restriction	Special Provisions for No Restriction	Affected Essential Job Task(s)
		~~testing~~ *[see Table 9.3.4.1(a) and Table 9.3.4.1(b)]* ~~*(see 9.3.4)*~~ (d) Has no restrictions associated with end-organ damage *(see the section of this chapter that corresponds to the specific organ that is damaged)*	
(19)* Hypertension, mild	Has systolic blood pressure of 140 to 159 mm Hg or diastolic blood pressure of 90 to 99 mm Hg and either of the following: a) Evidence of end-organ damage b) 10% or greater risk of ASCVD over the next 10 years, as determined by using the 10-year ACC/AHA Heart Risk Calculator *(For mild hypertension with neither of the above conditions, see 9.7.1.)*	Meets the following provisions annually or at the frequency indicated: (a) Is referred to their primary care physician to ensure that their blood pressure is controlled (i.e., three normal readings over at least a 30-day period), to screen for end-organ damage, and to address underlying co-morbidities and the possible need for lifestyle modifications (b) Every 2 to 3 years, as medically indicated, has no exercise-induced evidence of left ventricular systolic dysfunction, ischemia, toxic arrhythmias, hypoxia, exercise hemoglobin oxygen desaturation, or abnormal blood pressure response when a symptom-limited imaging stress test is performed to at least 85% maximum predicted heart rate and to a MET level of at least the 50th percentile cardiorespiratory fitness level for the general population based on the selected exercise protocol and the individual's biological sex and age *[see Table 9.3.4.1(a) and Table 9.3.4.1(b)]* ~~*(see 9.3.4)*~~ (c) Has no restrictions associated with end-organ damage *(see the section of this chapter that corresponds to the specific organ that is damaged)*	1, 2, 4, 5, 6, 7, 9, 13, 15
(20)* Metabolic syndrome	-	Meets the following provisions annually or at the frequency indicated: (a) Has control of modifiable risk factor(s) ~~(b) Has aerobic capacity of 12 METs or higher~~ (b~~e~~) Every 2 to 3 years, as medically indicated, has no	1, 2, 4, 5, 6, 7, 13

Condition	Special Criteria for Restriction	Special Provisions for No Restriction	Affected Essential Job Task(s)
		exercise-induced evidence of ischemia, toxic arrhythmias, hypoxia, exercise hemoglobin oxygen desaturation, left ventricular dysfunction, or abnormal blood pressure response when a symptom-limited imaging stress test is performed to at least 85% maximum predicted heart rate and to a MET level of at least the 50th percentile cardiorespiratory fitness level for the general population based on the selected exercise protocol and the individual's biological sex and age *[see Table 9.3.4.1(a) and Table 9.3.4.1(b)] ~~(see 9.3.4)~~*	
~~(21)* Low aerobic capacity~~	~~Has aerobic capacity less than 8 METs, as demonstrated during the individual's most recent fitness evaluation *(see Chapter 8)* or medical stress test, if required to evaluate a medical condition *(see 9.3.4)*~~	-	~~1, 2, 4, 5, 6, 7, 8, 9, 13~~
(21~~22~~) Congenital abnormalities of the heart, aorta, or other major vessels	Has a history of a cardiovascular congenital abnormality that has been treated by surgery but with residual complications or that has not been treated by surgery, leaving residuals or complications	-	1, 2, 4, 5, 6, 7, 8, 13
(22~~23~~) Cardiac hypertrophy	-	Meets the following provisions annually or at the frequency indicated: (a) Has normal or only minimally reduced left ventricular function as demonstrated by cardiac imaging (b) Has normal increase in heart rate with exercise in the absence of a mechanical pacemaker (c) Every 2 to 3 years, as medically indicated, has normal blood pressure at rest (d) Every 2 to 3 years, as medically indicated, has no exercise-induced evidence of ischemia, toxic arrhythmias, hypoxia, exercise hemoglobin oxygen desaturation, left ventricular dysfunction, or abnormal blood pressure when a symptom-	1, 2, 4, 5, 6, 7, 13

Condition	Special Criteria for Restriction	Special Provisions for No Restriction	Affected Essential Job Task(s)
		limited imaging stress test is performed to at least 85% maximum predicted heart rate and to a MET level of at least the 50th percentile cardiorespiratory fitness level for the general population based on the selected exercise protocol and the individual's biological sex and age ~~subjected to stress testing with imaging~~, off cardiac medications *[see Table 9.3.4.1(a) and Table 9.3.4.1(b)] ~~(see 9.3.4)~~* (e) Has a signed statement and medical records from a cardiologist, indicating that the individual meets the provisions specified in (a) through (d) and can safely and effectively perform the essential job tasks	
(2324) Heart transplant *(see Section 9.13 for antirejection medication)*	-	-	1, 2, 4, 5, 6, 7, 13
Vascular Disorders*			
(2425) Aortic dilation or aneurysm (i.e., thoracic aortic aneurysm or abdominal aortic dilation or aneurysm greater than or equal to 4.5 cm)	-	Meets the following provisions annually or at the frequency indicated: (a) Has controlled normal blood pressure as demonstrated by three normal readings over at least a 30-day period (b) Every 1 to 2 years, has stable aortic measurement as demonstrated by cardiac imaging (c) Has a signed statement and medical records from a cardiologist, thoracic surgeon, or vascular surgeon, indicating that the individual meets the provisions specified in (a) and (b) and can safely and effectively perform the essential job tasks (d) If the thoracic or abdominal aortic aneurysm is surgically repaired, has no complications after 6 months of postsurgical healing and meets (a) through (c)	1, 4, 5, 6, 7, 13
(2526)* Carotid artery disease	Is symptomatic and has reduction in blood flow of greater than 70%	-	13

Condition	Special Criteria for Restriction	Special Provisions for No Restriction	Affected Essential Job Task(s)
(26~~27~~) Thoracic outlet syndrome	Is symptomatic	-	1, 13
(27~~28~~) Peripheral vascular disease (arterial or venous)	Is symptomatic (e.g., claudication, Raynaud's phenomenon) or has severe peripheral edema	-	1, 4, 5, 6, 7, 9, 13
(28~~29~~) Thrombophlebitis or deep venous thrombosis	Has persistent or recurrent condition or is prescribed anticoagulation medication, regardless of dose *(see Section 9.13 for anticoagulation medication)*	Meets both of the following: (a) Is able to wear PPE (b) Has no restrictions related to any underlying cause (c) Is not currently prescribed anticoagulation medication, regardless of dose *(see Section 9.13 for anticoagulation medication)*	1, 4, 5, 6, 7, 9, 13
(29~~30~~) Circulatory instability, as indicated by orthostatic hypotension or persistent tachycardia	-	-	13
(30~~31~~) Chronic, severe lymphedema or massive edema of any type (e.g., due to lymphadenopathy, severe venous valvular incompetency, endocrine abnormalities, or low flow states)	-	Meets both of the following: (a) Is able to wear PPE (b) Has no restrictions related to any underlying cause	1, 2, 4, 5, 6, 7, 9, 13
(31~~32~~) Congenital or acquired lesions of the aorta or major blood vessels	Has a lesion that interferes with circulation or increases the potential for life-threatening sudden incapacitation	-	1, 4, 7, 13

*Additional information is provided in A.9.7.

A.9.7 …
~~*(21) Low aerobic capacity.* An evaluation of aerobic capacity should be performed after appropriate medical evaluation *(see A.8.2.2.1.1).*~~
…
(25~~26~~) Carotid artery disease. Carotid endarterectomy and carotid artery stenting are effective long-term stroke prevention strategies in symptomatic patients with flow obstruction greater than 70 percent. However, uncertainty remains regarding the optimal technique for long-term prevention of vascular events in asymptomatic patients with flow obstruction greater than 70 percent and whether either is sufficiently better than medical therapy.

7. Revise the following rows of Table 9.8, Medical Conditions Involving the Endocrine System and Metabolic Function (as amended by TIA 22-1):

Condition	Special Criteria for Restriction	Special Provisions for No Restriction	Affected Essential Job Task(s)
(1)* Type 1 diabetes mellitus	Requires treatment with insulin	Meets the following provisions annually or at the frequency indicated: (a) Is maintained by a physician knowledgeable in current management of diabetes mellitus on a basal/bolus (i.e., can include subcutaneous insulin infusion pump) regimen using insulin analogs	5, 9, 13, 14

Condition	Special Criteria for Restriction	Special Provisions for No Restriction	Affected Essential Job Task(s)
		(b) Has demonstrated over a period of at least 6 months the motivation and understanding required to closely monitor and control capillary blood glucose levels through nutritional therapy and insulin administration, including any experience and history dealing with erratic meal schedules, sleep disruption, and high aerobic and anaerobic workloads intrinsic to firefighting (c) Has a dilated retinal exam by a qualified ophthalmologist or optometrist that shows no higher grade of diabetic retinopathy than mild nonproliferative (microaneurysms only), as indicated on the International Clinical Diabetic Retinopathy Disease Severity Scale (d) Has normal renal function based on a calculated creatinine clearance greater than 60 mL/min using the Cockroft-Gault or similar formula and has absence of proteinuria (defined as 24-hour urine excretion of greater than or equal to 300 mg protein or greater than or equal to 300 mg of albumin per gram of creatinine in a random sample) (e) Has no autonomic neuropathy (determined by evidence of gastroparesis, postural hypotension, or abnormal tests of heart rate variability) or peripheral neuropathy (determined by diminished ability to feel the vibration of a 128-Hz tuning fork or the light touch of a 10 g monofilament on the dorsum of the great toe proximal to the nail) (f) Every 2 to 3 years, as medically indicated, has normal cardiac function without exercise-induced evidence of myocardial ischemia, toxic arrhythmias, hypoxia, exercise hemoglobin oxygen desaturation, left ventricular dysfunction, or abnormal blood pressure response when a symptom-limited imaging stress test is performed to at least 85% maximum predicted heart rate and to a MET level of at least the 50th percentile cardiorespiratory fitness level for the general population based on the selected exercise protocol and the individual's biological sex and age ~~when subjected to stress testing with imaging~~ *[see Table 9.3.4.1(a) and Table 9.3.4.1(b)]* ~~*(see 9.3.4)*~~ (g) Has a signed statement and medical records from an endocrinologist or a physician with demonstrated knowledge in the current management of diabetes mellitus, indicating that the individual meets the following provisions: i. Is maintained on a stable basal/bolus regimen using insulin analogs and has demonstrated over a period of at least 6 months the motivation and understanding required to monitor and control capillary blood glucose levels through nutritional therapy and insulin administration despite varied activity schedules ii. Has had hemoglobin A1C measured at least four times a year, at intervals of two to three months, over the last 12 months prior to evaluation if the diagnosis of diabetes has been present over 1 year iii. Does not have an increased risk of hypoglycemia due to alcohol use or other predisposing factors iv. Has had no episodes of severe hypoglycemia (i.e., requiring assistance of another) in the preceding year, with no more than two episodes of severe hypoglycemia in the preceding 3 years v. Is certified not to have a medical contraindication to firefighting training and operations (h) Where a hemoglobin A1C reading of 8% or greater, is medically evaluated to determine if a condition exists in addition to diabetes that is responsible for the hemoglobin A1C not accurately reflecting average glucose levels, including evidence of a set schedule for blood glucose monitoring and a thorough review of data from such monitoring	

Condition	Special Criteria for Restriction	Special Provisions for No Restriction	Affected Essential Job Task(s)
(2)* Type 2 diabetes mellitus that requires treatment with insulin	-	Meets the following provisions annually or at the frequency indicated: (a) Is maintained by a physician knowledgeable in current management of diabetes mellitus on a basal/bolus (i.e., can include subcutaneous insulin infusion pump) regimen using insulin analogs (b) Has demonstrated over a period of at least 3 months the motivation and understanding required to monitor and control capillary blood glucose levels through nutritional therapy and insulin administration, including any experience and history dealing with erratic meal schedules, sleep disruption, and high aerobic and anaerobic workloads intrinsic to firefighting (c) Has a dilated retinal exam by a qualified ophthalmologist or optometrist that shows no higher grade of diabetic retinopathy than mild nonproliferative (microaneurysms only), as indicated on the International Clinical Diabetic Retinopathy Disease Severity Scale (d) Has normal renal function based on a calculated creatinine clearance greater than 60 mL/min using the Cockroft-Gault or similar formula and has absence of proteinuria (defined as 24-hour urine excretion of greater than or equal to 300 mg protein or greater than or equal to 300 mg of albumin per gram of creatinine in a random sample) (e) Has no autonomic neuropathy (determined by evidence of gastroparesis, postural hypotension, or abnormal tests of heart rate variability) or peripheral neuropathy (determined by diminished ability to feel the vibration of a 128-Hz tuning fork or the light touch of a 10 g monofilament on the dorsum of the great toe proximal to the nail) (f) Every 2 to 3 years, as medically indicated, has normal cardiac function without exercise-induced evidence of myocardial ischemia, toxic arrhythmias, hypoxia, exercise hemoglobin oxygen desaturation, left ventricular dysfunction, or abnormal blood pressure response when a symptom-limited imaging stress test is performed to at least 85% maximum predicted heart rate and to a MET level of at least the 50th percentile cardiorespiratory fitness level for the general population based on the selected exercise protocol and the individual's biological sex and age ~~when subjected to stress testing with imaging~~ *[see Table 9.3.4.1(a) and Table 9.3.4.1(b)]* ~~*(see 9.3.4)*~~ (g) Has a signed statement and medical records from an endocrinologist or a physician with demonstrated knowledge in the current management of diabetes mellitus, indicating that the individual meets the following provisions: i. Is maintained on a stable insulin regimen and has demonstrated over a period of at least 3 months the motivation and understanding required to monitor and control capillary blood glucose levels through nutritional therapy and insulin administration ii. Has had hemoglobin A1C measured at least four times a year, at intervals of two to three months, over the last 12 months prior to evaluation if the diagnosis of diabetes has been present over 1 year iii. Does not have an increased risk of hypoglycemia due to alcohol use or other predisposing factors iv. Has had no episodes of severe hypoglycemia (i.e., requiring assistance of another) in the preceding year, with no more than one episode of severe hypoglycemia in the preceding 5 years v. Is certified not to have a medical contraindication to firefighting training and operations (h) Where a hemoglobin A1C reading of 8% or greater, is medically evaluated to determine if a condition exists in addition to diabetes that is	5, 9, 13, 14

Condition	Special Criteria for Restriction	Special Provisions for No Restriction	Affected Essential Job Task(s)
		responsible for the hemoglobin A1C not accurately reflecting average glucose levels, including evidence of a set schedule for blood glucose monitoring and a thorough review of data from such monitoring	
(3)* Type 2 diabetes mellitus that does not require insulin therapy and is able to control the condition with diet, exercise, or oral hypoglycemic agents	-	Meets the following provisions annually or at the frequency indicated: (a) Has had hemoglobin A1C measured at least four times a year, at intervals of two to three months, over the last 12 months prior to evaluation if the diagnosis of diabetes has been present over 1 year (b) If on oral hypoglycemic agents, has had no episodes of severe hypoglycemia (i.e., requiring assistance of another) in the preceding year (c) Has a dilated retinal exam by a qualified ophthalmologist or optometrist that shows no higher grade of diabetic retinopathy than mild nonproliferative (microaneurysms only), as indicated on the International Clinical Diabetic Retinopathy Disease Severity Scale (d) Has normal renal function based on a calculated creatinine clearance greater than 60 mL/min using the Cockroft-Gault or similar formula and has absence of proteinuria (defined as 24-hour urine excretion of greater than or equal to 300 mg protein or greater than or equal to 300 mg of albumin per gram of creatinine in a random sample) (e) Has no autonomic neuropathy (determined by evidence of gastroparesis, postural hypotension, or abnormal tests of heart rate variability) or peripheral neuropathy (determined by diminished ability to feel the vibration of a 128-Hz tuning fork or the light touch of a 10 g monofilament on the dorsum of the great toe proximal to the nail) (f) Every 2 to 3 years, as medically indicated, has normal cardiac function without exercise-induced evidence of myocardial ischemia, toxic arrhythmias, hypoxia, exercise hemoglobin oxygen desaturation, left ventricular dysfunction, or abnormal blood pressure response when a symptom-limited imaging stress test is performed to at least 85% maximum predicted heart rate and to a MET level of at least the 50th percentile cardiorespiratory fitness level for the general population based on the selected exercise protocol and the individual's biological sex and age ~~when subjected to stress testing with imaging~~ *[see Table 9.3.4.1(a) and Table 9.3.4.1(b)]* ~~*(see 9.3.4)*~~ (g) Where a hemoglobin A1C reading of 8% or greater, is medically evaluated to determine if a condition exists in addition to diabetes that is responsible for the hemoglobin A1C not accurately reflecting average glucose levels, including evidence of a set schedule for blood glucose monitoring and a thorough review of data from such monitoring	5, 9, 13, 14

8. Revise Annex paragraph B.1.2 to read as follows:

Annex B Guide for Fire Department Administrators

…

B.1.2 Legal Protections for Individuals Who Are Members of Protected Classes ~~(Race, Sex, Color, Religion, or National Origin).~~ Title VII of the Civil Rights Act of 1964, as amended, 42 U.S.C. § 2000e et seq., and implementing regulations by the EEOC prohibit discrimination in employment on the basis of race, sex, color, religion, or national origin (i.e., protected classes). Under Title VII, an "employer" is defined, generally, to mean a person with "15 or more employees for each working day in each of 20 or more calendar weeks in the current or preceding calendar year" (42 U.S.C. § 2000e). Several federal jurisdictions have held that unpaid volunteers are not considered to be "employees" under Title VII.

The Age Discrimination in Employment Act (ADEA), 29 U.S.C. § 621 et seq., forbids age discrimination against people aged 40 or older. It does not protect workers under the age of 40, although some states have laws that also protect younger

workers from age discrimination. It is not illegal for an employer or other covered entity to favor an older worker over a younger one, even if both workers are age 40 or older.

Other federal civil rights laws might prohibit employment discrimination against individuals based on other protected bases not discussed in this section, such as pregnancy and genetic information.

Additionally, many states, cities, and localities have adopted similar legislation. Generally, physical performance or other requirements that result in "adverse impact" on members of a protected class (e.g., on the basis of gender) are required to be validated through a study in accordance with EEOC guidelines, if such requirements are to be relied on in making employment decisions. Under EEOC guidelines, a study validating employment standards in one jurisdiction can be transportable to another jurisdiction (and therefore used in lieu of conducting a separate study). However, specific preconditions must be met in this regard, and the authority having jurisdiction should seek the advice of counsel before relying on a transported validation study.

Employers should ensure that employment tests and selection procedures are properly validated for the positions and purposes for which they are used. The test or selection procedure must be job-related and its results appropriate for the employer's purpose. To ensure that a test or selection procedure remains predictive of success in a job, employers should keep abreast of changes in job requirements and update the test specifications or selection procedures accordingly.

Courts have recognized that physiological differences between men and women impact their relative abilities to demonstrate the same levels of physical fitness. In other words, equally fit men and women demonstrate their fitness differently. An employer does not violate Title VII when it uses physical fitness standards that distinguish between the sexes on the basis of their physiological differences but impose an equal burden of compliance on both men and women, requiring the same level of physical fitness of each. *(See Bauer v. Lynch, U.S. Fourth Circuit of Appeals, decided 2016.)* Similarly, age-normed physical fitness standards might be permissible.

For more information see the following guidance from the EEOC:

(1) Laws Enforced by EEOC, www.eeoc.gov/statutes/laws-enforced-eeoc
(2) Age Discrimination, www.eeoc.gov/age-discrimination
(3) Employment Tests and Selection Procedures, www.eeoc.gov/laws/guidance/employment-tests-and-selection-procedures

9. Revise Annex paragraph F.1.2.5 by adding a new entry to read as follows:

F.1.2.5 Other Publications.

…

Liguori, G., *ACSM's Guidelines for Exercise Testing and Prescription*, American College of Sports Medicine (ACSM), 11th edition, 2021.

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