AUTHORS NEEDED

We encourage you to become more involved in OHSIG whether serving on a committee or a task force or writing an article or case study for OPTP. It’s a great way to share your expertise with others working in this area of practice.

We thank Jill Galper, PT, MEd, for her contribution to this edition of OPTP. Jill is VP of Occupational Health Services for IMX Medical Management Services. She is also a Fellow, America Board of Disability Analysts. Many of you perform Functional Testing, and I think you will find her information very helpful and relevant.

Please contact any of your OHSIG board if you have questions/comments. We’d love to hear from you!

Professional Regards,
Margot Miller, PT
OHSIG President

PHYSIOLOGICAL SAFETY DURING FUNCTIONAL CAPACITY TESTING

By Jill Galper, PT, MEd, and Rick Wickstrom, PT, CPE, CDMS

The American Physical Therapy Association (APTA) Guidelines for *Evaluating Functional Capacity* defines Functional Capacity Evaluation (FCE) as a detailed examination and evaluation that objectively measures the evaluatee's current level of function, primarily within the context of the demands for competitive employment, activities of daily living, or leisure activities. An FCE helps to bridge the gap between impairment and work disability by emphasizing functional, performance-based testing that is not amenable to inclusion in a traditional medical examination by physicians. The length of a typical FCE may range from 3 to 5 hours during a single day test, depending on complexity and related professional time to adequately address indications such as:

1. Assess residual functional status when treatment progress has reached a plateau.
2. Facilitate an appropriate release to return to full or modified duty for claimants who are not working.
3. Investigate discrepancies between subjective complaints and objective findings.
4. Evaluate reports of worker symptoms or difficulties with completion of expected job tasks.
5. Provide supporting documentation for vocational planning.

In published reviews of FCE practices, there are frequent references to a hierarchy of issues that should be considered for protocol design. These issues include: safety, reliability, validity, practicality, and utility. Safety in an FCE has been defined as lack of a new injury. A temporary increase in an evaluatee’s symptoms is not regarded as unsafe. Safety is listed at the top of the issues to reflect its importance for priority for FCE evaluators.

APTA Guidelines stipulate that physical therapists providing FCEs have the responsibility to ensure that the evaluatee is medically stable or that the FCE test protocol is administered within the safe confines of the evaluatee’s health condition. Medical stability refers to a state where primary healing is complete. There is a consistent presence of specific signs and symptoms at rest or in response to activity. Consistency means that the location of the symptoms and the presence of the signs have reached a plateau. The intensity of the symptoms may vary with activity or treatment, but the location of the symptoms remains consistent.

The purpose of this article is to provide specific guidance to promote an evaluatee’s physiological safety during an FCE. The scope of this article does not include biomechanical safety issues.
GENERAL CONSIDERATIONS DURING INTAKE/MEDICAL HISTORY

A well-designed FCE process should ensure that evaluees are screened for underlying medical conditions that may prohibit or limit participation in functional testing. The FCE Examiner should perform the following:

- Document the reason(s) for the FCE referral at intake and medical conditions that may impact work abilities at time of referral intake.
- Request information about job tasks and physical demands when a job match is requested.
- Notify the subject to bring a list of all recent medications and to take all medications according to the usual schedule that permits the most optimal level of daily functioning.
- If an evaluee has had recent surgery, it is recommended that the surgeon determine when functional testing is appropriate and provide any relevant medical contraindications or test limitations.
- Perform a comprehensive medical history and identify relevant medical records needed to review medical stability and confirm the appropriate diagnosis. Obtaining a thorough medical history is important to identify the existence of a health condition, even if unrelated to the covered condition or diagnosis, since it might impact the evaluee's safety and performance. The following health conditions are of particular importance for administration of FCE endurance tasks:
  - Cardiac, peripheral vascular, or cerebrovascular disease.
  - Chronic obstructive pulmonary disease, asthma, interstitial lung disease, or cystic fibrosis.
  - Diabetes mellitus, thyroid disorders, renal or liver disease.
- Inquire about the presence of any recent major signs and symptoms of cardiorespiratory disease:
  - Pain, discomfort (or other angina equivalent in chest, neck, jaw, arms or other areas that may be due to ischemia).
  - Shortness of breath at rest or with mild exertion.
  - Dizziness or syncope.
  - Orthopnea or paroxysmal nocturnal dyspnea.
  - Ankle edema.
  - Palpitation or tachycardia.
  - Intermittent claudication.
  - Known heart murmur.
  - Unusual fatigue or shortness of breath with usual activities.
- Address the risks for injury, aggravation of symptoms, or possibility of soreness in response to testing and explain exam procedures that will help reduce such risks, including immediate notification of the examiner of any change in symptoms in response to FCE tasks.

RESTING HEART RATE AND BLOOD PRESSURE CONSIDERATIONS

Usually heart rate is initially taken manually by palpating the pulse over the radial artery manually with the index and middle fingers. This is usually counted for 15 seconds and then multiplied by 4 to determine the per-minute HR. Use of an inexpensive heart rate monitor helps the examiner monitor heart rate changes in response to varying workloads.

It is recommended that two measurements of resting blood pressure in the same arm (minimum of 1 minute apart) after the evaluee has been seated quietly for 5 minutes in a chair with back support and their arm supported at heart level.

Some evaluees may be initially anxious, particularly at the outset of an FCE, when resting blood pressure and heart rate are measured. If evaluee is asymptomatic, but presents with tachycardia (HR > 100 beats/minute) or hypertension (defined as BP > 140/90 mmHg) during seated rest, then the following procedures are recommended:

1. With hypertension, retake blood pressure in the opposite arm (there may be up to a 20 mmHg difference in systolic blood pressure and a 10 mmHg difference in diastolic blood pressure between arms). A greater variation than this could reflect an underlying health problem. Taking blood pressure in the opposite arm can be done immediately after the prior measurement was obtained.
2. With hypertension or tachycardia, have the evaluee sit quietly for 15-20 minutes and then re-measure heart rate, followed by blood pressure in each arm.
3. If the evaluee remains hypertensive, proceed with the musculoskeletal evaluation and then retake resting HR and seated blood pressure after 5 minutes of seated rest. It is possible that heart rate or blood pressure may lower once the patient becomes more at ease with the test process.
4. If the patient still remains hypertensive but less so after the musculoskeletal evaluation, proceed with a functional test activity that is not strenuous, such as a walking, handling or fingering test, and then retake blood pressure after the evaluee has an opportunity to rest.

If the evaluee continues to demonstrate significantly hypertension (BP reading 160/100 or greater) or tachycardia (HR 100 beats/minute or greater), then the evaluee should be encouraged to contact their physician’s office for medical clearance or further instruction.

SOME PRACTICAL TIPS FOR FCE TASK ASSIGNMENT BASED IN RESTING BLOOD PRESSURE AND TASK STRENUOUSNESS

It is usually possible for asymptomatic individuals to perform some FCE tasks even when high blood pressure is present. The following guidelines may be considered for management.

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of asymptomatic individuals with resting hypertension during the FCE process:

- **SEVERE** hypertension (≥200/≥110) at rest should not prevent most individuals from doing SEDENTARY work; however, emergency referral is warranted if symptomatic.
- **MODERATE** (Stage 2) hypertension (160-199/100-109) at rest should not prevent most individuals from doing LIGHT or MEDIUM physical demands, if asymptomatic.
- **MILD** (Stage 1) hypertension (140-159/90-99) at rest should not prevent most individuals from doing HEAVY or VERY HEAVY physical demands.

**REASONS TO TERMINATE TESTING**

The evaluatee's symptoms, heart rate, blood pressure, and rating of perceived exertion (RPE) should be monitored in response to most endurance tasks. If an evaluatee demonstrates or reports shortness of breath, then monitoring of respiratory rate and oxygen saturation with a pulse oximeter is advised.

During the FCE, tasks should be stopped if any of the following occurs:

- Onset of angina or similar angina-like symptoms.
- Signs of poor perfusion: light-headedness, confusion, ataxia, pallor, cyanosis, nausea, or cold and clammy skin.
- Failure of HR to increase as expected with exercise intensity.
- Subject requests to stop.
- Physical/verbal manifestations of severe fatigue, shortness of breath, wheezing, leg cramps.
- Heart rate exceeds 85% of age adjusted maximal heart rate (220-age). Note: Because of individual variation in maximum heart rate, it is possible for the upper limit of 85% of the estimated maximal heart rate during an exercise test may represent a maximal effort for some individuals.
- Certain medications like beta blockers lower the heart rate at rest and in response to activity. This justifies using a psychophysical rating of perceived exertion (such as “Very hard”) as an added safety endpoint for these individuals.
- A drop in systolic blood pressure (>10 mm Hg decrease in SBP despite an increase in workload) or failure of SBP to increase with increased workload, is considered an abnormal test response.” Anxious patients who demonstrate a drop in systolic blood pressure during the onset of exercise, without corresponding signs and symptoms, generally do not warrant test termination.
- A relative contraindication to terminate exercise testing is a hypertensive response, defined as a systolic blood pressure of > 200 mm Hg and/or a diastolic blood pressure of > 110 mmHg.

As in medical practice, the dictum, “first, do no harm” is of utmost concern for physical therapists. The FCE evaluator can ensure the safety of his or her evaluatee by identifying specific physiological, biomechanical and psychophysical endpoints during FCE, performing a relevant clinical examination and closely monitoring the evaluatee’s performance during testing.

**REFERENCES**