

National Academy of Science Engineering and Medicine

Functional Testing for Work Activities



Susan J. Isernhagen PT

Developer and researcher in
Functional Capacity Evaluation
and ADA work placement



Functional Capacity Evaluation Definition

- **Functional:** Meaningful, purposeful work activity (testing is done by having evaluatee physically perform the work task)
- **Capacity:** The maximum amount able to be performed safely as well as capacity to do endurance activities
- **Evaluation:** A professional test with protocols, scientific criteria and work related outcome statements



Purpose of Functional Evaluation

- To provide objective information on the functional capacity of an individual in work like activities
- Takes into consideration the injury or illness of the evaluatee
 - Provide FCE results that reflect safety as well as capacity



Philosophy and Guideline

- Create a safe environment where the evaluatee trusts the evaluator in order to facilitate full effort
- Provide a history and physical prior to FCE to determine medical issues, safety parameters
- Assess evaluatee during functional items taking objective measurements of performance (not a checklist)



Occupational Requirements

Occupational Requirements Survey (ORS)

- Sitting
- Standing/Walking
- Sitting/Standing at Will
- *Lifting/Carrying*
- Pushing/Pulling
- Reaching
 - Overhead Reaching
 - At/Below the Shoulder Reaching

Occupational Requirements (continued)

- Keyboarding
- Gross Manipulation
- Fine Manipulation
- Foot/Leg Controls
- Stooping, Crouching, Kneeling, Crawling
(*very different physical requirements*)
- Climbing
 - Climbing Ramps or Stairs
 - Climbing Ladders, Ropes, or Scaffolds



International Research

- USA
- Canada
- The Netherlands
- Switzerland
- Germany

Reneman et al., 2002



Results of 3 questionnaires (Roland, Oswestry, Quebec) were compared to actual performance (Isernhagen FCE).

Questionnaires state less ability than actual performance for on an FCE:

Note: Once tested, evaluatees are more confident as they have actually performed the activities and not been “restricted”

Brouwer et al., 2005



Comparison of chronic low back pain patient:
Self-report, physician exam and functional testing.

Work ability was lowest in self report.

Physician estimate was higher than self report but lower than actual performance ability.

Functional tests showed greatest ability and least restrictions of all 3.



Discussion on Brouwer's and Reneman's research

There continue to be attempts to gain functional information by questionnaires but the research shows significant inaccuracy in underestimating (fear, previous medical advice?)



Discussion continued

Physicians with diagnoses and tests available are asked to estimate functional capacity but these are also underestimates

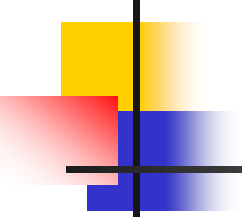
(physicians asked for the development of objective functional testing)



Discussion continued

Safe functional testing is realistic, *gives the evaluatee an accurate demonstration* of their abilities and limitations: and provides confidence for all parties.

If validity and evidence base is the goal, researched functional tests should be the gold standard.



Switzerland: Adding FCE to RTW: Oesch

Randomized controlled trial

1. Quality of Fitness for work certificates are better when FCE and medical findings are combined
2. Significantly more people went to work when the FCE and medical were combined
3. In Switzerland the physician and therapist are a team for reporting



US Professional Guidelines for Functional Work Testing

- American Physical Therapy Association (2008 and in process 2018)
- American Occupational Therapy Association.



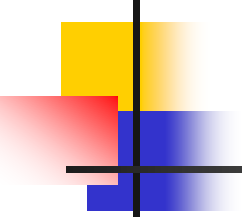
Job Matching Using Occupational Requirements Survey

- **Sedentary** : Lifting up to 10 pounds occasionally or negligible frequently. Sitting: frequently to constantly. Brief standing or walking occasionally.
- **Light** : Lifting up to 20 pounds occasionally, or up to 10 pounds frequently, or negligible constantly. Standing or walking frequently to constantly. Brief periods of sitting occasionally. Or, may include sitting frequently to constantly for arm or leg controls. Or, may be production pace work requiring negligible force.
- **Medium** : **Lifting** 21-50 pounds **occasionally**, or 11-25 pounds **frequently**, or up to 10 pounds **constantly**. **Standing or walking** frequently to constantly and may be brief periods of **sitting** occasionally.
- **Heavy** : Lifting 51-100 pounds occasionally, or 26 to 50 pounds frequently, or 11 to 20 pounds constantly. Standing or walking frequently to constantly and may be brief periods of sitting occasionally.
- **Very Heavy** : Lifting in excess of 100 pounds occasionally, or in excess of 50 pounds frequently, or in excess of 20 pounds constantly. Standing or walking are usually required frequently to constantly and the work may involve brief periods of sitting occasionally

Carry

- LIGHT
 - MEDIUM
- OR
- HEAVY??



- 
-
- LIGHT
 - MEDIUM
- OR
- HEAVY?





- SAFE

OR

- UNSAFE





- SAFE

OR

- UNSAFE



Test Item	OCCASIONALLY 1-33% (Maximum)	FREQUENTLY 34-66% (moderate)	CONSTANTLY 67-100% (light effort)
1. Carry	50#	25#	5
2. Lift up to waist	10	0	0
3. Lift waist - shoulder	20	10	0
4. Push/Pull	55/60#	27/30#	13/15#
5. Hand Grip	R 75#, L 70#	R 37#, L 35#	R 18#, L 18#
6. Pinch Grip	R 18#, L 16#	R 9#, L 8#	R 5#, L 4#
7. Fine and gross hand manipulation			X
8. Sit			X
9. Stand Walk			X
10. Stooping		X	
11. Squat and kneel	X		
12. Reaching at and above shoulder			X
13. Climb Stairs	X		



In summary: Functional Testing

- Is done by a medical based therapist as evaluatees having medical conditions
- Research verifies reliability and validity of some types of functional testing
- There are many types of functional testing but they are unequal. They should be examined for research base
- Professional Guidelines exist



In summary: Functional Testing

- Is utilized by physicians, vocational counselors, case managers, insurers, attorneys, employers, unions and employees/patients
- Is matched to a list of Occupational Requirements
- Can be a precursor to specific job functional testing



In summary: Functional Capacity Evaluation

- Is an objective way to evaluate a person's abilities to do a class of work or a specific job

THANK YOU