

Functional Capacity Evaluations (FCEs): Medical Evidence or Hearsay

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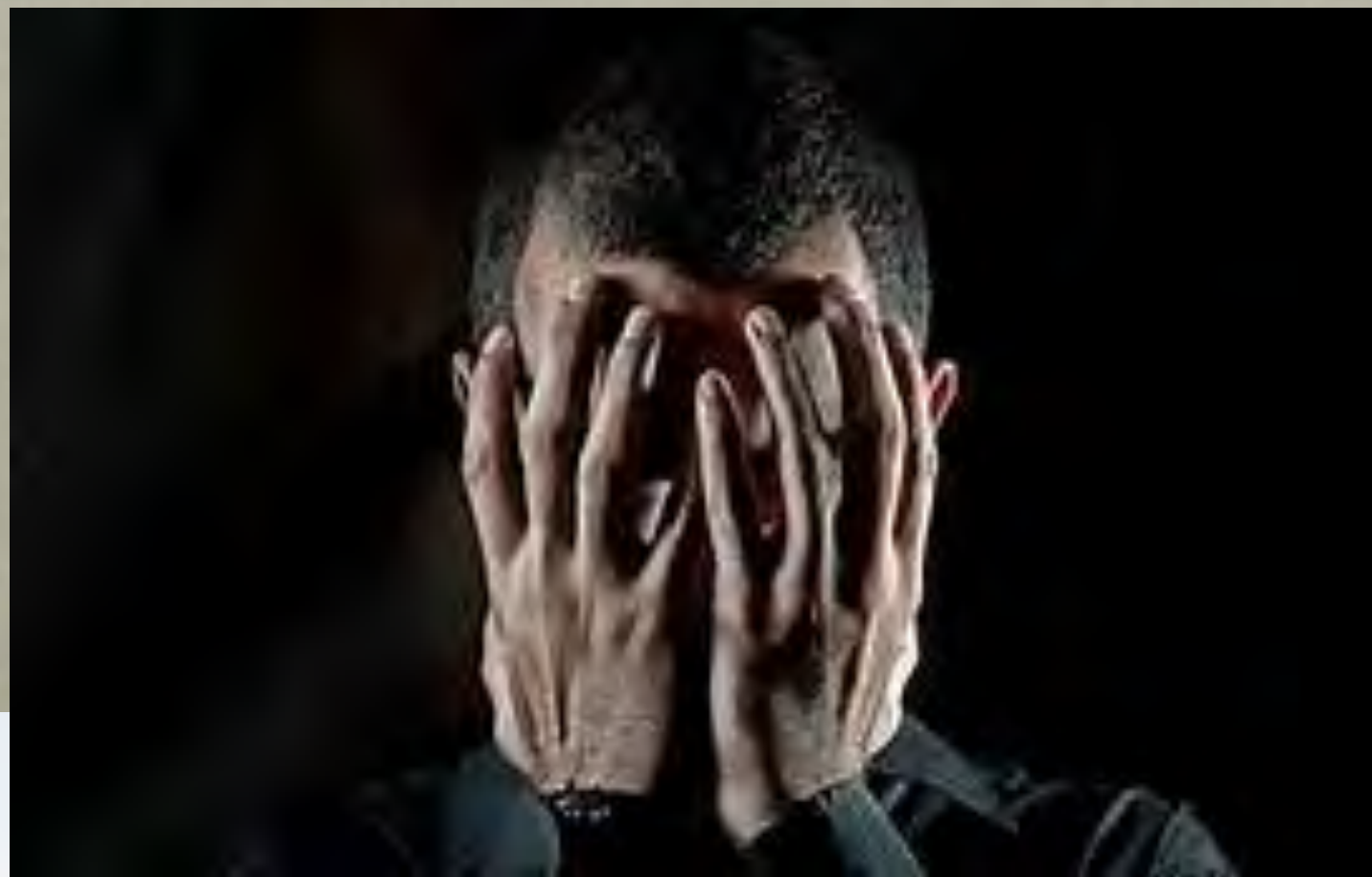
FCE Article – The Benefits of a Quality Functional Capacity Evaluation

- <http://jtechmedical.com/Newsflash/the-benefits-of-a-quality-functional-capacity-evaluation>
- <http://blog.jtechmedical.com/45-on-the-characteristics-of-a-quality-fce>
- <http://physical-therapy.advanceweb.com/Features/Articles/The-ABCs-of-FCEs.aspx>
- https://wcla.info/resources/Documents/WCLA_FALL_2017_FINAL.pdf



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Are FCEs Important?



Impairment Does Not Equal Function



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FCE Premise

- 1) Determine Safe Functional Work Level
- 2) Determine Sincerity of Effort

FCE Outcomes

A. Valid and Met Job Demands

B. Invalid

1. Met Job Demands

- 2. Did not meet job demands

- C. Valid results and did not meet job demands

- PERCENTAGES???

IL WC Reform

- 1) FCEs need to Be independent – directed by carriers and not from same facility
- 2) FCEs need to be performed by a physical therapist, occupational therapist, physician assistant, or physician
- 3) FCEs need to be standardized



A FCE to Determine Effort and/or Malingering

- What is the Difference?
- What are Non-Organic Signs?
- How do you find non-organic signs?
- Are they Quantifiable?



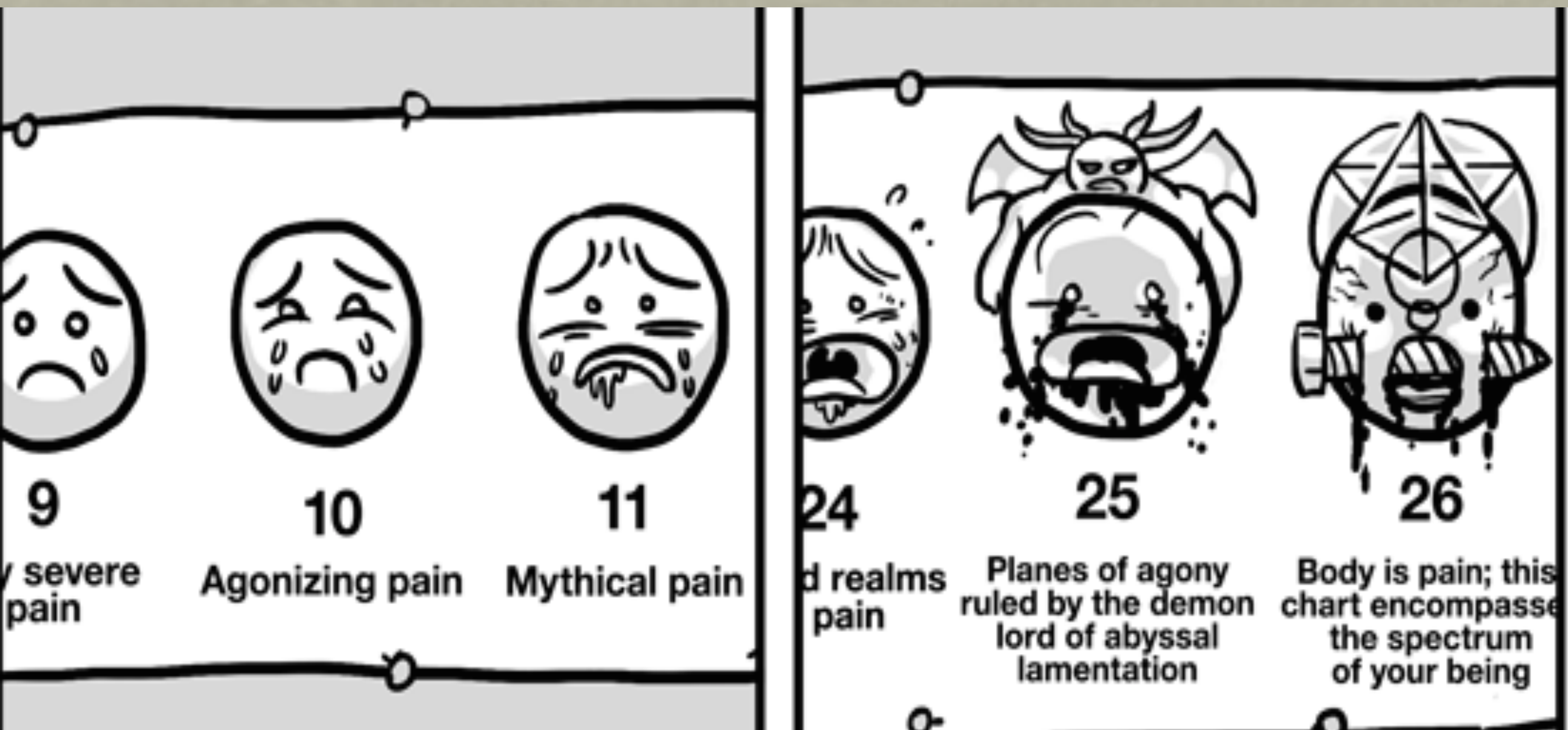
A FCE to Determine Effort and/or Malingering

- How Do You Determine Effort?
- What is a coefficient of variation?
- How does Heart Rate and perceived effort play a part?
- Does the FCE have Statistical Significance?



ALWAYS VALID?

BASED ON WHAT?



Types of FCEs – 10 Well Known Systems

I. Two Categories:

- 1) Controlled
 - 2) Uncontrolled
- Content Validity!

II. Two Sub-Categories:

- 1) Actual Simulation
- 2) Predicts Ability



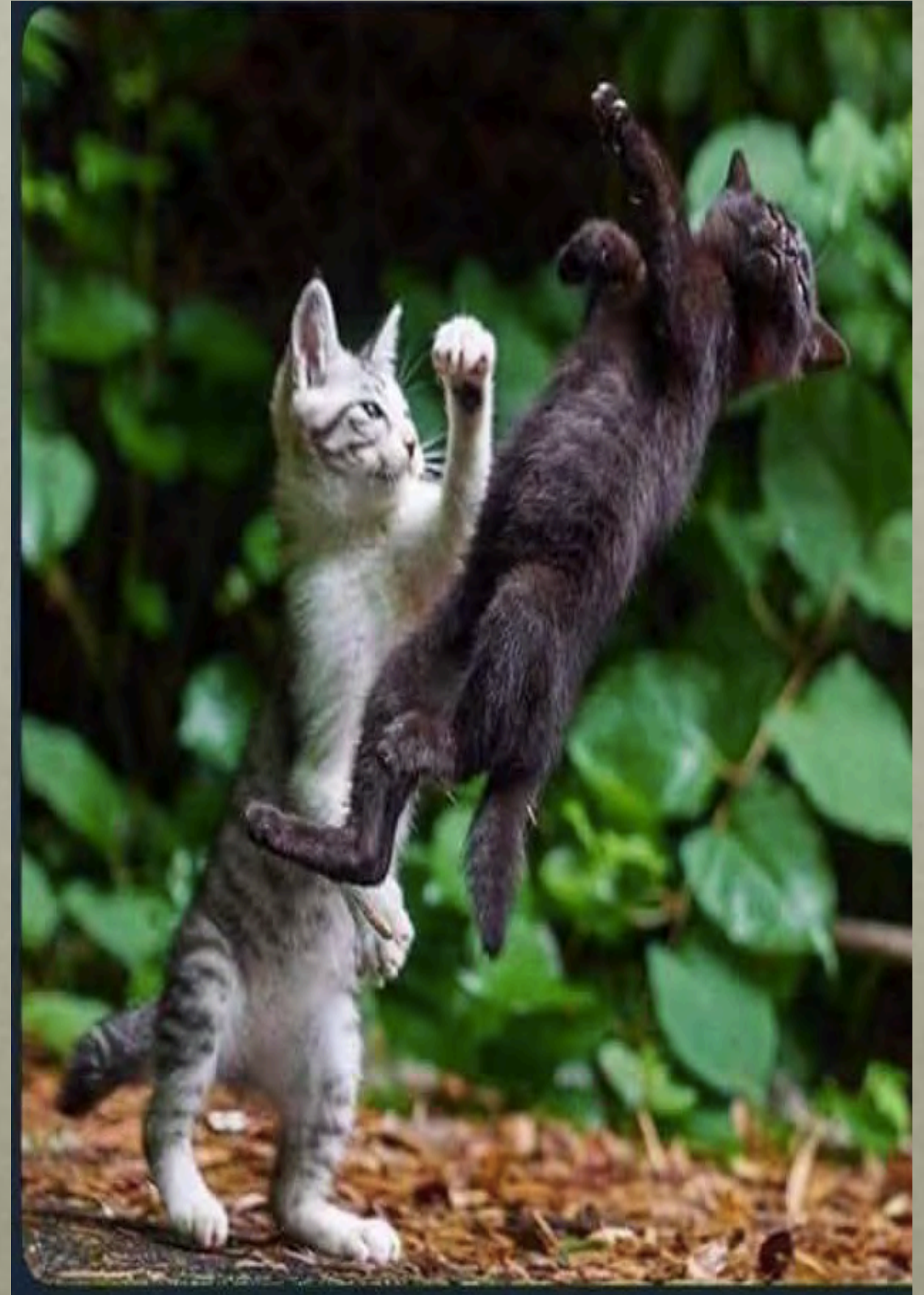
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Determining Maximum Ability

A. Psychophysical

B. Kinesiophysical

C. Evidence Based Prediction





Chicagoland/Illinois

Blankenship/J-Tech :

Uncontrolled with actual job simulations, based on isometric NIOSH predictions

Matheson/Epic:

Controlled with prediction module

Key :

Controlled with prediction module

Occupro:

Uncontrolled with actual job simulation.

ErgoScience:

Controlled/Prediction

The National Institute for Occupational Safety and Health & APTA

An FCE should:

1. Be safe
2. Be reliable
3. Be valid at prediction of safe work ability (Content Validity)
4. Be specific and flexible to work related abilities (Uncontrolled)
5. Predicts future risk
6. Answers The Referral Question
7. Follows U.S. State Specifications
8. Based on Medical and Researched Evidence, “generally accepted” by a meaningful segment of the scientific community

FCE Components

- 1) Paperwork – Pain Scales, drawings, function, depression, **Fear/Anxiety**, medical history, body language
- 2) Interview
- 3) Physical Examination
- 4) Warm-up
- 5) Grip Testing

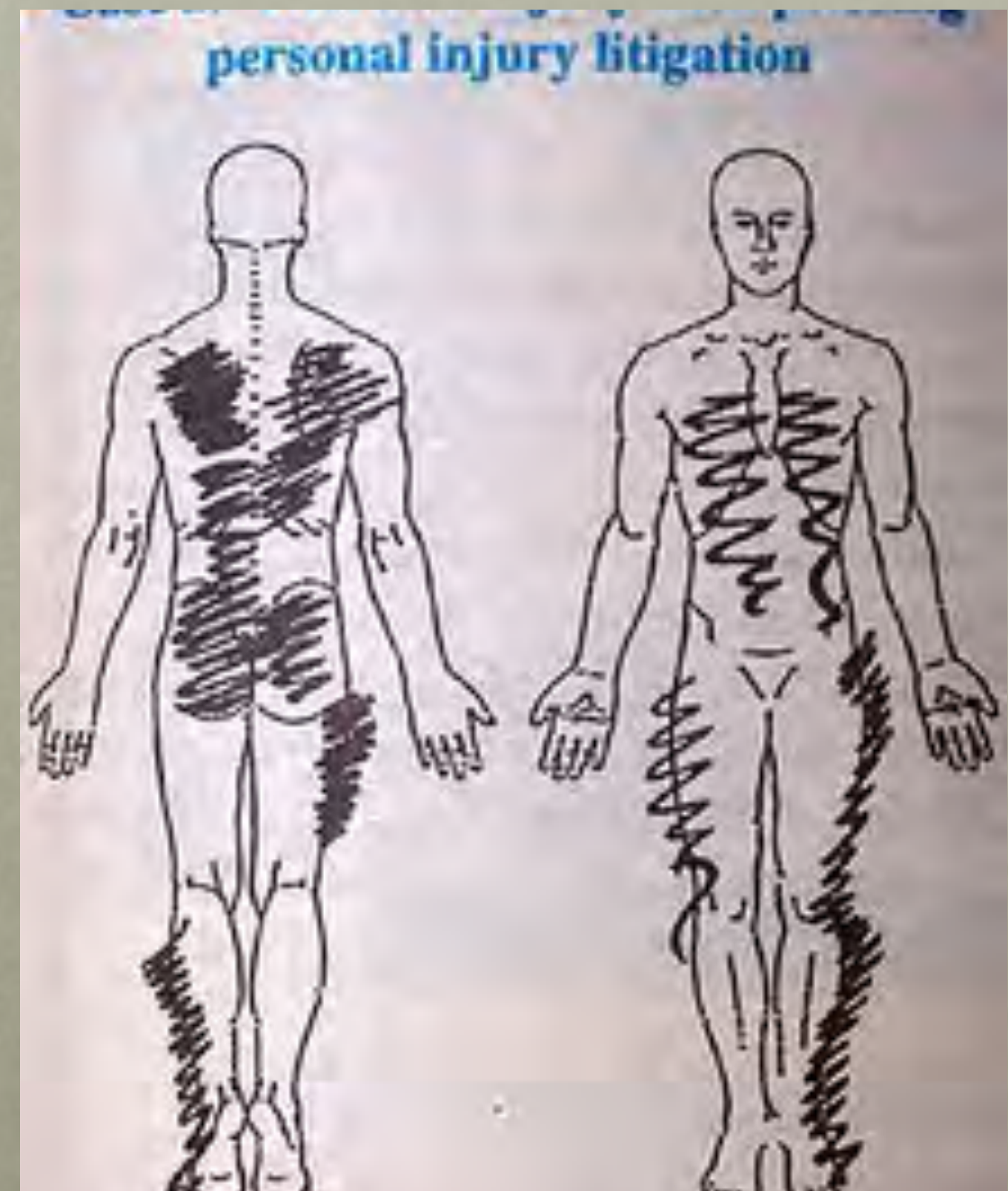
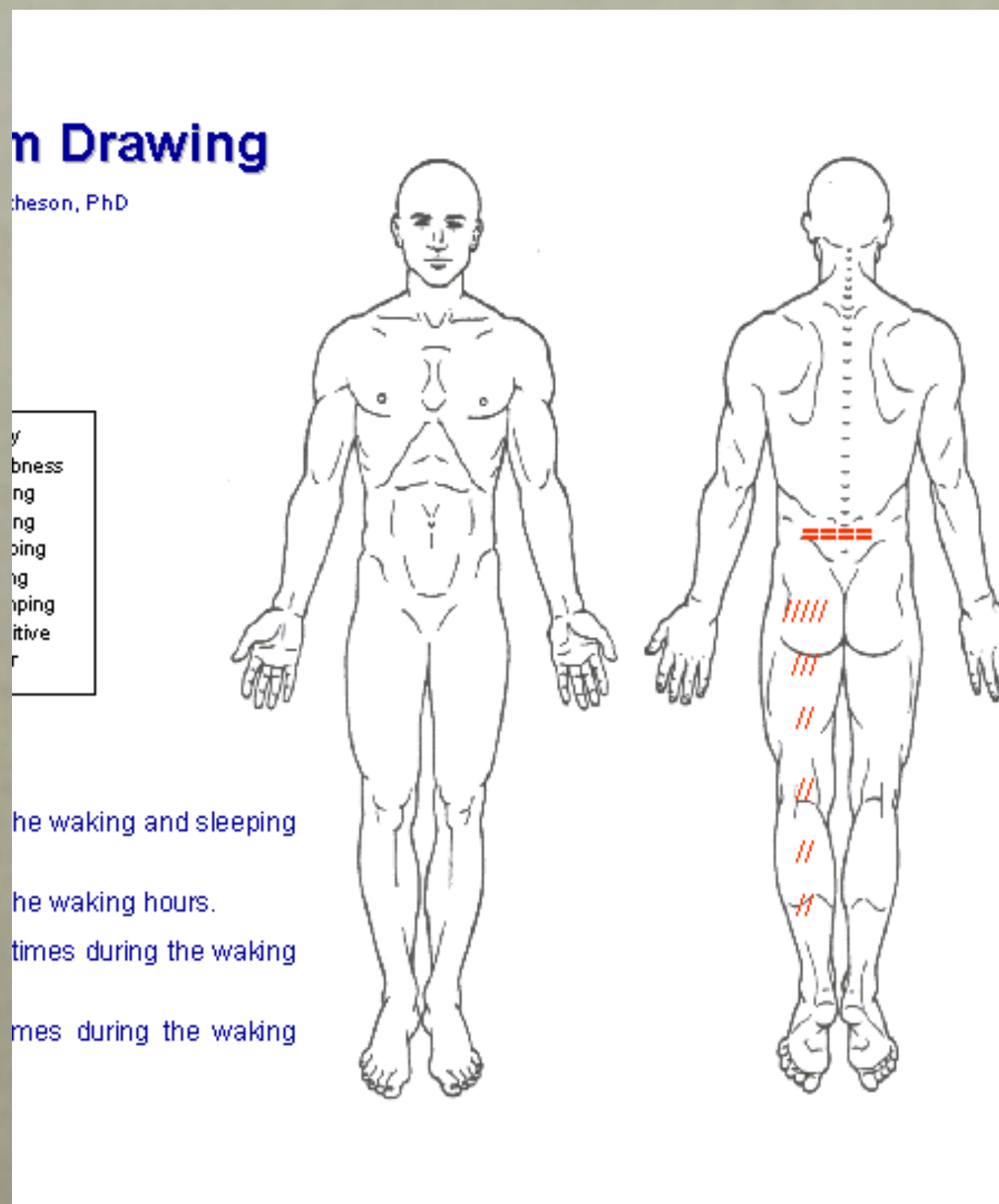


FCE Components – cont.

- 6) Cardio Testing
- 7) Isometric Strength Testing
- 8) Dynamic Lifts
- 9) Positional Tolerances
- 10) Job Specific Testing
- 11) Post Testing Paperwork
- 12) Analysis
- 13) Report Presentation



Important FCE Components Pre-Testing Paperwork



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Functional Questionnaires

- 1) Does the client's self reporting make sense with the diagnosis
- 2) Does the client's self functional reporting correlate to the activity during the FCE
- 3) Do the symptoms correlate to the injury and diagnosis
- 4) Available in multiple translations

Physical Examination!

- A physical exam helps determine if the client is consistent with previous examinations.
- Baseline Measurements: A physical exam is compared to testing activity for consistency.
- A physical exam is needed for determining non-organic signs that helps determine effort and malingering.
- A physical exam determines contraindications to testing or parts of testing that need to be monitored more closely.
- Therefore, a FCE that does NOT include a physical exam jeopardizes a patient's safety.

Physical Exam – Needed

- 1) Waddell, Korbon's, etc.
- 2) ROM
- 3) Neurological Signs
- 4) Muscle Strength Testing – Force Gauge
- 5) Cogwheeling

Are the findings Consistent with Diagnosis?



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Muscle Testing With A Force Gauge

	Result		CV		Difference
	Left	Right	Left	Right	
Lower Extremity Muscle Tests					
Knee Flexion (Leg Neutral)	37.9 lbs	40.1 lbs	10%	4%	-5% L
Knee Extension	36.8 lbs	40.3 lbs	2%	1%	-8% L
Ankle Plantar Flexion (Knee Neutral)	75.2 lbs	68.9 lbs	8%	4%	-8% R

Rapid Exchange Grip (REG) Example

Standard Validity Testing

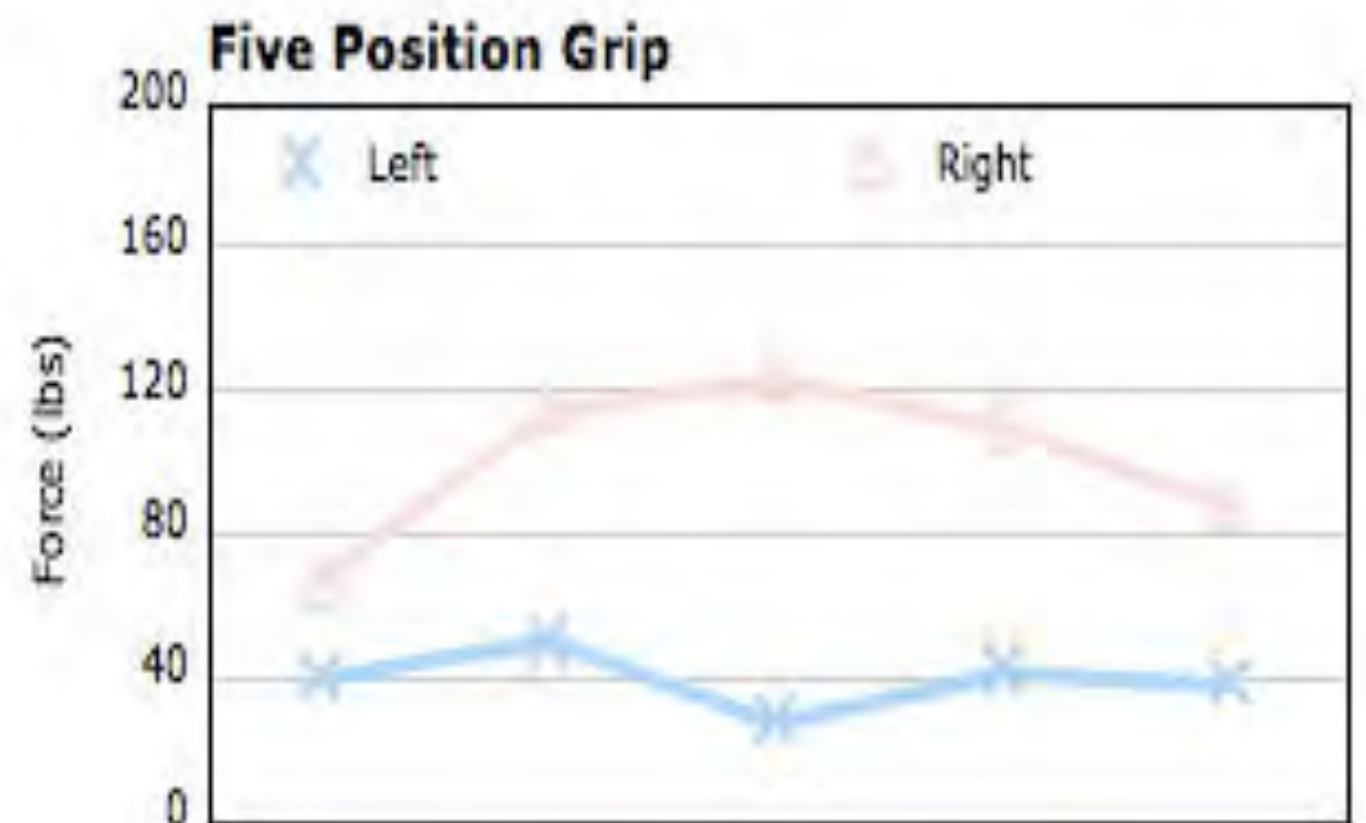


Grip Testing



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- 1) No Determination of Work Function
Matheson L,
Isernhagen S, and Hart D.
- 2) Consistency and Validity
 - A) Force Curves & Fatigue
 - B) Coefficient of Variation
- 3) Major Tests
 - A) Maximum Grip
 - B) 5-Position – Bell Shaped Curve
 - C) Rapid Exchange Grip – is Grip Stronger than Max Grip



**I DON'T ALWAYS
LIFT**



**WHEN I DO I USE THE NIOSH LIFTING
EQUATION**

memegenerator.net

Isometric Lifts:

**Creating an Accurate
Prediction Model**

**Other FCE Systems Are Self-
Limiting**

**Floor to Waist Lift (Leg,
Squat, Floor)**

**Matheson L, Isernhagen S,
and Hart D. Relationships
Among Lifting Ability, Grip
Force, and Return to Work.**

**Physical therapy
202;82:249-256.**



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The NIOSH Lifting Equation is:

$$LC \times HM \times VM \times DM \times AM \times FM \times CM = RWL$$

where LC is the load constant (23 kg) and other factors in the equation are:

HM, the Horizontal Multiplier factor

VM, the Vertical Multiplier factor

DM, the Distance Multiplier factor

FM, the Frequency Multiplier factor

AM, the Asymmetric Multiplier factor

CM, the Coupling Multiplier factor

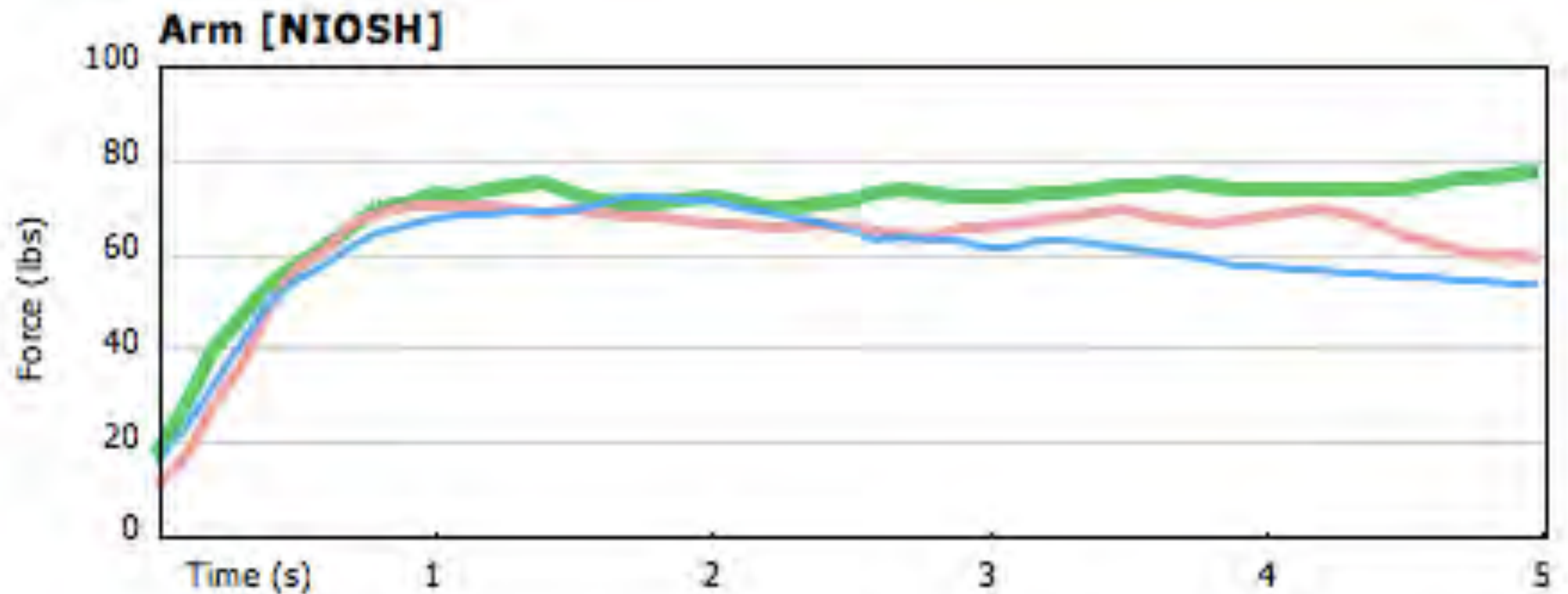
RWL, the Recommended Weight Limit



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Isometric Lift Example





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- 1) Extrapolate from NIOSH
- 2) Confirm or Disprove by patient reports and observed body mechanics.
- 3) Determine Maximal Occasional Lifts
- 4) Test for Frequent or Constant Lifts if needed for work

The Alternative – repetitive lifting based on psychophysical and kinesiophysical testing



Positional Tolerances



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FCE To Determine Effort?

■ Validity Profile

- 1) Coefficient of Variation
- 2) Heart Rate – consistent with effort, maximum heart rate, or pain
- 3) Rate of Perceived Exertion (RPE)
- 4) Hand/Grip Tests
- 5) Non-Organic Signs
- 6) Static v. Dynamic Lift Comparisons
- 7) Occasional v. Frequent Lift Comparisons
- 8) Observed v. Unobserved Behavior
- 9) Psychological Paper Tests v. Actual Performance
- 10) Minimum 20 tests, ideally 40+



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How To Analyze?

- #1. Who Performed The Test?**
- #2. What was the Test Format?**
- #3. Equipment Used?**
- #4. Physical Exam Performed?**
- #5. Objective, Subjective, or at least Highly Detailed**
- #6. Statistical Significance?**

#1 Who Performed the Test?

#1 Who is Performing the Test?

Test Needs to be unbiased

Board Certified?

#1 Who Performed the Test?

- An ATC is responsible for the evaluation of athletes under the supervision of the team physician. An athletic trainer is educated and trained on the evaluation of sport injuries and on the field/court injuries.
- "Physical therapist assistant" means a person licensed to assist a physical therapist and who has met all requirements as provided in this Act and who works under the supervision of a licensed physical therapist to assist in implementing the physical therapy treatment program as established by the licensed physical therapist. The patient care activities provided by the physical therapist assistant shall not include the interpretation of referrals, evaluation procedures, or the planning or major modification of patient programs."

#2 What FCE System Was Used?

“A FCE outcome depends on the expertise of the test administrator, not the system itself.”

JJC

#3 What Equipment was Used?

- I. Computerized v. Manual Test?
- II. Mechanical or Digital Equipment
- III. Calibrated?



#4 Was a Physical Examination Performed?

- A physical exam helps determine if the client is consistent with previous examinations.
- Baseline Measurements: A physical exam is compared to testing activity for consistency.
- A physical exam is needed for determining non-organic signs that helps determine effort and malingering.
- A physical exam determines contraindications to testing or parts of testing that need to be monitored more closely.

Therefore, a FCE that does NOT include a physical exam jeopardizes a patient's safety.

#4 Was a Physical Examination Performed?

- **Co-Morbidities?**
- **Drug Interaction?**
- **Fear Avoidance**
- **Pain Avoidance**
- **Psychological**
- **Perceived Function**

#5 Objective, Subjective, or at Least Highly Detailed

I. Objective v. Subjective

A. Psychophysical

B. Objective Testing/ Evidence Based Prediction

C. Kinesiophysical

Kinesio-Physiological Response

- 1) Biomechanical Changes
 - A) Changes in body Mechanics/Compensations
 - B) Muscle Recruitment Patterns
 - C) Sweating, redness, SOB
- 2) Heart Rate Response
 - A) Is it Credible?
 - B) Factors that Can Change?
- 3) Other Physiological Changes



Observations need to be detailed, individualized, specific to each activity, and abundant.

#6 Statistical Significance

Statistical Significance – What Does It *Really* Mean?

Statistical significance is the probability of finding a given deviation from the null hypothesis -or a more extreme one- in a sample.

Statistical significance is often referred to as the **p-value** (short for “probability value”) or simply **p** in research papers.

A small p-value basically means that your data are unlikely under some **null hypothesis**. A somewhat arbitrary convention is to **reject the null hypothesis** if $p < 0.05$.

What to ask your tester During an interview or Deposition?

- 1) When was the last time your equipment was calibrated?**
- 2) How many tests have you performed?**
- 3) How were you certified in FCE Testing?**
- 4) Does your license allow you to evaluate? Under a physician script for physical therapy?**
- 5) Did you know or work with patient prior to this evaluation?**



What to ask your tester During an interview or Deposition??

- 6) Is this test an evaluation or an assessment?**
- 7) Does the FCE system actively capture the data? If not how do you know you captured the data correctly?**
- 8) Do you keep the supporting documentation?**
- 9) How do you determine a Valid test – explain each test.**
- 10) How do you determine maximum lifting capacity?**



What to ask your tester During an interview or Deposition??

- 11) How do you correlate work ability?**
- 12) Explain the science behind “Blank” test**
- 13) How many Tests are used to determine effort in your analysis?**
- 14) How familiar are you with the injury?**
- 15) How familiar are you with the client’s co-morbidities?**
- 16) Do you Analyze the medications the client takes?
For PMH or Injury? Beta Blockers!**
- 17) Do you perform ALL tests yourself?**



Checklist For reading Report

1) Is this a Quality Test

Physical/Occupational Therapist v. Athletic trainer or other?

Was a physical examination performed?

Were the tests performed relevant to the job demands of the client?

Were the tests performed using electronic /computerized devices v. mechanical devices?



Checklist For reading Report

2) What was the Validity Profile

Were adequate tests performed to determine effort?

Did Physical exam indicate inconsistent symptoms?

Were there any Objective tests performed to predict lifting capacity?

Was there Fair or Poor effort given, yet not clearly stated in report (would physician miss this language and agree to low lifting demands?)



Checklist For reading Report

- 3) Did the report explain the why behind each test, especially conclusions of not meeting certain job demands?
- 4) Was all supporting documentation included?





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QUESTIONS?

