Neurobehavioral Rehabilitation Strategies for High-Functioning Clients

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Dr. Matheson is the co-owner of EpicRehab LLC, a developer and manufacturer of processes and equipment used in occupational rehabilitation.

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Neurobehavioral Rehabilitation

A holistic client-centered reality-based program using just-right challenges to return the person with ABI to full participation, measured by feasibility for competitive employment as the primary outcome.
High-Functioning Clients

- Above-average pre-injury IQ, often preserved post-ABI.
- Job demanded >90% of pre-injury ability.
- Usually highly competitive job x worker fit.
- Post-injury shortfall is modest and would not impede RTW for mid-level or low-level clients, but does impede RTW due to highly competitive expectations.

Just-Right Challenge

The job demand that exists within the client’s capacity, immediately beyond the client’s current ability.

The focus of growth-producing intervention.
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Role with Rules, Demands and Rewards

Environment with Affordances and Threats

Person with Physical and Psychological Capacities

Occupational Competence

Effectancies

Abilities

Challenges

Occupational Development in Pursuit of Role-Focused Challenges

Normal Job Challenge

Normal Job Demand

Normal Recovery
Feasibility for Competitive Employment

The acceptability to a competitive employer of the client’s work behaviors, in terms of:

- Productivity
- Safety
- Interpersonal Behavior
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Why do people rehabilitate?

Development of Occupational Competence:

Occupational and Environmental demands challenge the Person and stimulate growth.

Supported by self-efficacy theory and models of occupational competence, neurogenesis, and neuralplasticity.
Person as Worker

- The individual’s sense of competence:
  - Ability to respond adequately to occupational and environmental challenges.
    - Many people recover abilities with ADL, IADL, and even work skills but do not successfully return to work or remain in the workforce.
  - Self-Confidence / Self-Efficacy
    - Many people are discouraged and confused about whether they can handle the demands of work and the workplace.
Environment as Workplace

- The physical, social, cognitive and emotional demands of the workplace.
  - Employee-to-Employer and Employee-to-Employee behaviors, attitudes, and habits.
- Most difficult of the contexts to help the client learn to handle.
  - Least visible; not seen unless Person is observed doing Occupation in Environment.

Occupation as Job

- The knowledge, skill, and ability demands of the job.
  - Traditional work skill development / restoration
    - Focus on development or restoration of work skills provides client with sense of “mastering the familiar”, which helps to boost self-efficacy.
  - However, skill restoration outside of employer context has limited utility.
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SSA Work Disability Model

For Persons with ABI

- Pathology & Diagnosis
- Structural Impairment
- Functional Impairment
- Functional Limitation
- Vocational Non-Feasibility
- Occupational Disability

Executive Dysfunction

1. Inhibitory Control
2. Mental Flexibility
3. Emotional Control
4. Self-Monitor
5. Initiate
6. Working Memory
7. Planning & Organization
8. Task Monitoring
9. Organization of Materials

Track A
- Observed signs & reported symptoms
- Loss or restriction of person component function
- Restriction of person component function
- Inability to perform component actions & tasks
- Inability to perform fundamental work behaviors

Track B
- Track C

Track C
- Track B

Work-Oriented Tests

- Personnel Test for Industry Oral Directions Test
- Employee Aptitude Survey Battery
- Wonderlic Personnel Test
- Watson Glaser Critical Thinking Appraisal
- Career Assessment Inventory

- Norm-referenced to employee groups.
Personnel Test for Industry
Oral Directions Test

- Paper & pencil test of ability to follow oral directions.
- Very useful screening tool for persons whose brain injury affects cognition.
- Sometimes frustrating experience for client.
- Monologue is read from script.
- 39 items, 15 minutes.
Wonderlic Personnel Test

- Math, language, reasoning.
- Most highly researched pre-placement screening test in the U.S.
- Compare client's abilities to the abilities of people in hundreds of occupations.
- 50 items, timed 12 minutes.
Employee Aptitude Survey

- 10 sub-tests.
- Most highly researched aptitude battery.
- Compare client’s aptitudes to the aptitudes of people in dozens of occupations.
- 9 sub-tests are timed 5 minutes/each.
- 1 sub-test timed 10 minutes.
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Watson Glaser Critical Thinking Appraisal

- “Critical Thinking” = Ability to:
  - Define a problem.
  - Select pertinent information.
  - Recognize stated and unstated assumptions.
  - Formulate relevant hypotheses.
  - Draw valid conclusions.
- White collar, technical, professional.
- 80 items, timed 40 minutes

Career Assessment Inventory

- Compares interests of the client in terms of *Holland Occupational Types* system.
- Two different levels, one for persons with high school or less education and the other for persons with college education.
- Compares client’s interests for thousands of occupations.
- 305 or 370 items, untimed, approx. 45 minutes.
Environment & Job Analysis Tools

- O*NET
- D.O.T.
- Fleishman Job Analysis Survey
- Job description from employer
- Job description interview with worker
- Worksite visit

Occupation Measurement Tools

- One-off work simulations.
- Structured work simulations, Valpar, etc
- Structured work activity groups (SWAGs)
- PODs available soon.
Work Simulation

- Work simulation is the primary method to assess vocational feasibility:
  - Job Analysis or Job Description
  - Task Analysis
  - Select available work samples.
  - Design new work samples of essential functions.
  - Screen the client for safety.
  - Administer work samples.
  - Record performance data.
  - Interpret findings & report results.

Work Simulation Practice Hierarchy

Safety
Reliability
Validity
Practicality
Utility

However, designing simulations to adhere to these standards is burdensome.
Logistical Quagmire

- Because we must adhere to the Hierarchy, “one-off” simulations can be very problematic.
  - Safety criteria violations can lead to injury and liability.
  - Reliability and validity criteria violations will cause challenges to credibility of results and acceptability of our opinions.
  - Practicality criteria violations will lead to unacceptable expense and time investment.

SWAG As An Alternative

- Developed by recognized experts at Washington University Program in Occupational Therapy.
- Adheres to formal development procedures.
- Demonstrated to be safe.
- Uses a structured and standardized approach designed to achieve reliability across time and between therapists.
- Provides information on client’s ability to work; in general and with regard to occupational skills and abilities.
- Implemented with minimal expense for equipment, supplies and time.
SWAG: Hallmarks

• Each SWAG is a suite of related work activities centered on a “real world” theme that is housed within a virtual business.
• Each activity is composed of tasks that are graded in terms of work demand.
• Work skills are less important than “employee behavior”.
• Employee behavior is frequently evaluated.

Return to Work Evaluation

• Feasibility for competitive employment.
  – Use the Feasibility Evaluation Checklist to identify underlying work behaviors and attitudes.
    • Feasibility Evaluation Checklist
      – Observation
      – Self-Report
    • FEC Examiner’s Manual
• Job match based on job analysis or task analysis of job description.
“Constructive Failure” Philosophy

• Crucial to the client’s development.
• Usually occurs during work simulation, but can also occur during standardized testing.
• Based on a meaningful challenge, during which the client’s performance falls short of a competitive employment standard.
• Handled by therapist to integrate and use for future planning.

“Constructive Failure” Examples

• Arriving late to OPC appointment, if handled like employee - employer, not client - therapist.
• Breaking down with frustration during Oral Directions Test.
• Making an unacceptable number of errors on a SWAG activity.
• Not following SWAG safety rules.
• Not getting along with fellow workers on SWAG interactive activity.
Case Example: Maude

- 32 year-old female registered nurse.
- mTBI due to auto accident eight months prior.
- Reported functional limitations:
  - Cognitive endurance vs. Physical endurance?
  - Working memory?
  - Ability to multi-task?

OPC Intake

- Lacked confidence in abilities.
- Stopped going to work “before I got fired”.
- Used O*NET Ability Questionnaire to identify occupation-relevant shortfalls.
- Refer to OAQ handout.
O*NET Occupational Information System

- Experience Requirements
- Worker Requirements
- Worker Characteristics
- Occupational Requirements
- Occupation-Specific Requirements
- Occupation Characteristics

O*NET Ability Questionnaire

- High-functioning clients complete self-description in terms of O*NET Abilities importance.
- Therapist uses information to identify key job demands and set just-right challenge.
- Available free at:
  - http://www.epicrehab.com/swag/
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Initial Analysis

• Professional Opinion:
  – Job involves high level physical, perceptual & cognitive skills.
  – At or near performance level for prior job.
  – Lacks self-confidence.
  – Cognitive endurance is primary limiting factor.

• Maude’s Opinion:
  – Not near levels needed to return to work.
  – Should not have tried to return to work; “Almost blew it and lost my registration!”
OPC Goals

- LTG: Return to previous job with modified duties.
- STG:
  - Accurately identify strengths & weakness for work.
  - Attend to work tasks 1 hour without redirection.
  - Perform all assigned work tasks with 98% accuracy.
  - Meet all deadlines.
  - Use compensatory strategies for memory loss.
  - Accurately state accommodations for return to work.
  - Demonstrate safe compensatory strategies for endurance deficits.

OT Contact with Employer

- Job descriptions for all positions.
- Prior work performance.
- Options for modified duties upon RTW.
- Job specific tasks identified for simulations
Work-Related Assessments

- Personnel Test for Industry ODT
  - 90\textsuperscript{th} percentile
- Wonderlic Personnel Test
  - 62\textsuperscript{nd} percentile for college grads, above minimum suggested maintenance score.
- Watson-Glaser CTA
  - 70\textsuperscript{th} percentile for registered nurses.

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<th>Physical Demand Level</th>
<th>Occasional 0-33% of the workday</th>
<th>Frequent 34%-66% of the workday</th>
<th>Constant 67%-100% of the workday</th>
<th>Typical Energy Required</th>
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<td>Less than 10 lbs</td>
<td>Unable</td>
<td>Unable</td>
<td>Less than 1.5 METS</td>
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<td>Negligible</td>
<td>Negligible</td>
<td>1.5 - 2.1 METS</td>
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<td>Light</td>
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<td>10 lbs and/or walk/crawl/push/pull of arm/leg controls</td>
<td>Negligible and/or push/pull of arm/leg controls while seated</td>
<td>2.2 - 3.5 METS</td>
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<td>10 to 25 lbs</td>
<td>10 lbs</td>
<td>3.6 - 6.3 METS</td>
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<td>25 to 50 lbs</td>
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<td>6.4 - 7.5 METS</td>
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<tr>
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<td>Over 100 lbs</td>
<td>Over 50 lbs</td>
<td>Over 20 lbs</td>
<td>Over 7.5 METS</td>
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OPC Strengthening Exercise

- Stand on a stable surface, with plenty of room.
- With a 5-lb. potato bag in each hand, extend arms straight out from your sides and hold as long as you can. Try to reach a full minute.
- After a couple of weeks, move up to 10-lb potato bags.
- Try 50-lb potato bags and then eventually try to get to where you can lift a 100-lb potato bag in each hand, still holding your arms straight for more than a full minute.
- After you feel confident at this level, put a potato in each bag.

SWAG 1 Telephone Answering

- Just-right challenge began with mid-level and progressed to highest level over two weeks.
- After highest level achieved, multi-tasking with Doll Chair Assembly was undertaken.
- Initially, she could not switch attention fast enough, but worked with OT to develop strategies to improve to competitive standard.
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SWAG 1 Mailing List Maintenance

- Good attention to detail, with 95% accuracy on first trial.
- Used with Conference Room Scheduling for just-right challenge.
- Required three sessions to develop strategies to handle both tasks simultaneously.
SWAG 1 Incidental Learning

- Quiz after phone messages to assess incidental learning.
- Client scored 55% on this quiz.
- Discussed memory after this quiz.
- Identified compensatory strategies for memory.
- Re-test after re-trial two weeks later found 85% accuracy, significantly boosting confidence in strategies.
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Track B

Track C

Observed signs & reported symptoms

Loss or restriction of person component

Restriction of person component function

Inability to perform component actions & tasks

Inability to perform fundamental work behaviors

Inability to perform specific work behaviors

Executive Functions & Cognitive Components

Inhibitory Control

Mental Flexibility

Emotional Control

Initiate

Working Memory

Planning & Organization

Organization of Materials

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Neurocognitive vs. Neurobehavioral

- Neurocognitive function is usually measured by neuropsychologists and speech/language therapists.
- Neurobehavioral function is usually measured by occupational therapists and vocational evaluators.
- Both are necessary to consider in return to work planning.

Triage with BRIEF

- BRIEF is a good general neurobehavioral questionnaire:
  - Self-Rating
  - Informant Rating
- Two Indices:
  - Behavioral Regulation Index
  - Metacognition Index
- Age-based normative data
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SWAG Development Project

Original
Washington University School of Medicine
SWAG 1 Materials
Available Free:

www.epicrehab.com