

TRAZER

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What is the TRAZER?

- The Trazer is an automated, computer-controlled program that evaluates client's capacity for real-world movement
- The Trazer measures visual perception, reaction time, acceleration, velocity, distance traveled, METS and HR
- Communities it is implemented in: athletics, seniors, healthcare, military



Trazer for Seniors

- “A Cleveland Clinic study demonstrated “that older adults who are at risk for falling can achieve a dramatic increase in safe walking velocity by improving their response time.” The measurement of reaction time and movement speed are two of TRAZER’s most valued patented measurements. This information can be used to manage programs that can shave precious fractions of a second from reaction time, awakening fast-twitch muscle, improving balance and restoring physical performance capabilities” (Sports health assessment, 2014).



About the Trazer

- TRAZER is designed for the assessment of functional activities, including: stability, agility, reaction time, and movement skills associated with everyday life
- Flexible enough to address a wide range of applications, from simple stance stability, fixed, to the most demanding and complex movement requirements
- Trazer test is 20 minutes, but the patient can complete however much they can tolerate
- Trazer activities are available for practice, Trazer has different programs/protocols for ortho patients
- The Trazer can track patients utilizing AD and patients who are in WC

Case study 1

Patient Medical Hx: A-fib, CHF, HTN, depression, anxiety, GERD, respiratory insufficiency

Patient 1: Fair- dynamic standing balance

Focus of the Trazer: Problem solving, sequencing, following commands, balance

	10/15/14	10/31/14
Orientation	AOX ₁	AOx ₂
Functional Transfers	Maximum Assistance	Minimal Assistance
Standing tolerance	0 minutes	15 Minutes
Dressing	Maximal Assistance	Moderate Assistance
Following commands	1 step command	2 step commands



Performance Report For

	10/23/2014 - Baseline	10/27/2014
Reaction Time (seconds)		
Forward	10.81	6.90 +36%
Backward	16.50	10.14 +39%
Left	17.32	12.36 +29%
Right	14.98	9.89 +34%
Speed (ft/sec)		
Forward	0.19	0.25 +30%
Backward	0.22	0.12 -45%
Left	0.16	0.32 +97%
Right	0.23	0.11 -52%
Acceleration (ft/sec2)		
Forward	7.93	9.38 +18%
Backward	21.43	2.34 -89%
Left	7.29	11.13 +53%
Right	4.03	2.61 -35%
Deceleration (ft/sec2)		
Forward	-1.31	-0.98 -25%
Backward	-4.97	-3.30 -34%
Left	-1.31	0.00 -100%
Right	-7.97	-3.30 -59%
Detailed Data		
Max Heart Rate	0 bpm	0 bpm
Avg Heart Rate	0 bpm	0 bpm
Distance	1031 ft	464 ft
Points	15	10
SCAT Score	0	0

Case Study 2

Patient Medical Hx: Alzheimer's Disease, CAD, HTN, anxiety, prostate cancer, scoliosis, osteoporosis

Patient 2: Fair- dynamic standing balance to fair dynamic standing balance during Trazer

Focus of the Trazer: Balance, problem solving, safety, sequencing tasks, endurance

	09/30/2014	10/31/2014
Dynamic standing balance	Fair-	Fair
Standing tolerance	10 minutes	14 minutes
Functional Transfers	Supervision	Mod I
Safety Awareness	Poor	Fair

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Performance Report For

	10/01/2014 - Baseline	10/07/2014	
Reaction Time (seconds)			
Forward	1.25	2.65	-111%
Backward	3.39	3.87	-14%
Left	1.34	3.80	-183%
Right	3.85	3.54	+8%
Speed (ft/sec)			
Forward	0.41	0.47	+14%
Backward	0.34	0.53	+56%
Left	0.32	0.33	+1%
Right	0.38	0.45	+20%
Acceleration (ft/sec²)			
Forward	9.41	8.83	-6%
Backward	17.39	7.87	-55%
Left	17.23	5.11	-70%
Right	3.67	10.52	+186%
Deceleration (ft/sec²)			
Forward	-3.89	-25.21	+548%
Backward	-6.83	-8.17	+20%
Left	-3.98	-11.74	+195%
Right	-9.29	-22.41	+141%
Detailed Data			
Max Heart Rate	0 bpm	0 bpm	
Avg Heart Rate	0 bpm	0 bpm	
Distance	654 ft	627 ft	
Points	23	15	
SCAT Score	0	0	

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Performance Report For 2

Reaction Time (seconds)	10/21/2014 - Baseline	10/29/2014
Forward	1.27	1.31 -3%
Backward	3.96	1.44 +64%
Left	2.29	1.38 +40%
Right	2.83	1.15 +60%
Speed (ft/sec)	10/21/2014 - Baseline	10/29/2014
Forward	0.82	1.32 +60%
Backward	1.08	1.19 +9%
Left	0.95	1.29 +37%
Right	0.84	0.98 +17%
Acceleration (ft/sec2)	10/21/2014 - Baseline	10/29/2014
Forward	7.41	5.21 -30%
Backward	12.15	8.64 -29%
Left	6.81	8.95 +31%
Right	10.01	4.08 -59%
Deceleration (ft/sec2)	10/21/2014 - Baseline	10/29/2014
Forward	-16.44	-4.02 -76%
Backward	-8.58	-4.27 -50%
Left	-10.66	-3.54 -67%
Right	-14.18	-4.32 -70%
Detailed Data	10/21/2014 - Baseline	10/29/2014
Max Heart Rate	0 bpm	0 bpm
Avg Heart Rate	0 bpm	0 bpm
Distance	657 ft	552 ft
Points	29	48
SCAT Score	0	0

Case Study 3

Patient Medical Hx: L TKA (10/01/14), HTN, CAD

Patient 3: Fair- dynamic standing balance to fair dynamic standing balance, WBAT LLE

Focus of the Trazer: Dynamic standing balance, standing tolerance, coordinating body movements

	10/06/2014	10/18/2014
Standing tolerance	1 minute	8 minutes
Dynamic standing balance	Fair-	Fair
Lower Body Dressing	Moderate Assistance	CGA
Functional Transfers	Moderate Assistance	CGA



Performance Report For 3

	10/08/2014 - Baseline	10/16/2014
Reaction Time (seconds)		
Forward	2.39	2.45 -2%
Backward	2.33	1.81 +22%
Left	2.93	1.97 +33%
Right	2.16	2.35 -9%
Speed (ft/sec)	10/08/2014 - Baseline	10/16/2014
Forward	1.28	1.83 +43%
Backward	1.27	1.51 +19%
Left	1.32	1.74 +32%
Right	1.22	1.75 +44%
Acceleration (ft/sec²)	10/08/2014 - Baseline	10/16/2014
Forward	14.43	9.86 -32%
Backward	6.60	8.85 +34%
Left	6.72	5.72 -15%
Right	13.85	10.89 -21%
Deceleration (ft/sec²)	10/08/2014 - Baseline	10/16/2014
Forward	-3.06	-4.16 +36%
Backward	-3.83	-3.31 -13%
Left	-2.77	-3.77 +36%
Right	-4.25	-3.57 -16%
Detailed Data	10/08/2014 - Baseline	10/16/2014
Max Heart Rate	0 bpm	0 bpm
Avg Heart Rate	0 bpm	0 bpm
Distance	905 ft	1015 ft
Points	74	95
SCAT Score	0	0

Case Study 4

Patient Medical Hx: Pacemaker implantation (09/03/14), HTN, CVA, CAD, syncope, renal failure, bradycardia

Patient 4: Fair- dynamic standing balance , poor safety

Focus of the Trazer: Standing tolerance, dynamic standing balance, problem solving, coordinating body movements

	09/11/2014	10/23/2014
Safety Awareness	Poor	Fair
Dressing	Maximum Assistance	Modified Independent
Standing Balance	Fair-	Fair
Functional Transfers	Moderate Assistance	CGA

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Performance Report For 4

	09/23/2014 - Baseline	10/03/2014
Reaction Time (seconds)		
Forward	1.56	2.99 -92%
Backward	6.08	2.27 +63%
Left	4.40	2.63 +40%
Right	5.22	3.78 +28%
Speed (ft/sec)		
Forward	0.74	0.72 -2%
Backward	0.75	0.56 -25%
Left	1.01	0.77 -24%
Right	0.70	0.63 -10%
Acceleration (ft/sec²)		
Forward	9.63	7.40 -23%
Backward	5.94	14.19 +139%
Left	9.23	9.59 +4%
Right	6.68	15.18 +127%
Deceleration (ft/sec²)		
Forward	-4.22	-3.73 -12%
Backward	-4.91	-5.09 +4%
Left	-3.88	-5.71 +47%
Right	-4.17	-5.96 +43%
Detailed Data		
Max Heart Rate	0 bpm	0 bpm
Avg Heart Rate	0 bpm	0 bpm
Distance	1747 ft	836 ft
Points	61	36
SCAT Score	0	0



Trazer benefits

- **Based on the OTPF, Trazer targets:**
- **Performance skills**
- Motor/praxis skills: Pacing tempo, coordinating body movements, maintaining balance, anticipating/adjusting body position, navigating environment
- Sensory perceptual skills: visual skills, timing appropriate movements, positioning the body
- Cognitive skills: sequencing movements, multitasking, following commands

- **Activity demands**
- Space demands with AD, sequence and timing



Trazer benefits

- Increase in Trazer scores may increase ADLs
 - Upper Body Dressing: sequencing the task, attending to task, following commands
 - Lower Body Dressing: may increase dynamic balance and increase ability to pull up pants
 - Functional Transfers: navigating the environment, dynamic standing balance, anticipating/adjusting body movements

Criteria for participating

- No specific criteria, case by case basis
- Patients who are AOx1 and follow one step command, fair- dynamic standing balance
- Tried WC mobility (focus doesn't have to be an improvement in speed/scores) and visually impaired
- Grade the activity through amount of verbal/visual/tactile cues you provide, grade the activity up and down by time and difficulty (fixed vs not fixed)



Implementing at VNRC

- **Decrease risk for falls**
- All disciplines at VNRC can utilize the Trazer
- Track patients progress once a week through the Trazer test, patients may also practice Trazer activities in between tests
- Increase in independence in ADLs/IADLs, return to PLOF
- New intervention to implement in treatment sessions
- Positive feedback from patients



Resources

- American Occupational Therapy Association. (2008). Occupational Therapy Practice Framework: Domain & Process (2nd ed.). *American Journal of Occupational Therapy*, 62(6), 626-663.
- Sports health assessment. (2014). Trazer HRA health risk assessment. Retrieved from <http://www.trazerhra.com/trazer-hra-users/>