

Maximizing Function Through Innovative Occupational Therapy and Assistive Technology Interventions

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1115-1245 ET

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Presenters



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Joe Butkus, M.S., O.T.R./L.



Joe Butkus is an Occupational Therapy Supervisor of Amputee Care at Walter Reed National Military Medical Center (WRNMMC) and has been treating, researching, developing programs, and problem solving since 2005. Mr. Butkus has treated many complex polytrauma limb loss patients through the height of Operation Enduring Freedom (OEF)/Operation Iraqi Freedom (OIF) conflicts. He has been a contributing clinician with Targeted Muscle Reinnervation (TMR), Modular Prosthetic Limb (MPL), Implantable Myoelectric Sensors (IMES), Pattern Recognition, and Osseointegration (OI). Mr. Butkus has assisted with the development of a comprehensive rehabilitation program in the Republic of Georgia for polytrauma and limb loss patients since 2014 as well as volunteered for development of therapy and prosthetic care in Ukraine in 2016. Bilateral upper extremity transplant rehabilitation has been a specialty at Walter Reed NMMC since 2013 and Mr. Butkus has directed extended rehabilitation of three recipients. Mr. Butkus is passionate about patient care and in finding better treatment pathways to foster confident independence throughout an individual's lifespan. He is dedicated to advancing people to achieve the highest levels of functional performance while fostering a full return to active meaningful lives regardless of level of impairment.



Harvey G. Naranjo COTA/L



Harvey Naranjo is the Adaptive Sports & Reconditioning program manager for the Department of Rehabilitation at Walter Reed National Military Medical Center (WRNMMC).

Mr. Naranjo is responsible for overseeing hospital and community based Adaptive Sports programs for active duty and eligible veterans consulted for rehabilitation services at WRNMMC.

Mr. Naranjo has served at Walter Reed since 2002 and was instrumental in the development and implementation of Adaptive Sports and Community Reintegration programs in rehabilitation for severely injured service members returning from war. These programs allowed medical staff at Walter Reed to harness their patient's competitive and warrior spirit allowing them to maximize their rehabilitation and independence post injury. The utilization of Adaptive Sports in military rehabilitation has become a model for treating wounded, ill and injured service members at Military installations across the United States. Mr. Naranjo also serves as an Assistant Professor of Physical Medicine and Rehabilitation at the Uniformed Services University of Health Sciences, where he assist in educating future military physicians on Adaptive Sports.

Amanda Meares, M.S., A.T.P.



Mrs. Amanda Meares is a member of the Rehabilitation Engineering and Assistive Technology Society of North America (RESNA) and has been a certified Assistive Technology Professional (ATP) since 2007. She has been an Assistive Technology Specialist at Walter Reed National Military Medical Center (WRNMMC) for eleven years. At Walter Reed, she helps people with a variety of strengths and limitations regain a level of independence, through the use of technology. Her focus has mostly been on helping people with cognitive limitations as a result of an injury or symptoms related to behavioral health. Prior to working at Walter Reed, she worked for Pennsylvania's state Assistive Technology program (Pennsylvania's Initiative on Assistive Technology), where she frequently presented trainings related to accommodations in the workplace.



Dorothy R. Porcello, O.T.D., M.S.O.T., O.T.R./L.



Dr. Dorothy Porcello, O.T.D., M.S.O.T., O.T.R./L., is the current supervisor of the outpatient Traumatic Brain Injury (TBI) and Neuro Occupational Therapy department at Walter Reed National Military Medical Center (WRNMMC). She has nearly a decade of experience with addressing TBI related cognitive and visual deficits, particularly for active duty service members and military veterans.

Dr. Porcello served as an active duty U.S. Marine from 2001-2005. Upon her completion of military service, she obtained a Bachelor of Science in Exercise Physiology from Mississippi State University in 2009. She received her Master of Science in Occupational Therapy from Washington University in Saint Louis in 2012. She recently completed her Post Professional Occupational Therapy Doctorate at Gannon University in 2021.

Dr. Porcello has presented on the topic of traumatic brain injury rehabilitation on both national and international platforms, including American Occupational Therapy Association (AOTA), American Congress of Rehabilitation Medicine (ACRM), Defense Veterans Brain Injury Global Synapse Conference, and World Federation of Occupational Therapists (WFOT).

Kathryn Ellis, O.T.D., A.A.S.E.C.T.-S.C., O.T.R./L.



Dr. Kathryn Ellis is an educator, clinician, and consultant. She received her post-professional doctorate in occupational therapy from Boston University and has a Certification in Sexuality Counseling from the American Association of Sexuality Educators, Counselors, and Therapists (AASECT). She worked at Walter Reed National Military Medical Center from 2011-2020 where she stood up the Sexuality and Intimacy Occupational Therapy Clinic. She is the co-author of “Sex and Intimacy for Wounded Veterans: A Guide to Embracing Change,” and the founder of the Institute for Sex, Intimacy & Occupational Therapy which is a continuing education company. Currently, she lives in Delaware and has a private practice focused on sexuality counseling. She provides sexual health workshops for multiple veteran organizations, provides consultation for program and clinic development, and is currently working on a course for providers working with military service members.



Disclosures



- Mr. Butkus, Mr. Naranjo, Mrs. Meares and Dr. Porcello have no relevant financial or non-financial relationships to disclose relating to the content of this activity; or presenter(s) must disclose the type of affiliation/financial interest (e.g. employee, speaker, consultant, principal investigator, grant recipient) with company name(s) included.
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Learning Objectives



At the conclusion of this presentation, participants will be able to:

1. Describe a history of Adaptive Sports in the military and its impact on our service members' path to recovery.
 2. Explain how Adaptive Sports can be effective goal directed treatment in Occupational Therapy (OT).
 3. Summarize a brief overview of Adaptive Sports interventions, equipment and resources.
 4. Define vision therapy and differentiate the difference between Traumatic Brain Injury (TBI) Vision Therapy Services and TBI Low Vision Services.
 5. Explain how Assistive Technology has developed recently and can allow for customized solutions to accomplish a goal.
 6. Identify vision therapy and differentiate the difference between TBI Vision Therapy Services and TBI Low Vision Services
 7. Outline Occupational Therapy's role in provision of TBI related vision therapy services on a multidisciplinary rehabilitation team
 8. Discuss tools available to OT practitioners for maximizing vision function in individuals with history of TBI
 9. Describe two-three actionable steps to establishing a sexuality and intimacy clinic within their rehabilitation setting.
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Occupational Therapy with Limb Loss and Polytrauma Population

Joe Butkus, M.S., O.T.R./L.

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Occupational Therapy with Limb Loss and Polytrauma Population



Overview



- Statistics
- Protocol of Upper Extremity Amputee Care
- Assessment
- Adaptive Sports and Community Reintegration
- Features of Program
- Research Involvement

Civilian Statistics



- Total 2.1 million amputees in the USA (projected to double by 2050)
 - Causes:
 - 54% Vascular Disease (diabetes & peripheral arterial disease)
 - 45% Trauma
 - 2% Cancer
- 185,000 major amputations occur annually in USA cost, estimated \$8.7 billion in care in 2013
- For upper extremity amputations, 95% occur below the elbow
- 50% of upper extremity amputees do not wear a prosthesis

(Amputee Coalition, 2016)

Military Advanced Training Center: Occupational Therapy



(Photo courtesy of Mr. Butkus)

Upper Extremity (UE) Protocol of Care



- Phase I: Acute Management and Wound Care
- Phase II: Pre-prosthetic Training
- Phase III: Basic Prosthetic Training
- Phase IV: Advanced Prosthetic Training and Discharge (D/C) Planning

UE Protocol of Care

Phase I: Healing

- Wound healing
- Edema control
- Desensitization and scar management
- Pain control
- Gross motor
- Baseline Upper Extremity Evaluation
- Psychological support



(Photos courtesy of Mr. Butkus)

UE Protocol of Care

Phase II: Pre-prosthetic training

- Activities of daily living (ADL) training
- Change of hand dominance
- Strengthening and postural exercises
- Myosite testing and training
- Edema Control
- Desensitization/Scar management



(Photo courtesy of Mr. Butkus)

UE Protocol of Care

Phase III: Basic Prosthetic Training

- Donning/Doffing prosthesis
- Operational knowledge
- Self-maintenance and care of the prosthesis
- Prosthetic care/limb tolerance
- Controls training
- ADL prosthetic training
- Assess baseline of prosthetic skills



(Photo courtesy of Mr. Butkus)

Assessment

What is a successful prosthetic user?

- ☐ Benefits

- Performance:
 - ▷ Increased task ability.
 - ▷ Decreased workload on existing upper limb.
 - ▷ Allows the person to participate in meaningful tasks.
- Psychosocial:
 - ▷ Feeling complete
 - ▷ Appearing “normal” (cosmetic)
- Protection of residual limb

- ☐ General types of users

- Functional users versus Cosmetic users

Assessment

- Canadian Occupational Performance Measure (COPM)
- ADL checklist
- Prosthetic Upper Extremity Functional Index (PUFI) (Pediatric)
- Assessment of Capacity of Myoelectric Control (ACMC)
- Southampton Hand Assessment Protocol
- University of New Brunswick (UNB) Test of prosthetic function (Pediatric)
- Other Hand dexterity tests
 - ☐ Nine hole peg test
 - ☐ Box and Blocks
 - ☐ Grooved Pegboard
 - ☐ Jebson Taylor
 - ☐ Minnesota rate of rapid manipulation
 - ☐ Purdue pegboard

UE Protocol of Care

Phase IV: Advanced Functional Training

- Adaptive Sports
- Military Warrior Tasks
- Community re-integration
- Driver's training
- Vocational evaluation/training
- Recreational activities
- Child care/Pet care
- Shopping
- Home and Auto repair and maintenance
- Complex Meal preparation
- Prosthesis "thesis"



(Photo courtesy of Mr. Butkus)

UE Protocol of Care

Phase IV: Advanced Functional Training

- Assessment tasks that require more attention to detail, dexterity and anticipatory skills
- Knowledge of all prosthetic skills
- Adapting device or task quickly
- Advanced therapy tasks
 - ☐ Unilateral prosthetic performance
 - ☐ Facilitating independent problem solving
 - ☐ Tasks that require significant preplanning
 - ☐ Simultaneous control
 - ☐ Rapid alternating movements
 - ☐ Heavy weight
 - ☐ Tasks performed with vision occluded
 - ☐ Power Tools
 - ☐ Sporting and Recreational tasks



(Photos courtesy of Mr. Butkus)

What can we do to ensure physical and emotional health for trauma survivors over a lifespan?

Long Term Success



Adaptive Sports and Reconditioning

Weekly Adaptive Sports and Clinics:

- Cycling
- Working out: Circuit training, weight lifting
- Swimming
- Running
- Kayaking
- Wheelchair Basketball and Lacrosse
- Yoga
- Jiu-Jitsu
- Shooting, Hunting, Fishing, and Archery.
- Golf through Salute Military Golf Association
- Rowing
- Bowling
- Triathlon training



Recreation Therapy

Community Reintegration outings:

- Subway Training
- Cooking
- Movies
- Restaurant
- Shopping
- Retreats
- Events
- Trainings



(Photo courtesy of Mr. Butkus)

Adaptive Sports

Annual or Semi-Annual:

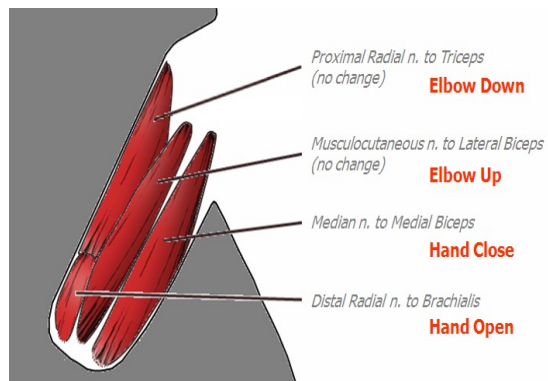
- Skiing
- Bicycling events
- Golf events
- Adapted Scuba Diving
- Watersports clinic
- Surf camp
- National Wheelchair Games
- Warrior Games- inter service
- Overnight Rafting



(Photo courtesy of Mr. Butkus)

Research

- Targeted Muscle Re-innervation (TMR)
- Implantable Myo-Electrode Sensors (IMES)
- Modular Prosthetic Limb (MPL)
- Pattern Recognition- CoApt, Myo Plus
- Upper Extremity Transplants
- Osseointegration
- Agonist-Antagonist Myo-neural interface (AAMI)



Features of Care



- Robust Recreation Therapy Program
- Community Reintegration
- Adaptive Sports and Reconditioning
- Availability/communication of Physicians, Therapists and Prosthetists
- Peer support
- Supportive community, isolated military base and available housing
- Non-Profits to assist with gaps
- Warrior Transition Brigade (WTB) – OT Transition
 - Intensive scheduled goal setting session
 - Education or internship programs mandatory for active duty
- Assistive Technology Specialists
- Return to a full actively engaged work, home and fitness roles

ADAPTIVE SPORTS

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ADAPTIVE SPORTS



MEANINGFUL - FUNCTIONAL & PURPOSEFUL ACTIVITY

What is Adaptive Sports?



Adaptive sports are competitive or recreational sports for individuals with life impacting illness, injury or a permanent disability. Early introduction to adaptive coaching, activity modification, equipment, and community resources will allow for a continuation of a safe, healthy & active lifestyle.

History:



Adaptive sports in the military began as a means for our veterans to rehabilitate from our conflicts in World War II, Korea, Vietnam and our conflicts in the Middle east.

Today Adaptive Sports continues to serve as a rehabilitative tool in military medicine to treat service members who have sustained permanent physical and emotional disabling injuries.

1946 - World War II Veterans gave birth to wheelchair basketball



Played in the Veterans Administration (VA) hospitals in Birmingham, CA and Framingham, MA as well as at the Corona Naval Station, CA where World War II veterans were being treated for various degrees of paralysis

(<https://montescalierparis.com/wheelchair-basketball-how-is-it-played/>, 2019)

(<https://www.nextavenue.org/nextavenue-wheelchair-basketball/>, n.d.)

1967 - The National Amputee Skiers Association (NASA) was founded



Later renamed as the National Handicapped Sports & Recreation Association (NHSRA). The organization was founded by disabled Veterans who wanted to teach Adaptive Skiing.

(<https://www.grousemountain.com/90/tyee-vass-history>, n.d.)

2003 –Adaptive Sports is introduced at Walter Reed Army Medical Center



Occupational Therapy began utilizing Adaptive Sports as a tool in the treatment of severely injured or permanently disabled service members returning from conflict post September 11, 2001.

2010 - Warrior Games



The Warrior Games is a multi-sport event for wounded, ill or injured service military personnel and veterans organized by the Department of Defense

2014 - Invictus Games

The Invictus Games is an international adaptive multi-sport event, created by Prince Harry in which wounded, ill or injured armed services members and their associated veterans take part in nine sports including wheelchair basketball, sitting volleyball, and indoor rowing.



(<https://www.usmagazine.com/celebrity-news/news/prince-harry-launches-sporting-event-invictus-games-for-injured-servicemen-and-women-201463/>, n.d.)
(<https://www.facebook.com/InvictusOrlando/>, n.d.)

Today:



Adaptive sports programs are utilized as a vital tool in rehabilitation. It contributes to the enhancement of physical, psychological, and social aspects of life for our severely wounded, ill or injured service members. Adaptive Sports are currently available at all major Military Treatment Facilities (MTFs) and Soldier Recovery Units (SRUs).

Adaptive Sports and its role in Occupational Therapy



Occupational Therapy as defined by the National Board of Certified Occupational Therapy (NBCOT):

Occupational therapy focuses on helping people participate in the meaningful activities they need and want to do after an injury, disability, or other health condition. It uses a holistic approach to look at not only why a client's participation in activities has been impacted but also at the client's roles and environment. Treatment strategies include wellness promotion, rehabilitation, and habilitation. The occupational therapy professional assists the client in regaining function or adapting to changes by assessing and addressing all aspects of recovery, not just the physical.

(NBCOT.org, n.d.)

OT Practice Framework



Area of Occupation	Client Factors	Performance Skills	Performance Patterns	Content and Environment	Activity Demands
<ul style="list-style-type: none"> • Activities of Daily Living (ADL) • Instrumental Activities of Daily Living (IADL) • Rest and Sleep • Education • Work • Play • Leisure • Social • Participation 	<ul style="list-style-type: none"> • Values, Beliefs, and Spirituality • Body Functions • Body Structures 	<ul style="list-style-type: none"> • Sensory Perceptual Skills • Motor and Praxis Skills • Emotional Regulation Skills • Cognitive Skills • Communication And Social Skills 	<ul style="list-style-type: none"> • Habits • Routines • Roles • Rituals 	<ul style="list-style-type: none"> • Cultural • Personal • Physical • Temporal • Virtual 	<ul style="list-style-type: none"> • Objects Used And Their Properties • Space Demands • Social Demands • Sequencing and Timing • Required Actions • Required Body Functions • Required Body Structures

Adaptive Sports and its Role in Occupational Therapy continued:



Occupational performance deficits (ADLs, IADLs, work, play, education, leisure, social roles/participation) can be targeted through Adaptive Sports to develop treatment plans that address performance skills and patterns, adaptation/modification, therapeutic exercise, life skills, self care, safety and injury prevention.

How Adaptive Sports can be utilized as effective goal directed treatment



Adaptive Sports affords the opportunity for our clients to be immersed in motivating, functional, meaningful and purposeful activity in a peer supported environment, providing venue for:

COMPLIANCE  **FUNCTION**  **INDEPENDENCE**

Patient Population Benefiting From Adaptive Sports:



Traumatic Brain Injury

Amputation

Osseointegration

Orthopedic Injuries

Polytrauma

Vision loss

Oncology

Posttraumatic stress (PTS)/ Posttraumatic Stress Disorder (PTSD)

Sexual Health

Psychological

Early treatment goals:

Safety

Reconditioning

Self care

Function

Building compliance

Skill building

Introduction to adaptive equipment

Grading and modification



Long term treatment goals:



Community self care

Accessibility

Functional independence

Reintegration

Mastering of adaptive equipment

Introduction to community Adaptive Sports
Programs (ASP)

The Benefits from Adaptive Sports



PHYSICAL	COGNITIVE/MENTAL	EMOTIONAL	BEHAVIORAL
Improved <ul style="list-style-type: none"> • Endurance • Mobility • Balance • Coordination • Strength • Body Mechanics • Sleep Decreased <ul style="list-style-type: none"> • Pain 	Improved <ul style="list-style-type: none"> • Attention • Concentration • Decision Making • Opportunities • Problem Solving • Planning • Processing • Sequencing Decreased <ul style="list-style-type: none"> • Hyper-Vigilance 	Improved <ul style="list-style-type: none"> • Emotional Regulation • Self-Esteem • Confidence • Self-Image Decreased <ul style="list-style-type: none"> • Agitation • Anxiety • Denial • Depression 	Improved <ul style="list-style-type: none"> • Socialization • Utilization of Stress Management Skills • Communication • Coping Strategies Decreased <ul style="list-style-type: none"> • Isolation • Restlessness

Procedures, Equipment & Resources



Procedures:

- Clinical assessments and evaluations
- Multidisciplinary team coordination
- Site visits
- Program risk assessments
- Medical clearance
- Activity/Task analysis
- Medical documentation
- Referrals

Equipment & Resources

- Certified Adaptive instructors
- Adaptive Sports equipment
- Accessible transportation
- Community ASP organizations
- Adaptive Rehab & Rec Center (ARRC)(WRNMMC)



(<https://www.shutterstock.com/search/discussing+doctor>, n.d.)

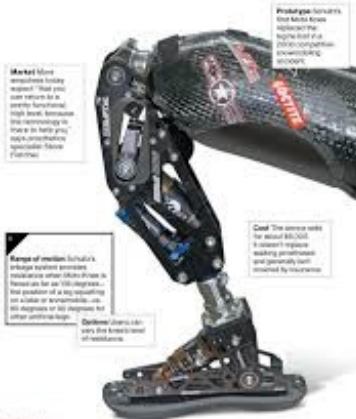
Activity Analysis



Identify the primary demands and therapeutic aspects of the activity. Adapt activity demands to align with therapeutic goals.

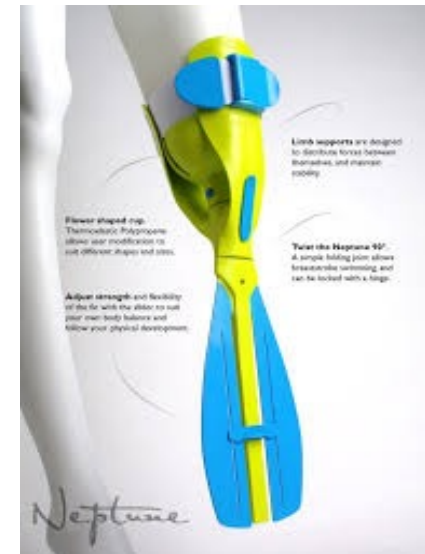
Motions	Range of motion (ROM)	Primary Muscles	<ul style="list-style-type: none">• Gravity Assisted• Resists• No Effects	Minimal Strength Required	Types of contraction
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Adaptive Equipment



Next Steps: Beckwith has sold 70 Mito knees so far, mostly to athletes and wounded veterans. Schmitt is competing in a nationwide race for amputees at the 4th Games this summer in Los Angeles. He plans to finish standing on the podium, but if he doesn't, Mito Knees may be there anyway, he says. "Those competitors are going to be wearing our equipment."

Design: Schmitt's leg is designed to be as close to a natural leg as possible.



Programs offered:



ON-GOING

Functional Fitness

Running

Swimming

Cycling

Boxing

Brazilian Jiu-Jitsu

Yoga

Golf

Paddle Boarding/Kayaking

Scuba

Skiing /Snowboarding

EVENTS

WWP Soldier Ride Miami/DC

Vail Veterans Program Summer/Winter

Bataan Death March

Achilles Hope & Possibilities 5K

Team River Runner Biathlon

Army 10Miler

Adaptive Sports Expo Summer/Winter

DSUSA Breckenridge Ski Spectacular

Local Sporting Events

Seasonal Clinics

Staff Education

Adaptive Sports Risk Assessment:









Risk Assessment is the process where you: Identify hazards. Analyze or evaluate the **risk** associated with that hazard. Determine appropriate ways to eliminate or control the hazard.

Levels of risk: **High/Moderate/Low**

Examples:

- | | |
|--------------------------|--------------------------|
| a. Weather conditions | g. Dehydration |
| b. Equipment malfunction | h. Environmental Hazards |
| c. Falls | i. Altitude Sickness |
| d. Fatigue | |
| e. Crowds | |
| f. Exhaustion | |

Weekly Calendar

NICoE 		RECREATIONAL THERAPY and ADAPTIVE SPORTS				
National Intrepid Center of Excellence		Adaptive Fall 2019 Programs				
MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	WEEKEND	
BLACKSMITHING West Minster, MD 1x / month 0800 - 1500	BOXING (Non-Contact) ARC Bldg. @ Track 1000 - 1200	ARCHERY Ft. Belvoir 3x / month 1000 - 1400	HORSEMANSHIP TRAINING / RIDING 2x / month 0830 - 1300	COMMUNITY REINTEGRATION DC, MD, VA	SUNDAY KAYAKING Open Water Potomac River Team River Runner	
CYCLING (Adaptive) Building 226 1300 - 1500	CHEF EGG ADL Kitchen 1x / month 1030 - 1330	FLY FISHING Main OT Clinic Project Healing Waters 1200 - 1300	YOGA (Adaptive) MATC OT Clinic 1200 - 1300	BOTANICAL GARDEN 1x / month 0830-1300		
 Paddle Boarding	ENTREPRENEURS' LUNCHEON 1x / month 1130 - 1330	Training w/ TRUMAN MATC / PT Front Desk America Building (19) 1200 - 1300	SEWING CLASS I Rad Onc Conf. Room 3x / month 1000 - 1300	PEN TURNING Rockville, MD. 1x / month 1200-1500	 Kayaking Tues & Thurs	
	YOGA (Adaptive) ARC Bldg. @ Track 1200 - 1300	WHEELCHAIR BASKETBALL MWR Gym 1300 - 1430	UNDER ARMOUR CIRCUIT TRAINING 1x / month 1000 - 1400	 Functional Fitness w/ Mikhail		
	SWIMMING MWR Pool Building 17 1400 - 1500		 Metro Training			
Interested ?? Please see a staff member PRIOR to participating						
<u>Adaptive Sports Rehabilitation Program</u>			<u>Recreational Therapy</u>			
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Benevolent Resources



American Red Cross

USO-United Services Organization

Disabled Sports USA

Wounded Warrior Project (WWP)

Semper Fi/Americas Fund

Vail Veterans Program

Challenge Athletes Foundation

Achilles International

Ranger Road

Team River Runner

USA Paralympics

USA Biathlon

USA Sled Hockey

Yellow Ribbon Fund

Live Water Foundation

Two Top Mountain

Adaptive Action Sports

Project Hero

SMGA

Dare 2 Tri

Key Takeaways



Adaptive Sports in collaboration with Occupational Therapy's scope of practice can provide for effective treatments to improve physical, cognitive and psychosocial skills that will promote functional and emotional independence.

1. Occupational Therapists can help identify physical and mental challenges and develop treatment plans through use of Adaptive Sports to help client meet treatment goals.
2. Educate/train client on activity modification and adaptive equipment
3. Introduce client to adaptive resources to promote a continued healthy & active lifestyle.

Assistive Technology Devices

Amanda Meares, M.S., A.T.P.

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Assistive Technology (AT) Device



“...any item, piece of equipment, or product system, whether acquired commercially, modified, or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities.” (Assistive Technology Act of 1998)

It's a Science.....

It's not just about the object!

AT Services: The Other Half



- “Any service that directly assists an individual with a disability in the selection, acquisition, or use of an assistive technology device”
(AT Act of 1998, as amended)
- Evaluation for appropriate devices
- Selection of devices: Coordination with service providers (e.g., therapists, engineers, technologists)
- Implementation: Training / technical assistance for the person and supporting individuals (e.g., personal assistants)
- Follow up

The Human Activity Assistive Technology (HAAT) Model and Feature Matching (Matching Persons and Technology Model)

Modern Shift in Assistive Technology Services



- Assistive Technology is a customized solution to accomplish a goal
- Mainstream technology is being developed at a rapid rate, and is more customizable
- Education and training on features within already owned equipment
- Follow the natural thought process/routine
- Using a familiar item to support memory can be easier than learning a completely new system

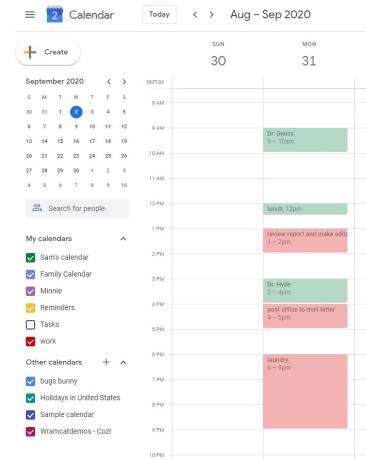
Every Day Technology vs. Assistive Technology



- How is it used?
- What is the purpose/goal?
- Does it help meet a need?
- Benefit: “If it doesn’t make me look ‘different’, I will be more likely to use it.”

Example: Time Management

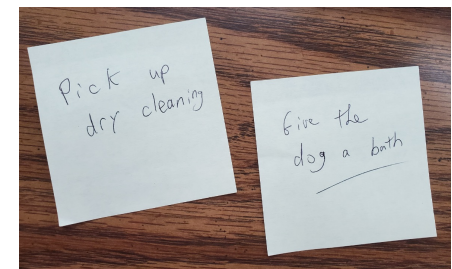
- Events, tasks, and notes may be easier to manage if they are separated into their own app/section
- Visual representation of events helps with time management



Electronic Calendar Example



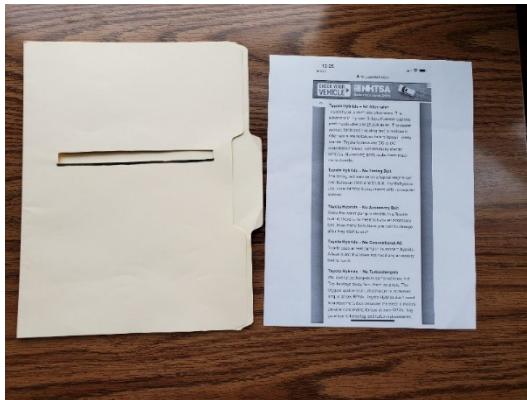
Paper Calendar



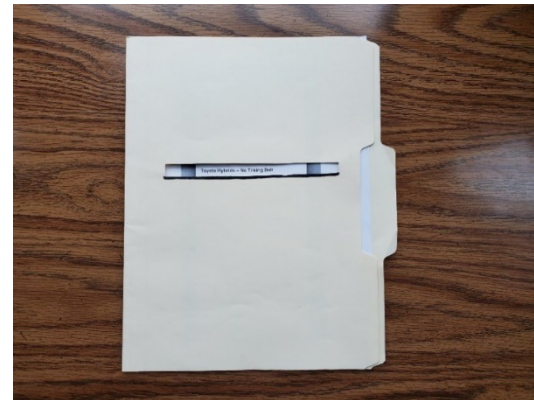
Sticky Notes

Example: Reading

Low-tech option for helping someone focus on printed material

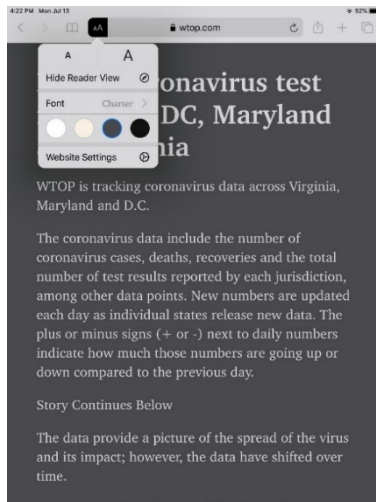


A folder with a window cut out, placed next to a document with many lines of text

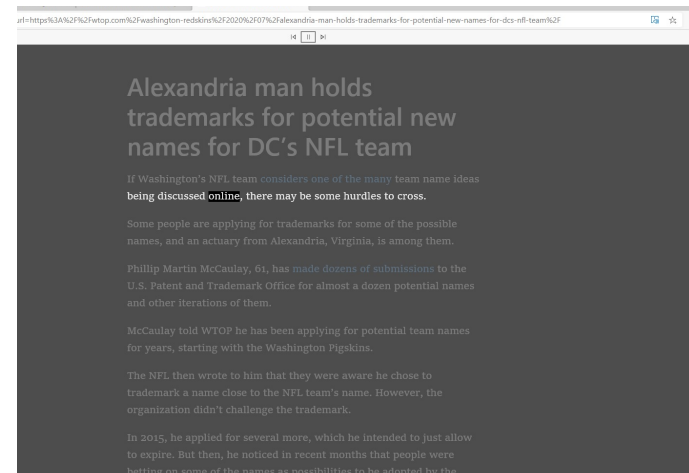


A folder with a window cut out, with a document with many lines of text placed inside the folder

Example: Reading

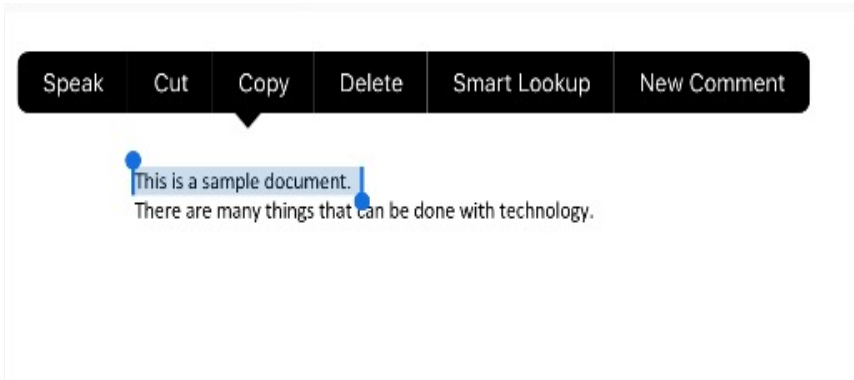


An example of Reader View, which simplifies busy webpages, as shown on a mobile device.

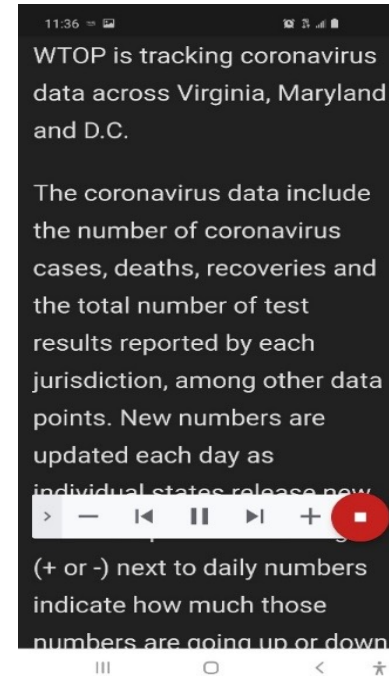


An example of Immersive Reader, which simplifies busy webpages, as shown on a computer web browser.

Text to Speech

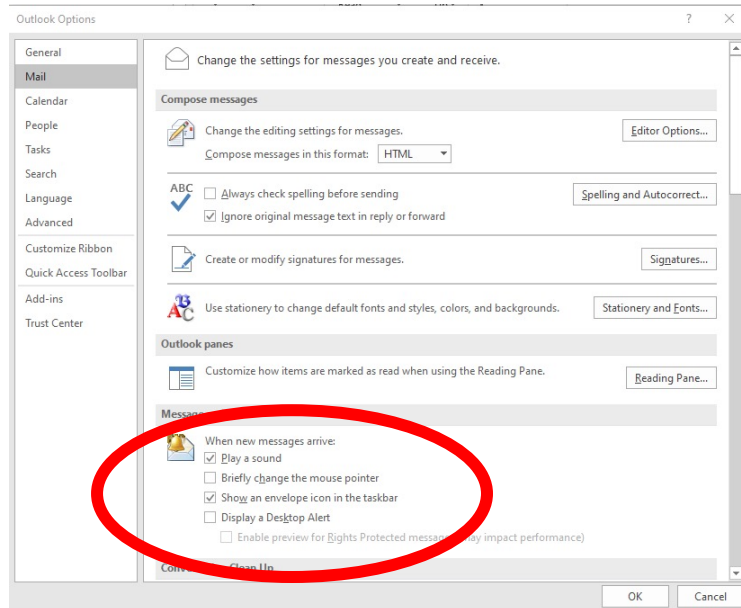


An example of the Speak Selection tool.



An example of the Select to Speak tool.

Minimize Distractions with Do Not Disturb



Screen shots of Mail and Focus Assist Settings





Focus assist

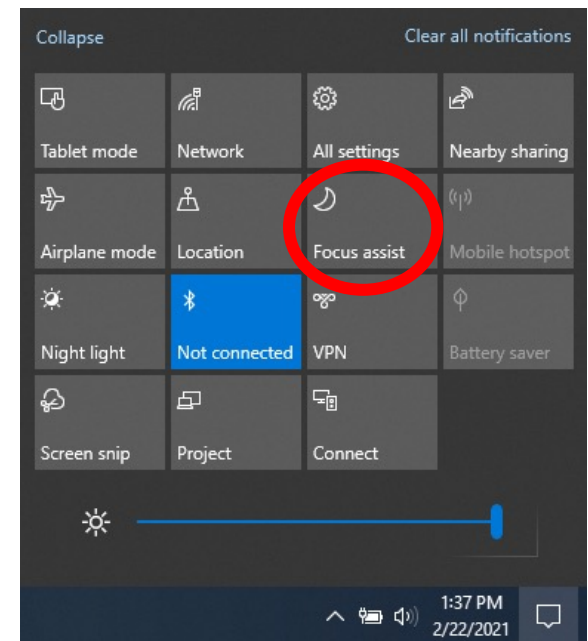
Choose which notification you'd like to see and hear so you can stay focused. The rest will go straight to action center where you can see them any time.

- ☒ Off
Get all notifications from your apps and contacts.
- ☐ Priority only
See only selected notifications from the priority list. The rest will go straight to action center.
[Customize your priority list](#)
- ☐ Alarms only
Hide all notifications, except for alarms.

Automatic rules

Choose the times and activities when you don't want to be disturbed, and focus assist will turn on automatically.

-  **During these times**
11:00 PM - 7:00 AM; Priority only ☐ Off
 -  **When I'm duplicating my display**
Alarms only ☒ On
 -  **When I'm playing a game**
Priority only ☒ On
 -  **When I'm using an app in full screen mode**
Alarms only ☒ On
- ☒ Show me a summary of what I missed while focus assist was on

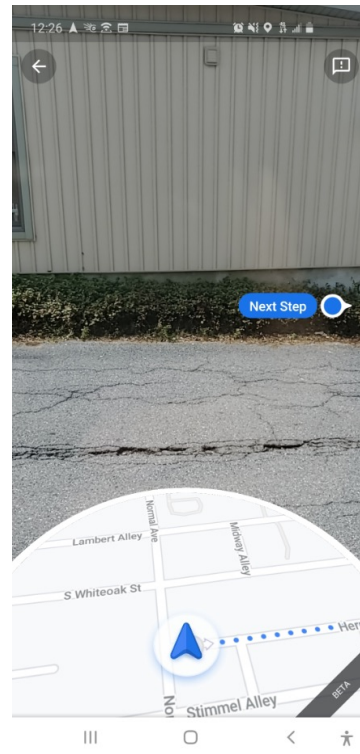


Emergency Contacts



- Phones can be set up to display important information on a lock screen
- Anyone who wants to assist can access this information and call emergency contacts from the lock screen

Navigation Assistance



A phone using the navigation app with an Augmented Reality overlay of the map

Discussions We Continue to Watch Evolve



- Wearable Smart Glasses are evolving. We predict these will be more common soon
 - Bluetooth speakers connected to smart apps on a phone
 - Built in computer chips in the glasses themselves
- Importance of Discussions around Ethics in Artificial Intelligence (AI) and Automated Decision Systems (ADS)
- AI is already all around us
 - In our homes (Ex. Smart speakers, Smart Assistants on our phones and watches)
- ADS are also in our smart home systems
 - Blueprints (Ex. Whose turn is it to do the dishes?)
- Machine Learning, ADS, and the Human Interaction – Providing Choices and Improving the user experience

Resources



- The Computer/Electronic Accommodation Program (CAP)
 - www.cap.mil
 - “Effective October 1, 2020 (FY21) CAP will no longer be funded to procure or provide Assistive Technology (AT) and AT devices to Non–DoD agencies. CAP will gladly conduct assessments, provide information, referrals and assist Non-DoD agencies in determining the appropriate AT and AT devices to purchase by their agency.”
- Rehabilitation Engineering and Assistive Technology Society of North America (RESNA)
 - www.resna.org
- Assistive Technology Industry Association (ATIA)
 - www.atia.org
- Each state has a program dedicated to informing the general public about Assistive Technology options
 - <https://www.at3center.net/stateprogram>

Resources



- Job Accommodation Network (JAN)
 - www.askjan.org
- The Partnership on Employment & Accessible Technology (PEAT)
 - www.peatworks.org
- Vocational Rehabilitation and Employment (VR&E)
 - <http://www.benefits.va.gov/vocrehab/index.asp>
- Rehabilitation Services Administration
 - <https://www2.ed.gov/about/offices/list/osers/rsa/index.html>
- Office of Disability Employment Policy
 - <https://www.dol.gov/agencies/odep>
- Employer Assistance Resource Network
 - <https://askearn.org/>
 - <https://askearn.org/topics/neurodiversity-in-the-workplace/>

Occupational Therapy and Its Role in Vision Therapy

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Occupational Therapy Vision Rehabilitation Services

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More than 20/20: What Vision Therapy IS...

Common Vision Therapy Diagnoses



- Accommodative Issues
- Convergence Insufficiency
- Eye Misalignments (Horizontal or Vertical)
- Scanning/Eye Movement Deficits (e.g. Fixation, Saccades or Pursuits)
- Resurgence of Developmental Vision Issues (e.g. history of Lazy Eye or Vision Therapy as a child)

Low Vision vs Vision Therapy Services



What Vision Therapy is NOT: Low Vision Rehabilitation

“In the United States, any person with vision that cannot be corrected to better than 20/200 in the best eye, or who has 20 degrees or less of visual field remaining, is considered legally blind.” ~American Optometric Association, 2021

- Think stroke and more severe TBI patients
 - Hemianopsias and visual field cuts
 - Progressive vision conditions (e.g. glaucoma, cataracts, etc.)
- Goal is compensation versus restoration of visual function

Vision and TBI



- Over 50% of the brain cortex is associated with the processing of visual information.
- The optic nerve is the longest cranial nerve in the brain/body.
- This leaves the visual system vulnerable to damage/change with all types and mechanisms of brain injury.
 - Blast wave, fall, motor vehicle accident, brain bleed, gun shot wound (GSW) or other penetrating injuries – all have potential to impact visual system.
- Current research identifies between 30-60% of individuals with TBI experience visual symptoms post injury, with military and veterans experiencing higher rate than the general population.
- The ability to assess and develop treatment plans for visual issues in TBI patients is critical to optimizing long term recovery and occupational performance.

Vision and the Brain



- Cerebellum – Initiation of many eye movements
- Corpus Callosum – Connects visual cortex to language centers
- Frontal Lobe – Visual focusing
- Occipital Lobe – Primary for vision processing
- Parietal Lobe – Visuospatial abilities, Space
- Temporal Lobe – Assigns meaning to visual images

OT as a First Line Provider



- OTs play a critical role in initial assessment of binocular vision for TBI patients
 - Often first point of contact for vision assessment
 - Provide global picture of impact of vision symptoms on daily functioning
 - Serve as bridge between rehabilitation team and optometry
- Primary goal of initial vision screen is to determine need for further optometric evaluation and intervention
 - OTs do not diagnose or prescribe
 - HOWEVER, OTs can initiate the process for patients requiring optometric intervention
 - AND can initiate education/intervention on energy conservation, symptom management, compensatory techniques, and assistive technology supports

OT and Optometry Collaboration



- Most optimal outcomes occur when patients have best corrected functional vision
 - Acuity changes
 - Prisms for misalignments or eye strain
 - Filters for Photosensitivity
- Needs may change across time – communication is key!
- Different prescription needs for different functional demands/activities
 - OTs provide feedback on the impact of cognitive loading and community environments
- If neuro optometry is not available in your facility, find a provider:
<https://locate.covd.org/>

When to Refer Out



- Red Flags for further Optometric Evaluation in TBI patients
 - Photosensitivity – automatic referral
 - Blurry vision – Think accommodation or change in acuity
 - Diplopia – Vertical vs Horizontal
 - Dry Eyes
- Vision Symptom Surveys
 - Convergence Insufficiency Symptom Survey -
<https://wowvision.net/wp-content/uploads/2014/08/CI-Screening-and-symptom-survey.pdf>
 - Post Traumatic Vision Symptom Survey -
https://noravisionrehab.org/uploads/media/brain_injury_vision_symptom_survey.pdf

Vision Therapy Assessment



- Visual Fixation – Does patient fatigue? Is nystagmus present?
Do certain gazes provoke eye strain or discomfort?
- Saccades
 - NSUCO (Nova Southeastern University College of Optometry) or King Devick - <https://kingdevicktest.com/>
- Pursuits
 - NSUCO
- Vergence Ranges
 - Convergence simple target – normal breakpoint and recovery within one-three inches from nose
 - Vectograms – provide 3D vergence assessment

Vision Therapy Intervention

- OTs should always connect vision intervention to individual occupational roles
- And be able to communicate that connection to the patient...
- Regardless of Type of Vision Therapy Intervention
 - Technical equipment (e.g. vectograms, brock strings, Dynavision)
 - Functional Activity Training (e.g. games, computer tasks, video games)



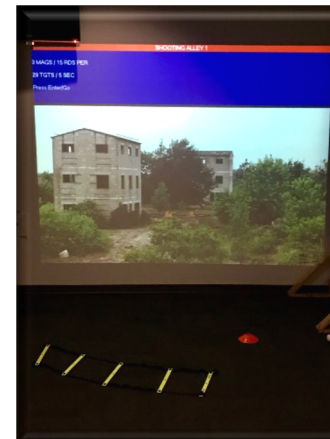
Helping Find a Visual Middle



- Many patients will have visual demands in daily life that initially exceed visual capacity
- OTs play a significant role in considering environmental modifications and energy conservation to promote optimal performance
- Teach 20/20/20 rule for all patients
- Consider influence of pain and anxiety on vision performance
- Examples: anti-glare screen, ergonomic computer set up, scanning cards or magnifier bars for paper reading

Example: Reading

- Emphasize Speed/Coordination/Reaction Time
 - Dynavision
 - Bioness Integrated Therapy Systems
 - Athletics Training
- Prolonged Visual Engagement
 - Timing of Appointments
 - Cognitive Loading (multisensory)
 - Visual based leisure activities
- Weapons Qualification
 - Simulated (FATS/ISMT) vs Live Fire
 - Binocular vs Monocular shooters
 - Pistol vs Rifle
 - Brock string and accommodation training



Vision Therapy Future Exploration...



- TBI Vision Therapy intervention research
 - Particularly to promote insurance reimbursement in the future
- Standardization of assessment, intervention and pathways of vision therapy care
- Effectiveness of Vision Therapy Telehealth interventions
- Use of Assistive Technology in mitigation of visual symptoms
- Vision Therapy impact on military readiness/performance post TBI

Vision Therapy Resources



- College of Optometrists in Vision Development - https://www.covd.org/page/vision_therapy
- Concussion Alliance - <https://www.concussionalliance.org/vision-therapy>
- Military Health System - <https://health.mil/About-MHS/OASDHA/Defense-Health-Agency/Research-and-Development/Traumatic-Brain-Injury-Center-of-Excellence/Provider-Resources>
- Neuro-Optometric Rehabilitation Association - <https://noravisionrehab.org/healthcare-professionals/professional-resources/professional-downloadable-resources>
- Neurovision Rehabilitation Guide – ISBN 13: 978-1498762564
- Vestibular Ocular Motor Screening (VOMS – UPMC) - <https://www.upmc.com/services/sports-medicine/services/concussion/symptoms-diagnosis/voms>

Sexuality and Intimacy: Considerations for Rehabilitation Settings

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Disclosures



- Dr. Kathryn Ellis is the founder and CEO of The Institute for Sex, Intimacy & Occupational Therapy. Her courses and consultation services are available to the public and have been purchased by DOD employees.
- The views expressed in this presentation are those of the presenter(s) and do not necessarily reflect the official policy or position of the Department of Defense, nor the U.S. Government.
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Gaps in Care



- Sexuality is an integral aspect of an individual's well-being.
- Military service members are at increased risk of developing sexual functioning problems.
- Research is limited on this topic.
- Healthcare professionals are not currently equipped to address sexual difficulties.

(Dosch et al. 2016)
(Kauth, 2012)

We're all Sexual Beings – About time we talked about that



“Sexual activity is an integral aspect of human life.

Military service increases the risk of sexual functioning problems”

Tepper, 2014

Impact of Service on Sexual Function



- Genital injuries
- Polytrauma injuries
- Operational tempo impacting sleep cycles, stress, family/couple time
- TBI – endocrine, cognitive, physical, emotional impairment
- Depression, anxiety
- PTSD
- Headaches and migraines
- Sexual trauma

Impact of Service on Sexual Function



- Erectile dysfunction is one of the more common sexual issues among military men.
- The inability to sustain an erection or produce an erection at all can create barriers to positive body image and self-efficacy in regards to sexuality and intimacy.
- Active service duty members age 40 or younger the rate of erectile dysfunction was 30%, three times the rate for similarly aged civilians, with only 12% of participants reporting to have received treatment due to social concerns.

(Wilcox et al. 2014)

Other Factors Influencing Sexual Function



For examples among many others:

- Trauma
- Harmful messaging
- Abysmal sexual health education
 - Omitted
 - Inaccurate
 - Non-inclusive

Impact on Sexual Function



- Pain
- Pelvic pain
- Erectile dysfunction
- Limited fine motor / limited gross motor
- Decreased desire
- Disconnection from partner
- Avoidance
- Difficulty navigating conflict
- Difficulty communicating needs
- Limited self-worth – feelings of inadequacy
- Challenges accessing community

Our Response? It's a mess!



Providers wait for patients to bring it up.

Patients wait for providers to bring it up.”

Providers don't want to offend their patients.

Patients don't want to offend their providers.

Patients are offended if we don't bring it up!

(Mona et al. 2017)

Walter Reed OT & Physical Medicine & Rehabilitation (PM&R) Efforts



Sexuality and Intimacy Clinic:

- Incremental steps
- Stakeholder engagement/support
- In-services to build referrals focused on provider comfort and education
- Program evaluation / Case series
 - Creating space
 - Defining sex and intimacy
 - Promoting communication
 - Role Identity
 - Modifying routines

(Ellis et al., 2021)

OT for Sexuality and Intimacy



Assessment:

- Holistically looking at physical, cognitive, and emotional aspects of sexual and intimate activities within the environment the individual is in
- Client lead

Intervention

- Sexual health education
- Psychosocial education
- Pleasure
- Sexual counseling
 - Arousal
 - Desire
 - Techniques for erectile dysfunction, pelvic pain
- Self-esteem
- Positioning
- Pain management

Case Example: Terrell (he/him), 35 years old



Terrell is a medical doctor and Army Officer who served in Afghanistan. He sustained a Mild TBI and open book pelvic fracture from a Humvee rollover while he was deployed with a Special Forces Unit as their medical doctor. Terrell has completed rehabilitation at a Military Medical Facility and is planning on returning to his job afterwards. Terrell is attending outpatient therapy for Physical Therapy (PT), OT, & Speech. He is single and has a supportive family and friend network.

Case Example



Throughout his rehab, Terrell has stayed up to date on his Continuing Medical Education (CMEs) and medical license, but he notices he has difficulty with attention during auditory listening and learning. He is excited he will be able to go back to work with his unit, but so far he has not figured out sitting tolerance and pain management for longer days, and he reports some issues with incontinence. He is independent with ADLs and has not given much thought to hobby interests or exercise. All of the rehab providers ask about sex and intimacy, and Terrell reports he is single, isn't sure what sex would look like and isn't sure how he should approach dating, but he is interested. Terrell reports he is concerned about sustaining attention to verbal conversations with background noise, sitting for long periods of time, if he will be able to have an erection, and concern about being vulnerable and sharing about his injury & physical pain limitations with new partners.

Case Example:



Physical Therapy:

- Strengthening the pelvic floor for erection health and incontinence
- Sitting schedule / integrating that into a workday or a date in the community

Occupational Therapy:

- Exploring and engaging in community hobbies
- Scripting how to explain injury to a potential partner or whether to explain injury in online profile
- Exploring erogenous zones / sexual activities Cameron can do or might need modification for
- Inquiring regarding erection health and subsequent intervention

SLP:

- Work on auditory attention & listening for conversational communication with potential partner

Key Takeaways



- Every Military Treatment Facility (MTF) Rehabilitation Department should have a sexuality and intimacy clinic with providers who are competent and willing to address the sexuality and intimacy needs of the service members and their families.
- Every clinic should include an occupational therapist.
- Resources and decision-making level support should be allotted to the development and sustaining of these services.

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Questions???



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To receive CE/CME credit, you must register by 0745 ET on 27 August 2021 to qualify for the receipt of CE/CME credit or certificate of attendance. You must complete the program posttest and evaluation before collecting your certificate. The posttest and evaluation will be available through 9 September 2021 at 2359 ET. Please complete the following steps to obtain CE/CME credit:

1. Go to URL: <https://www.dhaj7-cepo.com/content/aug-2021-ccss-exploration-innovations-health-care>
2. Search for your course using the **Catalog**, **Calendar**, or **Find a course** search tool.
3. Click on the REGISTER/TAKE COURSE tab.
 - a. If you have previously used the CEPO CMS, click login.
 - b. If you have not previously used the CEPO CMS click register to create a new account.
4. Follow the onscreen prompts to complete the post-activity assessments:
 - a. Read the Accreditation Statement
 - b. Complete the Evaluation
 - c. Take the Posttest
5. After completing the posttest at 80% or above, your certificate will be available for print or download.
6. You can return to the site at any time in the future to print your certificate and transcripts at: <https://www.dhaj7-cepo.com/>
7. If you require further support, please contact us at: dha.ncr.j7.mbx.cepo-cms-support@mail.mil