



## **Beyond Pavement:** Empowering Lives with Off-Road Power Mobility

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# WHAT IS AN OFF-ROAD POWER CHAIR

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**Drive wheels -**  
14" pneumatic tires



**Ground Clearance -**  
10.7cm



**Drivetrain -**  
4 motor, independent drive



**Battery Size -**  
(2) 95AH



**Weight Capacity -**  
160kg



# Benefits of an Off-Road Mobility Device

## Increased Independence

*(Ryan et al., 2017; Martin Ginis et al., 2016)*

## Promotes Physical Health

*(An & Kim, 2023; Schein et al., 2021)*

## Psychological and Emotional Well-Being

*(White et al., 2019; Ryan et al., 2017)*

## Access to Natural Environments

*Zhang et al. (2017)*

## Social Participation & Community Engagement

*(van der Scheer et al., 2018; Martin Ginis et al., 2016)*

## Built for Durability and Safety





# ASSESSMENT PROCESS



# Assessment Process

Initial Assessment / Information Gathering

Development of Goals

Physical Assessment / MAT Evaluation

Environmental Assessment

Equipment Trial Process

Clinical Reasoning

Equipment Considerations and Report Writing

Delivery and On-Going Training

# Goal Setting



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## Environmental Considerations

Access in and around home

Obstacles

Type of terrain

Inclines

Transportation and storage

Ryan, D. P., Kennedy, P., et al. (2017). The impact of the built environment on physical activity in individuals with spinal cord injury. *Archives of Physical Medicine and Rehabilitation*, 98(1), 79-88.

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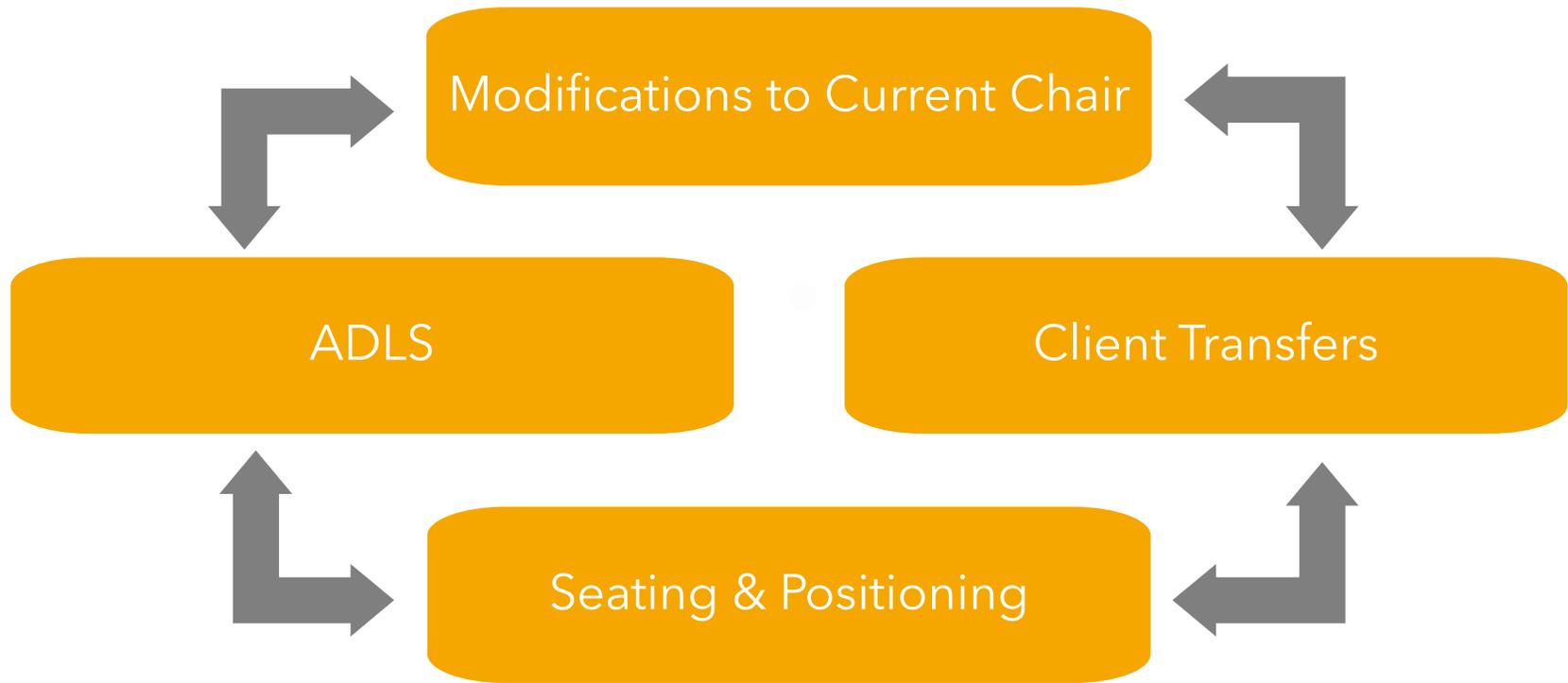
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## Equipment Trial Process - Considerations



# Indoor driving

### Awareness of turning radius

- 4x4 chairs have a larger turning circle
- Avoid narrow doorways and hallways
- Drive using wider turns.

### Slow & controlled movements

- When maneuvering indoors, drive slowly to maintain control in tight spaces.

### Width Clearance & Obstacle Navigation

- Enough space without damaging walls or objects
- Become familiar with your chair's dimensions.

### Reversing

- Reversing is difficult
- TIP: Look at the front wheel tires while reversing - more intuitive and greater control of the wheelchair

# Outdoor Driving

### Familiarize yourself with different terrain:

- Spend time driving on different surfaces
  - Practice in safe, open areas

### Curbs and Steps

- Slow intentional movements over curbs
- Fast over a curb = bottom out

### Loose Surfaces

- Chair sinking > reverse out slowly
- TIP: Use Traction Aids, Natural Materials or Clear the Path

### Puddles

- Reduced Grip on Wet Surfaces
- Hidden Hazards
- Skid Risk During Turns

### Chair Clearance

- Critical for traversing natural obstacle
- Helps prevent bottoming out
- Understanding clearance to protect batteries and motos at the bottom of the chair

## Equipment Trial Process - Driving Skills

### Choosing the path of least resistance:

Evaluate Terrain Characteristics



Identify Potential Hazards



Use Forward-Looking Vision



Plan Alternate Routes





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# Case Study - Bryan

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- Iraqi War Veteran
- Triple Amputee
  - Above knee amputee in left and right leg
  - Below elbow amputee in left arm
- Lives on large property and takes care of livestock.
- Barrier - Issues with safely and comfortably accessing his property to care for his livestock.
- Goal - To be as independent as possible with everyday activities, including tending to his property and livestock.





QUANTUM®

#1 FOR REHAB POWER

# Case Study - Bryan





# CLINICAL CONSIDERATIONS

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## Suspension - Clinical Considerations

**Skin Integrity &  
Pressure Injury  
Prevention**

**Reduces Fatigue**

**Increased  
Tolerance / User  
Comfort**

**Increased  
Postural  
Stability**

**Spasticity /  
High Muscle  
Tone / Pain  
Sensitivities**



An, S., & Kim, J. (2020). Advances in powered wheelchair mobility and user outcomes. *Inventions*, 7(2), 23. <https://doi.org/10.3390/inventions7020023>



## Seating/ wheelchair options

Customisable seating

Power seating options

Reverse camera

Lights



## Maintenance and Support

- Regular Servicing is Essential - Prevents breakdowns & extends chair lifespan
- User Responsibility - Basic care & daily checks
  - Tyre Care
  - Batteries
  - Saltwater care



## Case Study - Cam

- C7 incomplete quad
- Everyday chair - Push chair manual indoor chair, Quantum Edge 3 PWC
- Barrier - Cam's current wheelchairs are not able to access rough or loose surface terrains.
- Goals - Cam would like to access the beach and local hiking trails with his friends.







# THANK YOU

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