

Performance Analysis Off Road

Overview

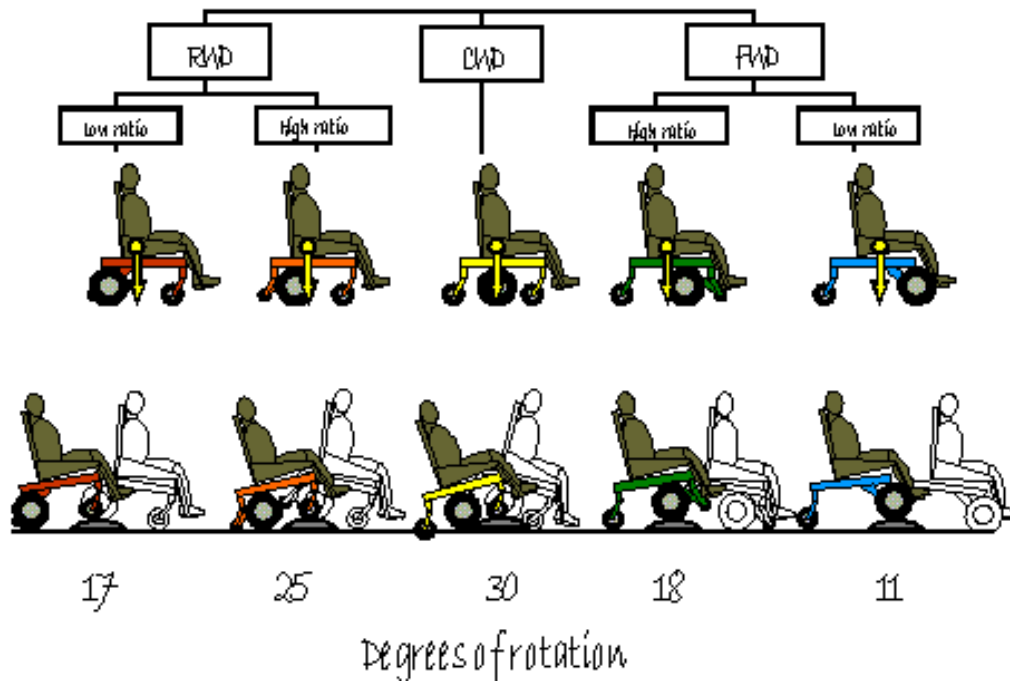
This section deals with a chair's performance on terrain that people using wheelchairs would like to access without fear of being bounced around, getting stuck, or worse. Grassy inclines and gravel paths are frequently found in urban parks. Unpaved roads are not unusual in rural communities and it has been known to snow occasionally.

Off road performance has been considered in two sections:

- Rough terrain
- Inclines

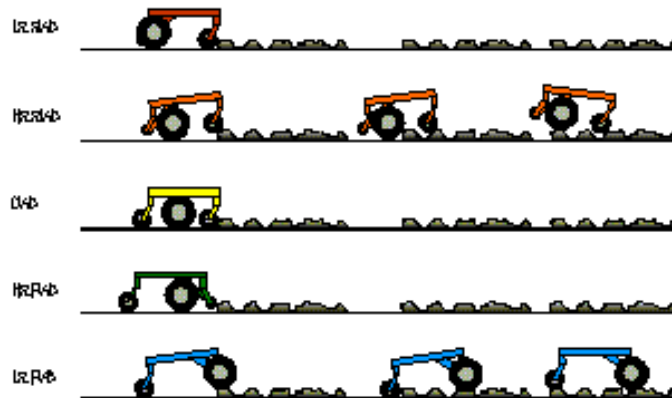
Rough Terrain

The length of the wheelbase contributes to the smoothness of ride. The shorter the wheelbase the more the driver will notice irregularities. Consider for illustrative purposes the angle through which each chair rotates while negotiating a speed bump.



Large wheels can overcome larger obstacles and smooth the ride over smaller ones better than small wheels. The characteristics of the wheels that contact the obstacle first are more critical than the characteristics of the trailing wheels.

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General comments

LR RWD	L	Small front casters with lots of weight on them are reluctant to roll over even moderately rough terrain. Applying power to lift the casters over an obstacle results in wheel spin due to the lack of weight on the drive wheels.
HR RWD	J K	Small front casters have little weight on them. When power is required to lift the casters up and over an obstacle the chair tends to wheelie, helping to get the caster over the obstacle. These chairs are quite capable on rough terrain, however, they provide quite a bouncy ride.
LR CWD	L	Performance depends to a large extent on the softness of the suspension and the ratio of weight on the drive wheels. If the chair has soft rear suspension, applying power when the front wheels encounter an obstacle will make it behave like a HR RWD. There is a possibility of getting the drive wheels hung up if the front and rear casters are on bumps and the drive wheels are over a dip.
HR CWD	K	
HR FWD	K L	Since the front wheel is very small, this configuration can only cope with moderately rough terrain. If the anti-tipper has a dynamic element it will be able to handle more rugged terrain. The chair tends to swerve where traction is varied due to the casters wanting to lead.
LR FWD	J K	Provide smoothest ride at slow speeds on moderately rough terrain, which is nice for people with poor balance or spasms. When larger obstacles are encountered, lack of weight on the drive wheels limits traction and the chairs ability to cope with rougher terrain. The chair tends to swerve where traction is varied due to the casters wanting to lead.

Known exceptions

HR FWD Jazzy	J	The Active-trac [®] suspension allows the Jazzy to conquer obstacles larger than a conventional HR FWD. It also helps to smooth out the ride considerably.
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Soft Terrain

LR RWD Permobil Trax	J	Will complete the manoeuvre uneventfully due to the steerable casters.
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Descending

General comments		
LR RWD	L	Will skid straight down the hill facing forwards.
HR RWD	J	Will complete the manoeuvre uneventfully.
LR CWD	L	Will skid down the hill forwards, backwards or sideways only starting to slow near the bottom. If a bump is encountered while the chair is going sideways the user could be pitched out.
HR CWD	L	Will skid down the hill forwards, backwards or sideways until the hill levels to 15 degrees then the chair will start to slow. If a bump is encountered while the chair is going sideways the user could be pitched out.
HR FWD	K	Will complete the manoeuvre uneventfully but if any braking effect is applied during the descent the chair will tip forwards onto the front auxiliary wheels.
LR FWD	L	Will complete the initial descent then lose traction during the traverse turning to face up hill. The chair will then skid backwards down the hill.

Go to [Performance Analysis Other Factors](#)