



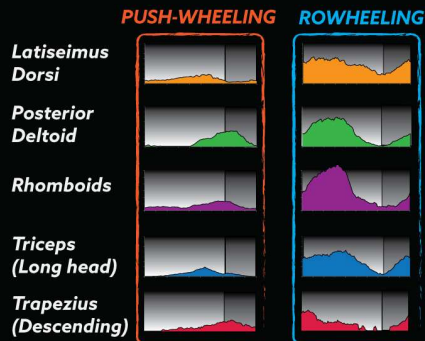
# Rowheels: Key to Your Shoulder Health

A 2016 study by the Pathokinesiology Laboratory at Rancho Los Amigos National Rehabilitation Center compared the muscle activity of manual wheelchair users while propelling push wheels and rowheeling/pulling wheels.

## Retractor/Pulling Muscles



% Max Muscle Activity Vs Stroke Cycle



- Rowheeling retracts the scapula, minimizing the risk of impinging the rotator cuff and improves user posture
- Rowheeling distributes the work over several large muscles, reducing the work load on smaller muscles
- When Push-wheeling, these muscles are overstretched and underused

## Protractor/Pushing Muscles

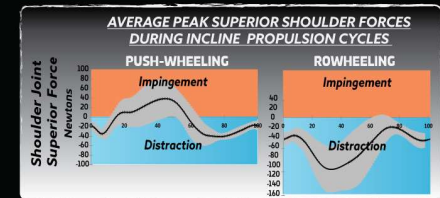
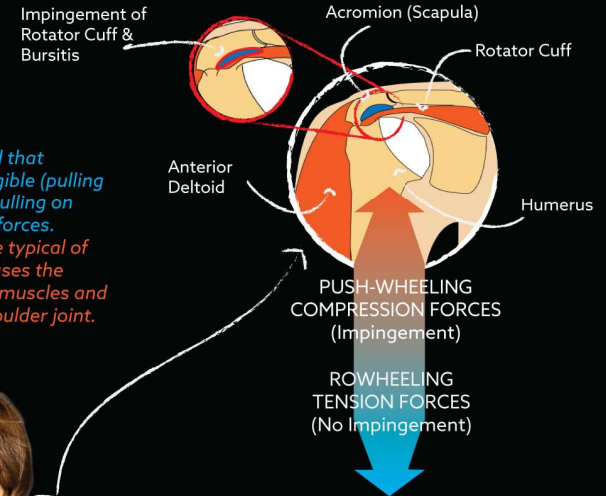


% Max Muscle Activity Vs Stroke Cycle



- Push-wheeling leads to overuse and tightness of the protractor muscles increasing the risk of impinging the rotator cuff and leads to poor user posture
- Distributes the work over a few small muscles
- When Rowheeling, these muscles are minimally active during the propulsion phase

• Study conclusively showed that rowheeling generates negligible (pulling up an incline) or negative (pulling on level ground) impingement forces.  
 • These "pinching" forces are typical of push-wheeling, which overuses the smaller chest and shoulder muscles and tends to de-stabilize the shoulder joint.



### Quick Fact

Up to **70%** of wheelchair **pushers** develop shoulder injury and Pain



\*Results presented are for the inclined propulsion section of the study.