

# Chapter 7: Driving & Commuting

*With the exception of some time alone to think or listen to “books on tape”, there’s little positive to say about commuting – not to mention gas prices.*



- Research links the commute time on congested highways to increased lost work days due to low back pain
- Drivers who spend more than 3 hours on the road a day are among the top 3 groups to develop musculoskeletal disorders
- People who drive in commute traffic are twice as likely to have an accident than those who drive during non-peak hours
- Use of a cell phone while driving increases your chance of an accident x10!!

If your commute is *driving you into the ground*, you might need some ergonomic driving tips to steer you in the right direction.

# Driving and Ergonomic Risks

## The *Ergonomic Risk Factors*

- Awkward spine postures due to sitting positions and car seat designs
- Awkward head/neck positions when seat fit doesn't correspond to individual body size or sitting posture
- Awkward wrist postures and forceful grip on steering wheel
- Long periods of constrained and static postures



# Marin County Employee Commuting Statistics



- 81% of employees drive to work alone an average of 18 miles each way
- 19% used commute alternatives such as carpools, buses, bicycles or motorcycles and of these 1% walked or took the ferry
- Two commute alternatives that employees would be most willing to try...
  - Carpooling 41%
  - Telecommuting 40%

*Perhaps the hike in gas prices will be a catalyst for these alternatives!*

Marin County commuting statistics courtesy of DPW-Employee Transportation Survey

# Driving & Commuting

## *Essential Tips & Techniques*

- Try an alternative hand position on the steering wheel to get your wrists in a slightly thumbs up position
- Adjust the car seat and steering wheel settings and vary them over a long trip
- Experiment with a lumbar or cervical cushion if your back or neck aches
- If you're a smaller person, try a seat wedge cushion or seat insert to prop yourself up and forward so you can reach the pedals with your feet and view the road clearly with your eyes
- Remove wallets and keys from your pants pockets that can put pressure on muscles and nerves and cause you to sit awkwardly
- If you routinely use your cell phone in the car, get a hands off headset and a caddy to hold the phone with a writing tablet in place
- When sitting still in traffic, take your hands off the steering wheel, stretch your arms out wide and ring out those tensed wrists and fingers
- After a long drive get out of the car; stretch or walk for five minutes



*Highway 101 at the Civic Center*

# Adjust the car seat to support your back



The seat backrest is reclined too far back and is not supporting the driver's mid and upper back



With the backrest adjusted closer to vertical, the driver is getting support through the low, mid and upper spine

# Adjust the car seat height and depth *...for good visibility and foot pedal activation*



Seat depth to drive pedals is too shallow and his knees are elevated which puts excessive compression force on his low back.



Seat depth to drive pedals is too far which puts a lot of stress on the hips calves and hamstring muscles.

# Adjust the seat depth, backrest and wheel angle *...to easily reach foot pedals and steering wheel*



When the seat back is fully reclined and seat fully retracted it can provide more space to stretch your legs - but it requires your arms to be held outstretched and greater effort with leg muscles to control drive pedals.



Adjust the backrest angle toward vertical and the seat forward to create a balanced relationship with a neutral back posture and relaxed arm and leg postures. Adjust your steering wheel height for your size and comfort.

# Adjust the car seat to support your curves



The seat back is reclined too far so she must bend her spine forward to reach the wheel.



With the seat back and depth adjusted she gets better back support but since she's very petit the seat doesn't adjust forward enough for a comfortable reach to the steering wheel. She needs a good seat cushion insert to move her forward a bit.



# Tools to support your sitting posture

*...to elevate your body & move you forward in the seat*



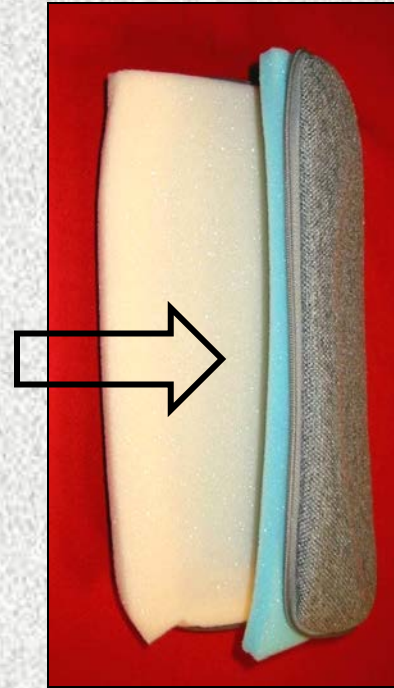
Seat Insert



Seat Cushions

It's essential that the driver is sitting high enough to view the road clearly and close enough to easily reach the foot pedals and steering wheel. A seat insert/cushion can be applied to compensate for seat height and depth.

# Apply a lumbar pad to support your curves



If your car doesn't have adjustable backrest features, consider applying a portable lumbar cushion to support your low back. This cushion includes foam inserts that allows you to adjust the lumbar cushion depth as shown in photo at the right.

# Apply a neck cushion to support your curves

Most automobile head rests are positioned too far back to provide cervical support or comfort since they are intended as a restraint to minimize whiplash in the event of a collision.

If you experience neck sensitivity when driving, you should try a portable neck cushion or add-on headrest to support your neck curvature and reduce cervical and upper back muscle loads .

They've been shown to minimize the severity of neck injuries in front and rear-end collisions.



# Tools to support your sitting posture

*...to open your trunk angle or assist in getting out of the car*



A seat wedge cushion can help elevate you or compensate for a deep recline seat angle to open your trunk to thigh angle and relieve compression on your spine.



If you have a hip, knee or back condition or suffer from degenerative joint conditions, a car seat cushion with a swivel base can help you rotate your body to exit the car with minimum force.

# Avoid grasping the steering wheel *...with force and awkward hand postures*



*A  
Real  
Stressful  
Combo!*



## *Driving / Commuting*

- *Wrists bent up/bent to the side*
- *Hands held tensed*
- *Arms extended forward*

## *Keying / Mousing*

- *Wrists bent up/bent to the side*
- *Hands held tensed*
- *Arms extended forward*

# Relax your grip on the steering wheel



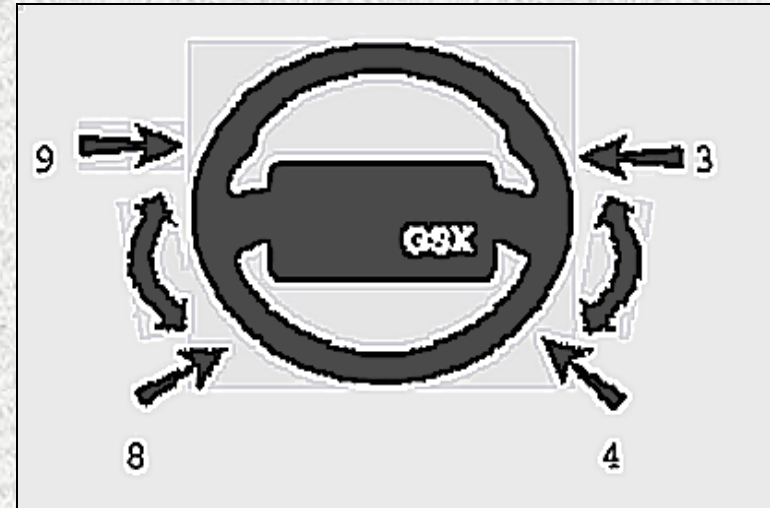
People will often grasp the wheel with too much force, particularly when driving in congested traffic. They may also grip the top of the steering wheel (photo on the right) with their wrists bent back and to the side, causing stress on the wrists and forearms. Neither of these hand positions is recommended!

**Safety Note: When holding the wheel at higher positions there is a significant risk of additional injury because during airbag activation the driver's hands are thrown back into their face!**

# Hand grip positions on steering wheel



Holding the steering wheeling at about 9 and 3 o'clock positions results in more relaxed and neutral hand postures. It has also been shown to be the safest steering position because you have much better control for quick turning maneuvers.



The above diagram shows lower hand positions of 8 and 4 o'clock as an alternative. Many police are trained to steer in lower positions. Experts advise that you experiment and go for the position that gives you the most comfort and best steering control.

# Relax and stretch out the stress!



When sitting in traffic, try relaxing your hands on your lap with the thumbs up since this is a neutral position that will offset the stress on your wrists.

Whenever you get a chance you should wiggle, shake and stretch your hands and forearms to get blood flowing as this will nourish the joints.



# *More stretching...*



## Car Pushup 1

Stand back 3 feet and place your hands on car at shoulder level holding arms out straight. Lean your hips forward and bend your knees slightly to stretch your calves.



## Car Pushup 2

From previous position, Lower hands on car and bend forward. Bring one foot forward with knee slightly bent and raise the toes of the back foot to stretch calf muscles and Achilles' tendon. Repeat with other leg.

# Lifting items in and out of the car



Avoid bending your back and stooping to lift heavy items from inside the car (trunk, hatch or back seat). Lose the “C” shape in your spine!



Get in close to the load and bend at the knees and hips, keeping your back nice and straight as you lift. Don't lift and twist when handling a heavy or awkward load.

# Safe use of cell phones while driving



We all know the use of cell phones while driving is inherently unsafe, but if you regularly use a cell phone while driving, you should invest in a phone holder, a headset and writing tablet holder to keep your hands free, your eyes on the road (and those pesky other cars!) with your body in a stable and upright position.



# Where to find more information

## Resources- ergonomic and safety guidelines

[www.cciservices.com](http://www.cciservices.com) - ergonomic hints for drivers

[www.drivingergonomics.com](http://www.drivingergonomics.com) - ergonomics guide for drivers

[www.spineuniverse.com](http://www.spineuniverse.com) - ergonomics guide for drivers

[www.securitydriver.com](http://www.securitydriver.com) - safety guide for drivers

## Sources- back cushions and tools for driving

[www.backdesigns.com](http://www.backdesigns.com)- full line of back, neck and seat cushions

[www.relaxtheback.com](http://www.relaxtheback.com) - car seat cushions, lumbar pads

[www.addonheadrest.com](http://www.addonheadrest.com) – supportive and safe automobile headrest

[www.1-computerdesk.com](http://www.1-computerdesk.com) - bedside laptop tables

[www.comfortchannel.com](http://www.comfortchannel.com) - back, neck and seat cushions

[www.hard2buy4.com](http://www.hard2buy4.com) - cell phone and writing tablet mounts for car