



# Golf Car Safety... It's a Golf Car not an Automobile!

by Robert Edwards

National Golf Cart Association

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# GOLF CAR SAFETY

IT'S A GOLF CAR NOT  
AN AUTOMOBILE.....

# INTRODUCTION

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People around the world have fallen in love with the experience of using the versatile little golf car for various transportation needs. Golf cars have become a common sight across the landscape of America. The golf car is noteworthy as one of the first mobility devices designed to help people with disabilities. It had its beginnings on the golf course, assisting enthusiastic golfers who needed help with disabilities - or just age - covering the long, green distances. It was nicknamed "The Arthritis Special", and started an evolution that continues today.

As mass production began, we were fortunate to have leaders in the industry who have shown themselves to be responsible "corporate citizens" by allocating substantial research for safety engineering. Every time I get on a golf car I not only look at the warning and caution labels so brightly displayed, I also read them. I've read them so many times I can recite some of them from memory. I made this a habit while driving a variety of carts throughout my life. I've had a passion about golf car safety from an early age because someone took the time to teach me that the golf car was not a "play toy".

My golf car safety education began with a client in my first big business venture. At the age of eleven, Dad gave me my own lawn mower and said, "Son, its time you started your own business". Up until that time I had been mostly involved in "pop bottle recovery" to make my money. The first client in my new business was one of our neighbors. He was such an avid golfer that he owned his own golf car, unusual in those days. He always kept it covered and underneath his carport. I wanted to drive that neat little thing from the very first. I could see it from my bedroom window. I had watched him drive off in it and load it on his trailer many times. Now I had a plan to make some money and get to drive that interesting piece of machinery.

I negotiated a deal with my new client. I would cut his lawn and the grass in his field down the road from his house at a reduced rate. In return for this generous discount he would teach me to hit a golf ball. We had struck a deal. I was

confident driving the golf car was going to be part of the deal, too. He always drove me to the field where he practiced. He would keep telling me to keep my eye on the ball; I had my eye on the golf car. Sure enough my chance to drive came one afternoon when I gained enough courage to ask him. He said, "Son, you seem to want to learn the game of golf so I guess you'll need to learn to drive the cart, but we're going to talk about it for a while first. This golf car is no toy".

So began one of many intense lessons on how the golf car worked and how to drive it safely. I never got to see how fast it would really go because he told me a golf car wasn't made to run "wide open". He taught me how to check tires and adjust the pressure. We went over how to service the batteries and how the charger worked. He told me to always make sure the charger was turned off and un-plugged before connecting or disconnecting it from the cart. I questioned him about that procedure because it seemed like unnecessary work. If we had the charger turned off why would we also need to unplug it? He said, "Son you don't take chances when it comes to charging those batteries". As it turned out I learned more about the golf car than I did about hitting a golf ball. All you need to do is play a round with me and you'll see I drive a golf car a whole lot better than I drive a golf ball.

In later years (much later) I became involved in retail golf car sales and service. I worked with a true design genius. I had the pleasure of working to build some of the most beautiful custom golf cars ever imagined. If a customer had an idea, we turned it into a golf car. I was always concerned about safety and educating the customer. Simple modifications made to golf cars such as rear seating, lift kits, larger tires and wheels, speed chips (did I just say speed chips?) caused the handling dynamics of the golf car to change, and increased the need for more safety education. When I saw the need, the National Golf Cart Association was founded and started its mission of golf car safety education and training.....

I appreciate your time to read on the subject of golf car safety. I wish I could tell you it's complete and includes all there is to know about operating a golf car/utility vehicle safely, but that would be untrue. The purpose of this book is to assist you in recognizing hazards of golf cars. That is what safety training does. Safety training does not make you a safe operator rather it provides information of hazards you need to be aware of. Your Owner/Operator's manual for your specific golf car/utility provides you with specific safety instructions. Contact

Authorized Dealer or manufacturer if you have safety questions. The information presented here is not specific to the make and model you own or operate. It is not intended to replace the instructions found in your Owner/Operator's manual; the information presented here is general in nature.

Safety training always starts and ends with your Owner's/Operator's manual. If you do not have the Owner's/Operator's manual for your specific golf car we recommend you make contact with the manufacture or Authorized Dealer. Provide your golf car serial number and also request any other documentation pertaining to safety provided at the time of original sale. Be sure to obtain additional safety information for any aftermarket installations or modifications made to your golf car from the manufacturers of those parts. Read and study the information specific to you golf car/utility vehicle.

Our goal is assisting you to become more aware of hazards involved with a golf car as an operator or passenger. We suggest you have your golf car serviced regularly and set up a preventive maintenance plan.  
Now it's time to " get our safety on"

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# TABLE OF CONTENTS

Introduction

Chapter 1      What We Know

Chapter 2      You Are the Most Important Person

Chapter 3      This Is Not An Automobile

Chapter 4      I Never Heard It Coming

Chapter 5      Defensive Driving

Chapter 6      Safe Riding Strategy

Chapter 7      On Road, Off Road

Chapter 8      General Maintenance

Chapter 9      What Have We Learned?

Conclusion

# CHAPTER 1

## What We Know

There are over two million golf cars in use in America today, and climbing. The largest area of growth is being experienced in residential settings. The golf car is allowed on many public roads, subject to federal, state and local ordinances. Communities like “The Villages”, near Ocala, Florida, are being developed around the golf car as a primary means of transportation. Gasoline powered golf cars can get about thirty miles per gallon and the electric golf car can go about twenty miles before recharging. The golf car for the most part is very environmentally friendly and offers a pleasurable, open-air experience to use as transportation.

The golf car has been designated as a Low Speed Vehicle (LSV) as defined by the United States National Highway Traffic Safety Administration as subject to Federal Motor Vehicle Safety Standard (FMVSS) No. 500 (49 CFR 571.500) having top speeds of between twenty and twenty-five miles per hour. Over thirty five states have passed legislation or regulations allowing LSV’s to be licensed and driven on roadways posted at thirty-five mph or less. Another name given to these vehicles is Neighborhood Electric Vehicles (NEV).

Drivers of golf cars on public roadways must be licensed and carry proper insurance as required by the state where they are being operated. Most insurance companies treat the golf car driven on public roads like any other vehicle in regards to insurance rates.

As golf car use on public roads has increased, so have the injuries relating to golf cars. Between 1993 and 1997 sixteen deaths were reported for golf car occupants on public roads in the United States. Studies have indicated a high percentage of concussion injuries for persons involved in golf car accidents.

Approximately 12,000 injuries per year require a visit to an emergency room resulting from golf car accidents. Roll-overs and passenger ejection cause the most serious injuries. Some studies have suggested that children under six years of age should not be transported in a golf car. The age groups that seems to be at most risk for injury are the very young (under the age of sixteen) and adults over the age of eighty; however, anyone who operates a golf car or is a passenger in a golf car is at risk. These studies suggest the need for more safety education and the use of personal protective equipment.

Many golf cars in use today have only rear wheel braking. What type of braking system does your golf car have? What is its stopping distance on different surfaces? You need to know. Those of us who are cruising with the rear wheel braking system need to be aware of the instability that can occur during panic braking, braking in curves, braking when travelling down a steep road grade, and braking on a wet roadway - all may create vehicle instability. Care must be taken any time a golf car is traveling down a declining road grade (going down hill). A golf car can reach an unsafe speed quite quickly going down a hill, causing instability leading to roll-over. Golf car manufactures have recently developed braking systems that will automatically slow the golf car before it reaches an unsafe speed traveling down-hill.

The most serious injuries to occupants of golf cars are generally due to roll-overs and passenger ejection. Roll-overs and passenger ejection are both commonly related to excessive speeds and sharp turning. It is important that tires are properly inflated. An underinflated tire can easily initiate a golf car roll-over. A tire that is observed to have a slow leak and occasionally requires inflating must be professionally repaired or replaced. You do not want to take the chance of a panic stop situation or sudden sharp turn with a forgotten underinflated tire.

The passenger is at the most risk for ejection, with no steering wheel to hold on to. Using seatbelts reduces the risk of ejection, if used properly. However, using seatbelts that have been installed as an "aftermarket" accessory will create more danger than ejection in a golf car roll-over accident if the golf car does not have a roll-over protection structure (common only in cars built for industrial use). Most golf car tops are merely sun shades. Always consult with the manufacture before installing seatbelts and consider the risk vs. benefit.

The operator of a golf car anticipates turns, but the passenger is not always aware of up coming turns, and is often caught off guard. The passenger does have hand holds built into most golf car roofs and seat sides, but may have difficulty reaching these points after the turn begins and centrifugal forces are acting – so he or she should use a hand hold at all times.

Common injuries involved in golf car related accidents include concussions, injuries to the neck and shoulder, hip and lower extremity fractures, and bruising. In the past year the National Golf Cart Association has been approached for assistance by several Attorneys representing clients on both sides of golf car related accidents. These accidents were serious, resulting in brain damage, quadriplegia, and amputations. Expert witnesses were needed in litigation. This is very serious business, so take your safety seriously!

The good news is that most golf car accidents are preventable. Most accidents are caused by driver mistakes and lack of good judgment. Knowing the handling characteristics of your specific golf car, having a good preventive maintenance plan and safety education program can help in reducing your chances of an accident. Always remember there are three basic components to golf car accidents: the golf car, the roadway, and the operator. Choose to be a safe operator.

## CHAPTER 2

### You Are The Most Important Person

You need to be in good mental and physical condition when you operate your golf car. If you are sick, have a headache, feel tired, dizzy, light headed or fatigued it would be wise to postpone your trip. Make alternative arrangements until you feel better. Avoid unnecessary risk when operating a golf car. Always make sure you feel physically energized and mentally geared up for your journey.

Vision is arguably the most important sensory perception needed in safe golf car operations. Have your vision checked regularly and do not operate your golf car if you are having any vision difficulty. Most operators have a field of vision of 180°, with a range of about 90° on either side. This relates to how well you can see out of the corners of your eyes when looking straight ahead. With side (peripheral) vision you do not see things clearly to the side, you mostly see movement. There is only a small area in the center of your vision where you see everything clearly. This is why it is important to keep your eyes moving at all times while operating your golf car.

Depth perception is important in judging distance while operating your golf car. Impairment can be compensated for by using other references to help you judge distances, such as other vehicles, street signs, and other familiar objects. If you are unsure, always give yourself more room than you really think you need, and slow down.

Night vision and color vision can also affect your ability for safe operation of your golf car. Some operators have good vision in the daylight hours but can't see well at night. If you find you have this trouble do not look into oncoming headlights, but look to the right side of the road or path. Always slow down for

night driving if you experience this problem. To assist with problems with color, memorize the shape of road signs and the position of traffic lights.

In another chapter we will cover some of the dangers of carbon monoxide but it is important here to mention its effects. Be aware: even if you are operating an electric golf car you could still be affected by the exhaust of automobiles and gas powered golf cars. If you stop for an extended period, remember carbon monoxide has no taste or smell and is deadly in small amounts. Some of the warning signs are headache, feeling sleepy, and sick to your stomach.

Never operate your golf car while under the influence of drugs or alcohol. If for some reason you consume alcohol, have someone who is sober operate your golf car. Never be afraid to turn down an offer of an alcoholic beverage if you are out on a trip. All you need to do is say, "No thanks, I'm driving". If you have consumed an alcoholic beverage be sure it was not in an amount that impairs your driving or puts you over the legal limit. Remember, alcohol often intensifies the effects of some prescription drugs, and has greater effect as you age.

If you are taking prescription medications talk to your doctor. Discuss the possible impairment the medication could cause in operating your golf car. If medications are changed, be sure you know the effects on you before operating your golf car. The same cautions apply to over the counter medications.

## CHAPTER 3

### This Is **Not** An Automobile

Automobiles must meet strict crash test ratings, are many times heavier than golf cars, and are required to have many safety features that are not on our golf cars. In an accident with an automobile, the golf car loses in a big way, and so does everyone occupying the golf car. There is no driver air bag, passenger air bag, side curtain air bag, intrusion beam in the door (no doors), no high strength steel reinforced roof supports in most golf cars. A golf car never wins in a collision with the automobile. So guess what? We can't drive our golf car like it's an automobile.

When we start to operate a golf car on a public road, we share the roadway with automobiles, SUV's, light duty trucks, heavy duty trucks, vans, motorcycles, and other golf cars. It is natural for our driving style to be the same in a golf car as in an automobile, but that is a mistake. We must drive the golf car as a golf car, remembering its limitations. Motorcycle riders have to learn different operating techniques, including avoiding collisions. They, too, are unprotected by heavy steel.

Motorcycle riders understand that drivers of automobile sometimes do not see them. Anyone who has operated a motorcycle can tell you a story about an automobile driver that pulled into his or her path. I believe motorcycle riders are more aware of the hazard of not being seen by automobile drivers than the average golf car operator. Motorcycle riders are trained to see every automobile as having the potential of pulling into their pathway, or just plain running them over.

An automobile vs. golf car in only a twenty mile per hour accident is not a pretty sight. I use the analogy of putting an uncooked egg, still in its protective shell, in your purse or pants pocket and walking around in a crowded store. If you're not very careful, and do not take extra special precautions, you will bump into someone or something, causing that egg to break. What a mess. Your golf car on the roadway is as fragile as that egg shell compared to the average car. If you need a reminder of how fragile your golf car is, imagine keeping a whole raw egg in the storage compartment of your golf car, and drive like you don't want that egg to break, or have someone else break it for you!

The good driving habits we learned for our automobile can be transferred to operating our golf car, but not the bad habits. To increase the visibility of the golf car you could: use your headlights during daylight operation, install an amber flashing light at the highest point on the golf car, or one of the tall orange safety flags designed for bicycles. These safety items have been shown to reduce accidents by increasing the visibility for automobiles, motorcycles and bicycles. They will have the same effect in helping reduce accidents for the golf car. Installing reflectors on the golf car also increases its visibility at night, red on rear and amber on the front and sides.

As a kid my dad would get on to me for hanging my arms (and head) out the car window. There was no air conditioning back in those days. It sure felt good to me. When I asked him why I couldn't, he told me, "Don't hang anything out a car window you're not willing to lose". That made sense to me. I quit hanging my arm, head or any other body parts out the window. The same philosophy is true in our golf car. Always keep your hands, arms, feet, legs and other body parts within the confines of your golf car, and insist your passengers do the same.

Golf cars are increasingly becoming a popular way to get around some neighborhoods. We must take what we learned from operating an automobile safely and adapt it to the little golf car. It is important to be aware that the golf car does not meet the federal regulations for safety requirements required for automobiles. Just as the motorcycle riders have learned to be aware of increased hazards, so must we do with the golf car. Anticipating a hazard helps you avoid it. Educating others that may operate your golf car is your responsibility. Educating the passengers of your golf car is also your responsibility. You set the rules for operating and riding in your golf car. If you have grandkids they will

definitely want to operate your golf car. Please do not turn someone loose on it, especially kids, without going over the safety features and requirements to operate it in a safe manner. Be strict. Make them read out loud to you the warning, caution, and other labels displayed on the particular golf car they will be operating. If they can't read them, they are probably too young to be operating the golf car. Encourage them to read the owner's/operator's manual. It's recommended they be licensed drivers who have completed an approved driver's education course. We do not recommend children under the age of six even be transported in a golf car. If their feet can't touch the floor, they really shouldn't ride in the golf car. I want you and yours to be safe and responsible golf car owners/operators just like me!

## CHAPTER 4

### I Never Heard It Coming

As hybrid electric automobiles are being put into service on the nations roadways a serious design flaw has emerged. They are so quiet that pedestrians are stepping off curbs right into the path of the moving automobile. Studies are underway right now to create some type of audible sound for the hybrids to emit so pedestrians will hear them coming. We face the same dangerous phenomenon as we drive our electric golf cars.

The National Federation of the Blind has brought this problem to the attention of lawmakers who are looking to see if new regulations are needed. Studies are underway to see if safety regulations should be required by manufacturers. It is apparent that pedestrians in general do not hear electric vehicles approaching.

I've had my own experience with a hybrid vehicle in a shopping center parking lot. I realized I do rely on my hearing a great deal as I anticipate traffic hazards. Stepping off a curb and having a hybrid vehicle pass within a few feet of me made me realize the danger. We are so used to hearing a vehicle coming towards us before we see it that we are lazy about looking. Our electric golf car poses this same risk for pedestrians.

People are so hard to predict, especially pedestrians. We must operate our golf cars responsibly and think ahead. People may not hear us coming. It is important that we reduce golf car speeds in areas with pedestrian traffic. Assume everyone we see standing near our direction of travel will step out into our path. Golf car vs. automobile - automobile wins. Golf car vs. pedestrian - pedestrian loses ... and so does the golf car operator. Let's play it safe, and if we make a

mistake let it be one where we thought someone was going to step into our path but didn't. Always yield to the pedestrian. Never assume they see us and realize sometimes, "they never even heard it coming".

# CHAPTER 5

## Defenses Driving

I recommend that all golf car operators enroll in a defensive driving course for automobiles such as the one offered by the National Safety Council. Courses of this type help prevent accidents. Most insurance companies recognize the value of defensive driver training and will give insurance discounts to drivers who complete the course. Some insurance companies promote online courses.

There are many habits we can improve on that will help to prevent accidents. I have made a habit of approaching my golf car by walking around the entire golf car before I get in the operator's seat. This does several things; most importantly I began thinking about safety before my trip. I always look for objects around the golf car and visually check the condition of the tires for under inflation or damage.

When I sit in the operator's seat, I begin to check my safety equipment for good working order. I'll check the rearview mirror for proper adjustment and push on the brake pedal to see if I notice any difference from the last time I operated the golf car. I check the braking system as outlined in my owner's manual including a "rolling brake" check when I begin to move the golf car. I want to notice any problems with my brakes before I begin my trip, not when I need them to stop at an intersection.

As a responsible operator I always educate my passengers about the safety devices of the golf car. I will include the hazards that could be encountered during our ride. If something was to go wrong, I want my passengers to know what to do. I'll ask my passengers to assist me in watching for any hazards they might see while we are underway. I'll designate my passengers as my "co-pilots" and give them permission to alert me of any hazard they see that I might not have

seen, or be aware of. Yes, I give them permission to yell, scream or anything else it takes to alert me to any approaching danger.

I try to make it a rule never to look away from the roadway for more than one second. I avoid looking directly at my passenger when we are in conversation and remain focused on the task at hand, which is operating the golf car safely. I'm trying constantly to be aware of what lies ahead of me. I'm scanning the roadway anticipating any hazards I might encounter. I'm aware that most accidents take place at intersections and take special care as I approach them. I am just as concerned about how other people are driving as how I am driving. I always like to keep a good safe distance from other vehicles, objects, and pedestrians. Remember, defensive driving has a lot to do with looking at the right place at the right time.

Be aware of "blind spots" in your golf car and on the roadway. Trees, bushes, limbs, objects, curves, corners, buildings, and other vehicles cause dangerous blind spots. When proceeding through an intersection never just glance left and right, look and observe other drivers as they approach intersections. Expect the unexpected. Start the braking process when approaching a possible hazard. Be aware accidents sometimes involve multiple hazards.

Hold the steering wheel with both hands, one on each side of the wheel when operating your golf car. When backing use hand over hand placement (top and bottom) on the steering wheel. Be sure to look over your left and right shoulder before backing, along with using your rearview mirror. Be sure you have the shift control in the correct position! When you are releasing the parking brake, keep pressure on the brake pedal until you are sure it's safe to begin backing. You should hear an audible alarm when the golf car is placed in reverse. Do not operate a golf car if the reverse alarm is not working. Never disconnect the reverse alarm on your golf car. If you do not think the reverse alarm is important get in contact with me. I'll have a grandmother call you who puts on a prosthetic lower limb every morning.

She and her grandson were heading out to the grocery store one beautiful Saturday morning. She asked him to move the golf car that was parked behind her Cadillac. She walked between the front of the golf car and the back of her car as her grandson pushed down on the golf car accelerator pedal. The reverse

alarm wasn't working on the golf car and the shift selector was in the forward position rather than reverse. This is a very tragic story for a grandmother and her grandson. Did I convince you that reverse alarms are important? I hope I did.

Always use your turn signals to insure other vehicles on the roadway are clear about your intentions. If your golf car is not equipped with turn signals, guess what? This is the only time you can break the "golden rule" of no hands or arms outside of the golf car. Yes, use hand signals when turning if your golf car is not equipped with turn signals. Ask any old person for help – these used to be required learning for all drivers. Allow sufficient room to make your turns. Be aware that the majority of vehicle accidents occur at intersections. Did I already say that?

Be sure to set your parking brake when parking. Turn off your key and remove it from the switch. Put it in your pocket or purse when leaving the golf car. Want to know about another device that can secure your golf car? A bicycle cable type lock can secure your steering wheel by threading it through the spoke of the steering wheel and around the operator's seat back support. The cable will stretch across the operator's seating area making it difficult to return to your golf car and drive off without removing it. Are you interested why I mentioned this? The ignition key that fits my golf car also fits all the other golf cars produced by that manufacturer. You may want to check with your authorized dealer for your specific golf car and inquire about the security of your key and lock cylinder. There are replacements available that allow you to have a unique key.

If you need another tragic story, I have one about two teenage girls who took the family golf car out for a joy ride one night after their parents were asleep. The story involves serious head trauma. Do I need to say any more? Keep your golf car key on a key ring just as you do for your automobile, and keep it just as secure. Consider an extra safety measure to secure your golf car when it's not in use, like the cable lock or other devices available.

When beginning to resume your travels, be sure all passengers are inside the golf car and seated before releasing your parking brake. Look left, look right, look front, look back, and repeat as necessary. Take no chances. Remember most accidents are preventable and caused by operator error. I think I already mentioned that. Most importantly, remember to enroll in the Defensive Driving

Course as I mentioned at the beginning of this chapter, and complete it. You'll never regret it, you'll never say, "I'm sorry I took that course", but without it you may get in a situation where you never get to say "sorry" again. Did I make a point? I hope I did, and hope you sign the whole family up today.

## CHAPTER 6

### Safe Riding Strategy

As a passenger or operator in a golf car we need to adopt a strategy of “offense” as well as “defense”. We need to be prepared to protect ourselves and our passengers. Remember an injury to the head can be very serious and even deadly in any accident. Have you seen the stylish headgear the bicyclists wear? Don’t they look neat? Have you ever thought about adding that particular piece of personal protective equipment to your golf car experience? It’s a good idea. I have a friend who makes any young person put on that particular piece of personal protective equipment before beginning a trip in his golf car. The kids actually love it. He had the helmets painted the same color of his golf car so it becomes a matching accessory (I think that was his wife’s idea). One of our customers had us paint several helmets. One set of helmets represents their favorite college football team and another set is for their favorite pro team, complete with logos. During game day when other golf cars are cruising around flying their team flags, this couple sports around in their designer headgear. Sometimes smart people do smart things that make them stand out.

Check to see what type of personal protective equipment you might want to add to your golf car experience. Remember how important your vision is. Have you seen the safety glasses that are designed to go over prescription glasses? Ever notice the color of lenses on a pair safety glasses used on a firearm target range? Do you know why the lenses are that bright amber color? The color increases the ability to distinguish objects, especially under cloudy conditions. I don’t think you will go wrong adding personal protective gear to your wardrobe. In fact I think you should, are you surprised?

# CHAPTER 7

## On Road, Off Road

If we choose to take our golf car off road, the types and level of hazards change. When we start to talk about off road hazards I like to start off with a little story from my distant past.

As kids we got into the dirt bike craze and found a really neat place to ride. There were several large dirt hills and all types of terrain that was just right for the thrills we were seeking at the time. On a beautiful fall day my buddy and I was tearing through the woods heading for our first large thrill of a dirt hill. Our little 90cc bikes were wound tight. As my buddy topped the large hill I heard him let out a scream that exceeded the noise being made by the little dirt bike. It caused me to abort my hill climb and go around the massive pile of dirt. On the other side I found my friend lying on the ground in agony. What was left of his bike was battered against a thicket of pine trees. When I looked back at our dirt hill I realized what had happened. Since our last ride the land owner had removed the back side of the hill with a front end loader. My friend experienced an unexpected twenty foot drop when he topped the hill and had made a hard landing. Thank God his injuries were not serious. We learned a good safety lesson that day. If you choose to go off road, know your terrain and don't assume things are the same as they were the day before. If you top a hill, stop at the crest and be sure there is another side to that hill before proceeding. Did you know most golf cars are not recommended for road grades that exceed 25% of a level surface? That's 14° for math challenged people such as me.

In Chapter One we talked about braking instability in some golf cars as they proceed down an incline. This condition can develop into a roll-over scenario very quickly under certain conditions. The golf car is not designed to safely climb and go over steep hills, especially at an angle. Hilly terrain presents some unacceptable hazards and golf car use should be restricted in those areas.

We must remember that all vehicles have a particular center of gravity. If we maneuver too fast or too sharply, especially on uneven terrain, we risk roll-over. Golf cars that have been modified with lift kits and over-sized wheels and tires have a higher center of gravity, and are more likely to roll over than an unmodified golf car.

Loose gravel and loose dirt present hazards in off road travel. Excessive speeds in these types of conditions will be dangerous. Remember we want to use the golf car to get from point "A" to point "B" safely. We don't want to get to point "A" by golf car and to point "B" by ambulance. The golf car is not designed as a thrill ride and extreme dangers are present if we go looking for a thrill.

If you would like to see some good examples of what not to do with a golf car visit [YouTube™](#) on the internet. Type in "golf cart videos" and you will run across some foolish people doing very stupid things. There are obviously some thrill seekers who love golf cars. On the positive side, the site also contains some good content videos on golf car safety and maintenance.

Off road travel can be very enjoyable, but use good judgment and don't take risks. If you think what you are about to do might be risky, it probably is. Off-road travel in a quiet, electric golf car offers a fantastic opportunity to see some of nature's beauty others never get to see. I ride in an area close to where I live that is a private residential community development. It has paved roads but no houses yet. Many times I've come upon deer, turkeys, raccoons, foxes, and one time even a bobcat. Gee, those little golf cars are sure quiet. Enjoy the experience; just be aware of the off-road hazards.

# CHAPTER 8

## General maintenance

Repairs and maintenance to your golf car should be performed by qualified personnel. We recommend you use a factory authorized dealer for your repairs and general maintenance needs. We recommend you have a preventative maintenance program in place for your golf car. The following are some suggestions that can assist in your safety:

### **Electric Golf Car**

Read your Owner's/Operator's manual to decide if there are any services you may want to perform. Do not attempt to do anything to the golf car that you're not comfortable with, or have not received adequate training for, including all safety precautions. Let the professionals service your golf car or provide you with instructions.

Always insure the parking brake is set, the shifter is in neutral position, and the key is turned off and removed before performing any service. If you choose to service your batteries use personal protective safety equipment. A full face shield, gloves, and protective clothing are recommended. Be aware lead-acid batteries as found in a golf car, produce explosive hydrogen gas when the batteries are charging or discharging. A spark or any ignition source can cause batteries to explode. I've seen it happen, trust me on this one. Never smoke around the batteries. Use an approved battery filler if you plan on adding distilled water to batteries. In case of any contact with battery acid on skin or in eyes, flush with plain water for at least 15 minutes. Get more instructions from emergency medical personnel.

Here is what I do when charging my batteries. Before connecting the golf car to the battery charger I insure the parking brake is set, shifter is in neutral position, key is turned off and removed, charger is unplugged from the power source (wall outlet) , and charger is set to off position. Have you heard of “wheel chocks’? I use them for a good reason! I recommend you invest in a set to use them. I plug the charger into the port on the golf car first, then to the wall outlet, and then turn on the charger, following the manufacturer’s recommendations. When the charge is complete, I turn the charger off, unplug it from the wall outlet, and then unplug the charging lead from the golf car. Golf car batteries are “deep cycle” types which are designed to be recharged daily after use. They are not designed to be fully discharged and then recharged. They should be charged before they reach 50% discharge and preferably at 20% discharge. Be sure to only charge batteries in well ventilated area, to dissipate the hydrogen gas. I also thread the charging lead through the golf car steering wheel spoke and then plug it into the charge port on the golf car to prevent me from driving off with the charger attached. Yes, I have personally seen a man taking off in his golf car dragging his charger behind him, as I looked to see what all that noise was.

I believe the phrase “speed chip” has been mentioned. Do you really need a speed chip in your golf car? I have a friend with an electric golf car that he says will run over 55 mph. I’ll take his word for it. I’ve survived my foolish years, thank the Lord. I don’t need to revisit that time in my life. Let’s not put speed chips in golf cars. Do we really want that little golf car to go faster than it was safely designed to go? Let’s play it safe and not modify the things that adversely affect safety. Get an “*ooo gah*” electric horn instead (very popular in the Villages)!

### **Gasoline powered Golf Car**

Read your owner’s/operator’s manual services to decide if there are any services you may want to perform. Again, do not attempt to do anything to the golf car that you’re not comfortable with, or have not received adequate training for, including all safety precautions associated with the repair or maintenance. Have the professionals service your golf car or provide you with instructions. Be sure to store gasoline only in approved containers. Always shut engine off before fueling. Never attempt to add fuel while the engine is at operating temperature (hot), let it cool first. Never add fuel while indoors and please no smoking or open flames. Clean-up spills immediately. It’s a good idea to top off the fuel tank

before starting the engine. Be careful not to over-fill the tank. Be sure the gas cap is properly replaced after fueling.

Always apply the parking brake, set shifter in neutral position, turn the key to off position and removed key before performing any service. Never operate the golf car in closed in areas due to carbon monoxide danger. Never attempt adjustment to a speed governor on a gasoline powered golf car so it will go faster, just not a good idea. This modification may damage your engine and void any warranty you may have. Anyway we already decided not to modify anything that would affect our golf car safety. Good decision!

## CHAPTER 9

### What have we learned?

Our goal is to assist you in the awareness of hazards needed to operate a Golf Car safely. The Owner's/Operator's manual for your particular Golf Car/Utility Vehicle supersedes anything you have read in this book. We conclude this book with one of the many reasons the National Golf Cart Association started on its mission of safety education:

*The following is a news release from the University of Alabama at Birmingham's Center for Injury Sciences:*

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**Gerald McGwin, Ph.D.,**

Associate Director for Research at the Center for Injury Sciences and Professor of Epidemiology

- Golf cart-related injuries increasing
- Use up in neighborhoods
- Adolescent males have high injury rates

BIRMINGHAM, Ala. - Golf carts are becoming a popular means of transportation away from golf courses, and new research from UAB's (University of Alabama at Birmingham) Center for Injury Sciences says injuries associated with their use may be underappreciated, suggesting the need for the implementation of safety measures.

In findings published in the June issue of the Journal of Trauma: Injury, Infection and Critical Care, UAB researchers found that there were more than 48,255 golf-cart related injuries between 2002 and 2005, with the highest injury rates observed in males 10-19 years old and those over 80.

Golf carts are becoming a popular way to get around in some neighborhoods, particularly for adolescents and teenagers who cannot yet drive a car," said Gerald McGwin, Ph.D., associate director for research at the Center for Injury Sciences and professor of epidemiology. "A lot of people perceive golf carts as little more than toys, but our findings suggest they can be quite dangerous, especially when used on public roads."

McGwin says fractures and head trauma are among the most common injuries associated with golf cart-related accidents.

"Some communities encourage golf cart use as a primary means of transportation because of their low emissions, quiet operation and presumed safety," McGwin said. "There is little federal regulation and most states do not require operators to be of a certain age, use any sort of safety equipment, or obtain an operator's license."

McGwin suggests that safety standards are needed. Manufacturers and sellers of golf carts should be required to include safety education materials at the time of sale.

Due to the high risk of rollover and ejection, the use of helmets and seatbelts is recommended, particularly if the golf cart is driven on public roads. And McGwin suggests that developers should reevaluate the design of golf cart paths, addressing gradient, sharpness of curves and proximity to other hazards.

"Golf carts are an attractive transportation solution due to their low emissions and cost effectiveness when compared to traditional motor vehicles," McGwin said. "But more stringent safety standards should be applied to the design and use of golf carts, particularly those operated on public roads."

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# CONCLUSION

The need for Golf Car Safety awareness training increases as more golf cars are being used on public roads. As younger operators get behind the wheel of a Golf Car, the owner/operator has the responsibility to educate them. We recommend only licensed drivers operate a Golf Car, and children under the age of six years old not be transported in a Golf Car. A persons feet need to be able to touch the floor of the golf car. The increase of accidents and injuries are on the rise. The age groups of people most injured in golf car related accidents are the very young, and the very old. We do not want the injuries to approach what we are seeing today in the “four-wheeler” (ATV) off road users group.

We believe safety education hazard awareness will reduce the number of golf car accidents, injuries and deaths. The entire community of golf car users will need to assist in sharing the knowledge of safety hazard education to make a difference in lowering these numbers. In every way possible we will try to protect our families and friends. Educating them with what we learned will make a difference - **you** will make a difference.

*Dear Friends,*

*I want to thank-you for participating in this safety hazard awareness presentation by the National Golf Cart Association™. Keep your eyes on the road and your hands on the wheel. Make safety education your priority! Tell others the message of golf car safety!*

*Visit our web site at <http://www.NationalGolfCartAssociation.com> for more safety information. I invite you to join us as a Member and assist us in getting the message out.*

*The Golf Car is serious equipment and not a play toy!*

*Best Wishes,*

*Robert Edwards*

*Founder and*

*Executive Director*

*National Golf Cart Association*