WALKING WITH WILL

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GOLFER'S DETOX PROTOCOL

Reduce Your Toxic Load Before, During & After the Round

Golf courses are among the most heavily pesticide-treated landscapes in the US. A 2025 JAMA study found that living within 1 mile of a golf course is associated with a 126% higher risk of Parkinson's disease. This protocol is what I personally implement to reduce that load - before, during, and after every round.

WHY THIS MATTERS

Golf courses are maintained at an aesthetic standard that requires one of the highest pesticide applications of any managed landscape. In the United States, courses apply up to **15x more pesticide per acre than their European counterparts**, where many of these chemicals are banned outright.

126%	15×	2×
higher odds of Parkinson's living within 1 mile of a course (JAMA Network Open, 2025)	more pesticide per acre on US courses vs. EU courses	higher Parkinson's risk for those on groundwater near a golf course

The Primary Chemicals

- **Organophosphate pesticides** (chlorpyrifos, trichlorfon) - neurotoxic insecticides. Chlorpyrifos alone: 8,500+ lbs applied on NJ courses in a single year. Still legal in the US on turf. Banned from food crops.
- **Fungicides** (chlorothalonil) - comprise up to 80% of total pesticide use on US golf courses. Classified as a likely carcinogen.
- **Herbicides** (glyphosate, 2,4-D, dithiopyr) - applied to fairways, rough, and greens. 2,4-D is associated with non-Hodgkin's lymphoma in agricultural workers.
- **Synthetic fertilizers** - high-nitrate runoff contaminates groundwater; nitrates are converted to nitrosamines in the body, a class of known carcinogens.

The Mechanism - Why Parkinson's Specifically

This is not a vague correlation. The neurological mechanism is well-established. Compounds like paraquat and organophosphates:

- Disrupt **mitochondrial Complex I** - the first step of the electron transport chain, collapsing energy production in neurons
- Generate **reactive oxygen species** that preferentially damage dopaminergic neurons in the substantia nigra
- Accelerate **alpha-synuclein aggregation** - the protein clumping that is the hallmark pathology of Parkinson's disease

Why paraquat matters:

Paraquat is banned in the EU and 60+ other countries. It is still legal in the US and is one of the most widely used herbicides in agriculture. Its mechanism of Parkinson's induction is so well-characterized that it is the standard compound used to induce Parkinson's in laboratory animals.

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How You're Exposed on the Course

- **Dermal (primary)** - lower legs, hands, and forearms in contact with treated turf and dew. Early morning rounds are highest risk because dew reactivates surface pesticide residues.
- **Inhalation** - aerosolized pesticide vapors from turf, especially in warm weather when volatilization increases. Riding in a cart keeps you closer to the turf longer.
- **Incidental ingestion** - touching your face, eating on the course, drinking from course water fountains without washing hands.
- **Groundwater (for residents)** - the JAMA study found groundwater contamination was the single highest risk factor, exceeding direct course exposure.

None of this protocol eliminates exposure. The goal is load reduction - keeping your body's clearance mechanisms ahead of accumulation. Someone playing 2–3 rounds a week for 20 years is a different clinical picture than someone playing once a month. Stack accordingly.

BEFORE THE ROUND

The goal pre-round is to prime your liver's detox enzymes and get your antioxidant defense online before exposure hits. Take these 30–60 minutes before you tee off.

Liposomal Glutathione

Glutathione is your body's master antioxidant and the primary molecule your liver uses to neutralize and tag pesticides and other toxins for elimination (Phase II detoxification). Liposomal delivery bypasses the gut and gets glutathione into cells directly - standard oral glutathione is largely destroyed in digestion. Take on an empty stomach.

→ Quicksilver Scientific Glutathione Gold

NAC (N-Acetyl Cysteine) - 900mg

NAC is the direct precursor to glutathione. It replenishes cysteine, the rate-limiting amino acid in glutathione synthesis, and supports your liver's ability to process and clear toxins more efficiently. Take the night before or morning of the round.

→ Pure Encapsulations NAC 900mg

Cruciferous Vegetables with Your Pre-Round Meal

Broccoli, Brussels sprouts, and cauliflower contain sulforaphane and indole-3-carbinol, compounds that naturally upregulate your liver's Phase I and Phase II detox enzymes - the same pathways your body uses to process pesticides. This is food as medicine. Eat them, don't skip them.

The single most important pre-round question:

Ask the pro shop or superintendent: "When was the course last sprayed?" Avoid playing within 24–48 hours of an application. This is the highest-leverage behavior change in this entire document - more protective than any supplement.

ON THE COURSE

Exposure on the course is ongoing. The habits below reduce the amount that gets into your body in the first place - dermal, inhalation, and ingestion.

- **Wear long socks and pants when possible.** Primary dermal exposure is through your lower legs. Especially important in early morning rounds when dew is present - dew reactivates and concentrates surface pesticide residues.
- **Do not eat or touch your face without washing your hands first.** Incidental ingestion is a significant and avoidable exposure route.
- **Minimize unnecessary contact with turf maintenance equipment** - flags, rakes, ball washers. These surfaces concentrate pesticide residues.
- **Do not drink from course water fountains.** Groundwater near golf courses is a documented contamination vector. Bring your own filtered water.
- **Ask when the course was last sprayed.** Some states (California, New York, others) require courses to post spray notification signs at the clubhouse and on tee boxes. Look for them. If you can't find out, avoid playing within 2 days of a rainfall - rain immediately after spraying maximizes runoff and re-suspension.

State notification requirements:

Check your state's pesticide notification laws before your next round. Many states require 24–48 hour advance notice posting. If your course isn't posting them, they may still be required to provide spray records on request. Ask.

AFTER THE ROUND

Post-round is your clearance window. The goal is to stop ongoing dermal absorption immediately and then support your gut and liver in escorting what got in back out.

Shower Immediately

Shower as soon as you get home and wash your golf clothes separately from your regular laundry. Dermal absorption continues as long as pesticide residues are on your skin or in your clothing. This is the simplest and most impactful post-round action.

Binders - 30–60 Minutes Away from Food

Binders are compounds that bind to toxins in your gut and escort them out through your stool, interrupting the enterohepatic recirculation loop - the process by which toxins your liver has partially processed get reabsorbed

from the gut back into circulation. Take on an empty stomach, at least 30–60 minutes away from food and other supplements.

ZeoBind by BioPure (Zeolite)

Zeolite has a cage-like crystalline structure with a specific affinity for organophosphates and heavy metals. It is non-absorbable - it travels through the gut and exits with what it has captured. This is the most targeted binder for golf course exposure given the organophosphate load.

→ BioPure ZeoBind - Buy on Amazon

Enterosgel by Enteromed (Silica-based)

Enterosgel is a polymer of methylsilicic acid - a gel-forming silica compound with broad-spectrum affinity for environmental chemicals, organic toxins, and some heavy metals. Originally developed in Russia and widely used clinically in Europe for poisoning and chemical exposure. Particularly strong for general environmental chemical load.

→ Enterosgel - Buy on Amazon

Rotating both binders:

Either binder works on its own. If you want to be aggressive - regular golfer, living near a course, or just had a round within 48 hours of a spray - rotate or alternate both. They have different binding affinities and the combination provides broader coverage.

DAILY STACK - FOR REGULAR GOLFERS & THOSE LIVING NEAR A COURSE

If you play 2+ rounds per week, live near a course, or drink groundwater in a golf-course-dense area, the before/after protocol alone is not enough. The daily stack below addresses two goals: keeping your liver running clean so toxins do not accumulate over time, and protecting your nervous system against the oxidative damage driving the neurological risk.

Liposomal Glutathione or NAC - Daily

Keep your body's primary detox molecule topped up. You do not need both every day - alternate or stack based on what you can maintain. NAC is the more affordable daily option; glutathione is the higher-bioavailability upgrade.

→ Quicksilver Scientific Glutathione Gold | Pure Encapsulations NAC 900mg

CoQ10 or MitoQ

Organophosphates and related pesticides directly attack mitochondrial Complex I. CoQ10 and its mitochondria-targeted derivative MitoQ directly support the electron transport chain under oxidative stress. MitoQ is the higher-end, more bioavailable option - it concentrates specifically inside mitochondria rather than just circulating in plasma.

→ MitoQ 10mg - Buy on Amazon

Magnesium Glycinate

Neuroprotective, directly supports mitochondrial function, and is the mineral most depleted by both chronic stress and EMF exposure. The glycinate form crosses the blood-brain barrier and supports nervous system calm - relevant when your neurological system is under ongoing toxic pressure.

→ Pure Encapsulations Magnesium Glycinate - Buy on Amazon

Methylated B Vitamins

B vitamins are cofactors in both Phase I and Phase II liver detoxification, and methylated forms are required for the methylation cycle that processes and clears neurotoxins. If you have an MTHFR polymorphism (very common), unmethylated B vitamins from standard supplements are partially unusable.

→ Thorne Methyl-Guard Plus - Buy on Amazon

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Milk Thistle / Silymarin

Silymarin is the active compound in milk thistle with decades of clinical use for liver protection under toxic load. It stabilizes hepatocyte membranes, acts as an antioxidant in liver tissue, and supports regeneration of liver cells. For anyone with ongoing pesticide exposure, this is non-negotiable liver maintenance.

→ Thorne Milk Thistle Phytosome (Siliphos)

Clean Filtered Water - Non-Negotiable

The JAMA 2025 study found that groundwater contamination from golf course runoff was the single strongest risk factor for Parkinson's - stronger than direct course exposure. If you are on well water or municipal water in a golf-course-dense area, a reverse osmosis filter is not optional. It removes organophosphates, nitrates, heavy metals, and glyphosate that standard carbon filters leave behind.

→ AquaTru Classic Countertop RO - Buy on Amazon

This protocol is not a replacement for medical care. If you have concerns about pesticide exposure or neurological symptoms, consult a licensed healthcare provider. These are the tools I personally use and recommend as a holistic health practitioner - not a clinical treatment protocol.

PLAY SMART. PLAY CLEAN.

Your body keeps the score - protect it.

None of this protocol eliminates your exposure. The goal is load reduction - keeping your body's clearance mechanisms ahead of accumulation.

Someone playing once a month needs the basics. Someone playing 2–3 rounds a week for 20 years needs the full stack. Stack accordingly.

If this was helpful, share it with your golf crew. They won't thank you now. They will later.

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