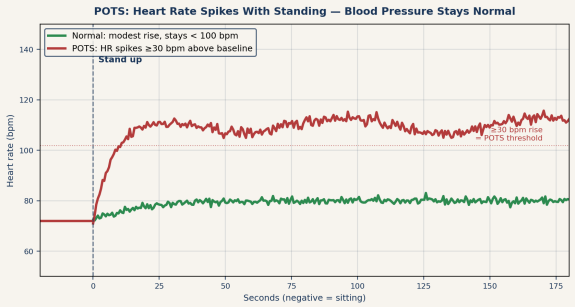
Understanding POTS

Postural Orthostatic Tachycardia Syndrome — Causes, Diagnosis, and How to Manage It

A treatable cause of racing heart, dizziness, and fatigue — especially in young women.



Online: https://go.riasalimd.com/pots-guide

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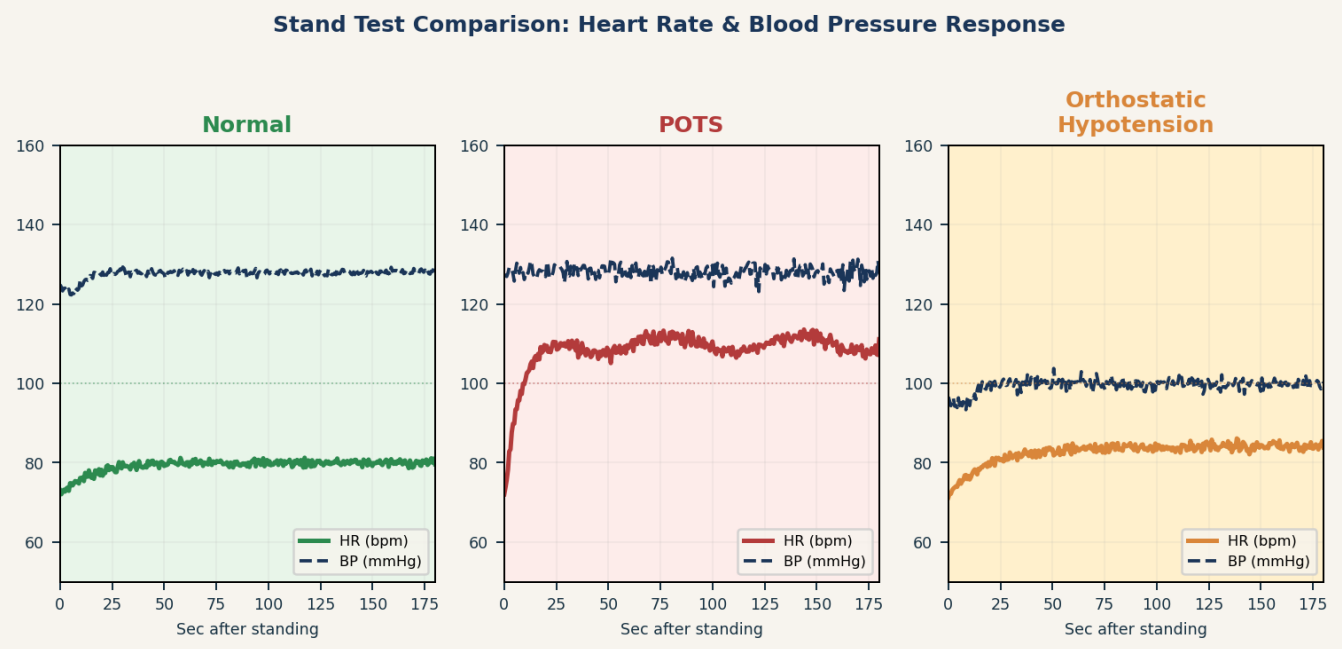
Names & Terms You Will Hear

Term	Meaning
POTS	'Postural' means body position. 'Orthostatic' means upright standing. 'Tachycardia' means fast heart rate. POTS = heart rate jumps when you stand up.
Postural orthostatic tachycardia	The full name for POTS. Used the same way. Both terms mean the same thing.
Orthostatic intolerance	Trouble tolerating upright posture. POTS is the most common type.
Hyperadrenergic POTS	A subtype. Standing causes a surge of adrenaline. This raises heart rate AND blood pressure. You may also feel tremor, flushing, or anxiety.
Neuropathic POTS	The most common subtype. Nerves fail to tighten leg blood vessels when you stand. Blood pools in the legs. The heart races to compensate.
Hypovolemic POTS	Driven by low blood volume. Less blood in the body means the heart beats faster to keep pressure up. Responds well to salt and fluids.
Dysautonomia	A broad term for any autonomic nerve disorder. POTS is one type. See companion guide: go.riasalimd.com/dysautonomia-guide
Tilt-table test	A test where you lie on a table that tilts upright. Heart rate and blood pressure are checked each minute. It is the best way to confirm POTS.

POTS vs. Orthostatic Hypotension:
In POTS: heart rate rises 30+ bpm on standing. Blood pressure stays normal.
In orthostatic hypotension: blood pressure drops 20+ mmHg on standing.
Both cause dizziness when standing. But they are different conditions. You can have both.
Tell your doctor if you have a racing heart AND dizziness on standing.

What Is POTS?

- POTS means your heart rate jumps 30 or more beats per minute when you stand up. For teens ages 12-19, the threshold is 40 bpm. Symptoms must last 3 or more months. Blood pressure does NOT drop — this is what sets POTS apart from orthostatic hypotension.
- When you stand, a pint of blood shifts into your legs. Normally, blood vessels tighten and heart rate rises a little. In POTS, the vessels do not tighten enough. The heart races to make up the difference.
- POTS affects 1-3 million Americans. It is 5 times more common in women. Most people are diagnosed between ages 15 and 50.
- POTS often starts after a viral illness (including COVID-19), surgery, pregnancy, bed rest, or a concussion. Post-COVID POTS is one of the fastest-growing forms.
- POTS is often found with joint hypermobility (Ehlers-Danlos syndrome), mast cell problems (MCAS), migraine, IBS, and autoimmune disease.
- The average wait for a correct diagnosis is 4-6 years. Many people are told it is anxiety first. POTS is a real physical disorder with measurable test results.



Stand test results: Normal — modest HR rise, BP recovers fast. POTS — HR spikes 30+ bpm, BP stays normal. Orthostatic hypotension — BP drops 20+ mmHg, HR rises modestly.

Subtype 1 — Neuropathic POTS (Most Common)

- Cause: nerves fail to tighten leg blood vessels on standing. Blood pools in the lower limbs. The heart races to compensate.
- Sign: heart rate rises on standing. Blood pressure stays normal or low-normal.
- Common triggers: viral illness, Ehlers-Danlos (loose connective tissue), bed rest.
- Treatment: salt and fluids, compression garments, exercise. Medications: midodrine or fludrocortisone.

Subtype 2 — Hyperadrenergic POTS

- Cause: standing triggers a large adrenaline surge. The body overreacts.
- Sign: racing heart AND rising blood pressure on standing. Also: tremor, sweating, flushing.
- Key point: blood pressure goes UP on standing — unlike most POTS types.
- Treatment: low-dose beta-blockers work best. Midodrine can make it worse. Clonidine is sometimes used.

Subtype 3 — Hypovolemic POTS

- Cause: chronically low blood volume. The body has less blood to work with. The heart races more on standing to maintain pressure.
- Sign: worst in the morning. Blood tests may show low plasma volume.
- Common after: long illness, COVID, poor fluid and salt intake.
- Treatment: aggressive salt and fluid loading. Fludrocortisone helps hold volume. IV saline works for acute flares.

Why It Matters

- Without a diagnosis, many people with POTS cannot stand for more than a few minutes. Work, school, and basic tasks become very hard.
- POTS is often called anxiety for years. The average wait for the right diagnosis is 4-6 years. Getting the correct diagnosis opens real treatment options.
- With proper care, 50-80% of POTS patients improve a lot or recover in 1-2 years. Exercise reconditioning is the most powerful long-term tool.
- Post-COVID POTS has grown rapidly since 2020. Early treatment helps prevent long-term disability.
- Without treatment, POTS gets worse as the body deconditions. This cycle can be broken with the right plan.

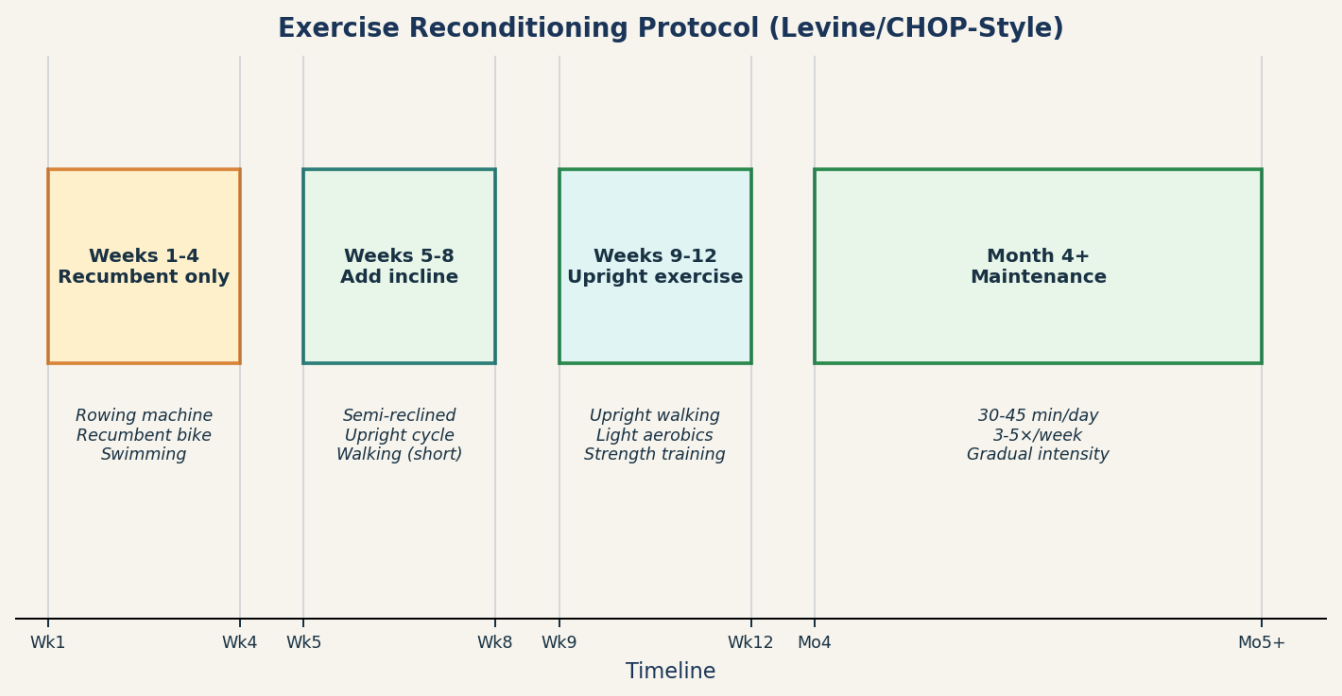
Risk Factors

Some patients are more likely to develop this condition. Knowing your risk helps your care team take extra precautions.

Risk Factor	Why It Increases Risk
Female sex, ages 15-50	POTS is 5 times more common in women. Hormone changes worsen symptoms. Peak onset is in teen and young adult years.
Recent viral illness or COVID-19	POTS can start after any viral illness. About 2-14% of Long COVID patients meet POTS criteria. The virus can damage autonomic nerves.
Prolonged bed rest or deconditioning	Even 2-4 weeks in bed can cause POTS. Blood volume and vein tone drop quickly with rest. Common after surgery, injury, or illness.
Joint hypermobility or Ehlers-Danlos	Loose connective tissue lets veins stretch more. Blood pools in the legs more easily. POTS affects 30-40% of people with hypermobile EDS.
Autoimmune conditions	Lupus, Sjögren's, and nerve damage from autoimmune disease can disrupt autonomic signals. Some POTS patients have immune markers in their blood.
Mast cell activation syndrome (MCAS)	Mast cells release chemicals that dilate blood vessels. This raises heart rate on standing. MCAS occurs in many POTS patients.
Post-concussion or head injury	Head trauma can disrupt the brain's control of heart rate and blood pressure. POTS from this cause may last months to years.

Treatment Options

- Non-drug steps come first. Fluids, salt, compression, and exercise are the foundation of every POTS plan. Many people do well with these alone.
- Drink 2-3 liters of fluid daily. Add 8-10 grams of salt per day (about 2 teaspoons). This builds blood volume and is one of the most helpful non-drug steps.
- Exercise reconditioning is the most effective long-term treatment. Start recumbent (rowing machine, recumbent bike, swimming). Slowly progress to upright activities over weeks 5-12 (see timeline below).
- Wear waist-high or abdominal compression garments (20-30 mmHg). Calf-only stockings are not enough for POTS.
- Medicines are added when non-drug steps are not enough. Options include beta-blockers, ivabradine, midodrine, fludrocortisone, and pyridostigmine. The best choice depends on your POTS subtype.
- Counter-maneuvers stop a POTS episode fast: cross your legs and squeeze hard, clench both fists, or squat briefly. These push blood back to the heart.



Levine/CHOP protocol — weeks 1-4: recumbent only (rowing, bike, swimming). Weeks 5-8: add incline. Weeks 9-12: add upright activities. Most patients see improvement by week 8-12.

Management ladder — always optimize non-drug steps first.

Step	What to Do	Goal	When
1 — Fluids and salt	2-3 L fluids/day + 8-10 g salt/day	Build blood volume	Start day 1; always continue
2 — Compression	Waist-high stockings or abdominal binder (20-30 mmHg)	Reduce blood pooling in legs	Day 1; wear daily while upright
3 — Exercise	Recumbent exercise 3-5x/week (row, swim, recumbent bike)	Rebuild blood volume and vein tone	Weeks 1-4 recumbent only; build up slowly
4 — Avoid triggers	Avoid heat, long standing, big meals, alcohol	Fewer flares	Always; track your own triggers
5 — Medicines	Beta-blocker or ivabradine (HR); midodrine or fludrocortisone (BP/volume)	Control HR or raise BP	Add if steps 1-4 are not enough

Comfort Measures at Home (No Medication Needed)

These simple steps support healing and ease symptoms. Use them alongside any medication your doctor prescribes.

- Raise the head of the bed 6-10 degrees. This reduces blood volume shifts overnight.
- Eat smaller meals. Avoid large carb-heavy meals. Big meals can trigger a POTS flare.
- Use cool showers or a cooling vest in hot weather. Heat worsens POTS.
- Avoid alcohol. Even small amounts lower blood volume and worsen pooling.
- Use a shower chair when symptoms are bad. Standing in a hot shower is a common POTS trigger.
- Plan hard tasks for the morning. Symptoms are often mildest early in the day.

Fluids and Salt — The Foundation

- Drink 2-3 liters daily. Water, electrolyte drinks, and broths all count.
- Add 8-10 grams of sodium per day (about 2 teaspoons of salt). Use table salt, salty snacks, electrolyte tablets, or bouillon.
- Drink 500 ml (16 oz) of water before getting up each morning. Blood volume is at its lowest after an overnight fast.
- In heat, during exercise, or when sick, increase fluids and salt even more.
- Skip this if you have heart failure, high BP, or kidney disease — ask your doctor first.

Compression and Exercise Reconditioning

- Garments must reach the waist or include an abdominal binder. Calf-only stockings do not work well — thigh and abdominal pooling is the main issue.
- Start recumbent: rowing machine, recumbent bike, or swimming. These raise heart rate without gravity pulling blood down.
- Weeks 1-4: 30 min of recumbent cardio, 3-5 times per week. Weeks 5-8: add semi-upright exercise. Weeks 9-12: add walking and light aerobics.
- By month 3: add light strength training (leg press, squats). Stronger leg muscles pump blood back to the heart.
- Symptoms may briefly worsen in weeks 1-2. Push through gently. If near-fainting occurs, go back to recumbent only.
- Goal: 45-60 min of exercise, 5 days per week by month 4-6. This is the strongest predictor of long-term improvement.

Counter-Maneuvers — Use During a POTS Episode:
Cross your legs and squeeze hard — pushes blood back to the heart.
Clench both fists and tense your arms — raises pressure in 15-30 seconds.
Squat down briefly — quickly restores blood flow to the brain.
These steps can stop a near-fainting episode when symptoms suddenly worsen.

Risks, Benefits, and Alternatives

Every choice has trade-offs. Use this table to start the shared decision conversation.

Option	Risks	Benefits	Alternatives
Salt and fluid loading (always step 1)	Avoid in heart failure or high blood pressure. Can raise lying-down BP in rare cases.	Builds blood volume. Reduces heart rate on standing. Effective in 60-80% of patients. Free and no prescription needed.	IV saline (for severe flares), fludrocortisone (keeps volume up with medication).
Compression garments (waist-high or abdominal binder)	Hot to wear. Must be put on daily. Calf-only stockings do not work well for POTS.	Reduces blood pooling in legs. Lowers standing heart rate by 10-20 bpm in studies.	Salt and fluids alone (less effective without compression), midodrine (drug option).
Exercise reconditioning (Levine or CHOP protocol)	Takes months. Symptoms may briefly worsen at first. Must start recumbent. Upright exercise too early makes things worse.	Best long-term treatment. Builds blood volume and vein tone. 50-80% of patients improve with steady effort.	Medications (faster relief, but do not fix the root cause), watching and waiting.
Low-dose beta-blocker (propranolol 10-20 mg)	Can cause fatigue. Lowers blood pressure. Worsens hyperadrenergic POTS if too high. Not safe in asthma.	Lowers standing heart rate by 15-25 bpm. Well-tolerated at low doses.	Ivabradine (does not lower BP), midodrine (raises BP instead of lowering HR).
Ivabradine	May cause light flashes in vision. Headache. Not for heart failure or slow heart rate.	Lowers heart rate without lowering blood pressure. Good when BP is already low. Works as well as beta-blockers for HR control in POTS.	Beta-blocker (more data), midodrine plus fludrocortisone (volume approach).

Option	Risks	Benefits	Alternatives
Fludrocortisone	May cause fluid retention, low potassium, and raised lying-down BP. Needs potassium checks. Avoid in heart failure.	Builds blood volume. Helpful for hypovolemic POTS. One dose per day.	Salt loading (milder, no drug), midodrine (raises pressure without volume expansion).
Midodrine	Raises lying-down BP. Do NOT take within 4 hours of bedtime. May cause goosebumps or trouble urinating. Three doses per day.	Raises standing BP and lowers heart rate. Works well in neuropathic and hypovolemic POTS.	Droxidopa (for nerve-related low BP), beta-blocker (HR control), pyridostigmine (mild option).

Common Misconceptions

Myth	Reality
POTS is just anxiety.	POTS has measurable, physical findings on tilt-table testing. The heart rate rise is real. Many people are told it is anxiety for years before a correct diagnosis. Anxiety can exist alongside POTS, but it does not cause POTS.
I should drink less fluid to calm my racing heart.	The opposite is true. The heart races because not enough blood returns when you stand. Drinking more (2-3 liters daily) and adding salt reduces the need for the heart to race.
Rest is best — exercise will make POTS worse.	Rest makes POTS worse over time. It speeds up deconditioning. Structured exercise starting recumbent is the best long-term treatment. Start slowly and build up.
POTS and orthostatic hypotension are the same.	They are different. In POTS, heart rate rises but blood pressure stays normal. In orthostatic hypotension, blood pressure drops on standing. The treatments differ.
Knee-high compression stockings will fix POTS.	Calf-only stockings do not help much. Blood pools in the thighs and abdomen. Waist-high stockings or abdominal binders work much better.
POTS is permanent.	Many people improve or fully recover — especially those with post-viral or teen-onset POTS. Recovery takes months to years with consistent exercise and care.
A normal ECG and echo mean there is nothing wrong.	POTS is diagnosed by the change in heart rate on standing, not at rest. A normal resting ECG is expected. Diagnosis needs a stand test or tilt-table test.

A real head-up tilt-table test — the patient is strapped in and tilted upright while heart rate and blood pressure are tracked. This is the objective test that proves POTS is a measurable physical condition, not anxiety. Image: NASA/Victor Zelentsov (public domain).

Possible Complications

Knowing what can go wrong helps you spot problems early. Most complications are uncommon, especially with treatment.

Where / What	What Can Happen
Exercise intolerance and deconditioning	Avoiding activity makes POTS worse over time. The body loses fitness and blood volume. Structured reconditioning breaks this cycle.
Fainting or near-fainting	Blood can pool away from the brain on standing. This may cause loss of consciousness. Falls from fainting can cause injury.
Brain fog	Less blood flow to the brain causes trouble thinking, memory gaps, and slow processing. This often gets better when treatment restores blood flow.
Sleep problems	Autonomic dysfunction disrupts normal sleep. Poor sleep makes fatigue and brain fog worse.
Fatigue	Fatigue affects 80-90% of POTS patients. It is often the most disabling symptom. Exercise and better sleep are the best treatments.
Social and work disability	Not being able to stand limits school, work, and social life. Effective treatment can restore function and quality of life.
Gut symptoms	Slow stomach emptying, nausea, bloating, and constipation are common. The gut is also controlled by autonomic nerves.

Points to Know

If you remember nothing else, remember these key points.

- POTS: heart rate rises 30+ bpm on standing — blood pressure stays normal. This differs from orthostatic hypotension, where blood pressure drops.
- Drink 2-3 liters of fluid and add 8-10 g of salt daily. This is the most important non-drug step.
- Start exercise RECUMBENT first — rowing machine, recumbent bike, or swimming. Upright exercise too early makes symptoms worse.
- Compression must reach the waist or cover the abdomen. Calf stockings alone are not enough.
- Cross your legs and squeeze, or clench both fists — these stop a near-fainting episode fast.
- Avoid triggers: long standing, hot showers, large meals, alcohol, and dehydration.
- Medicines supplement the lifestyle plan. They do not replace fluids, salt, compression, and exercise.
- Most people improve with the right plan. Recovery takes months, not days. Stay consistent.

When to Call Us - and When to Call 911

If you are not sure, call. We would rather hear from you twice than miss a real problem.

- Fainting or loss of consciousness — call us today.
- Heart rate above 120 bpm while sitting or lying down — call us today.
- Chest pain, shortness of breath at rest, or severe pressure — call 911.
- Sudden weakness on one side, slurred speech, or vision change — call 911.
- Symptoms getting much worse despite fluids, salt, and exercise — call us this week.
- Side effects from medication (leg swelling, visual flashes, trouble urinating) — call us.
- Depression or severe anxiety that limits daily life — call us. Mental health support is part of POTS care.

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Trusted Resources

The links below are the trusted resources Dr. Ali used to write this guide and that he recommends you visit for more information. Each is a clickable link in the digital version and a Short.io tracked URL on the printed version.

- Dysautonomia International — POTS - Leading advocacy organization for POTS patients. Clinical summaries, support groups, and physician-referral network.
- Cleveland Clinic — POTS - Comprehensive patient-friendly overview of POTS symptoms, diagnosis, and treatment from a leading medical center.
- Mayo Clinic — POTS - Detailed patient guide covering symptoms, causes, and management options.
- NIH MedlinePlus — POTS - NIH patient-facing resource with links to current research and clinical trial information.
- Syncope companion guide - Fainting and near-fainting — how POTS, vasovagal syncope, and orthostatic hypotension overlap.
- Orthostatic Hypotension companion guide - Blood pressure drops on standing — different from POTS but often discussed together. Causes and treatment.
- Dysautonomia companion guide - Broader autonomic nervous system dysfunction — POTS is one form.

Sources Used to Build This Guide

Every recommendation in this guide is grounded in one or more of the studies, guidelines, or trusted resources below. Short links are tracked so Dr. Ali can see which references patients are reading; nothing personally identifying is captured.

- 2015 Heart Rhythm Society Expert Consensus on POTS *[Guideline]*
  Defines POTS diagnostic criteria (HR rise ≥30 bpm, ≥40 bpm ages 12-19), subtypes, and management framework
- Dysautonomia International — POTS Patient Information *[Patient Org]*
  Leading patient-advocacy organization for POTS; treatment guidance and patient-voice framing
- Cleveland Clinic — POTS *[Patient Ed]*
  Authoritative plain-language overview; diagnosis and treatment sections
- Mayo Clinic — POTS *[Patient Ed]*
  Comprehensive patient guide covering symptoms, diagnosis, and management
- Levine et al. — Exercise reconditioning protocol for POTS (JACC 2005) *[Trial]*
  Foundational exercise reconditioning (Levine protocol) — establishes recumbent-start exercise as most effective long-term therapy
- Raj — The hypovolemic POTS: a distinct subtype (Circulation 2006) *[Clinical Review]*
  Subtypes: hypovolemic, neuropathic, hyperadrenergic POTS — clinical features and targeted treatment
- Sheldon et al. — 2015 HRS POTS Consensus Statement *[Guideline]*
  Full HRS consensus on POTS definition, evaluation, and treatment — primary evidence base
- Bourne et al. — Long COVID POTS (Nature Cardiovascular Research 2022) *[Research]*
  Post-viral/Long COVID POTS mechanism, prevalence, and autoimmune underpinning
- NIH MedlinePlus — POTS *[Patient Ed]*
  NIH patient-facing resource for trusted resources section
- Low et al. — Pharmacological treatment of POTS (Mayo Clin Proc 2022) *[Clinical Review]*
  Evidence review of beta-blocker, ivabradine, midodrine, fludrocortisone, pyridostigmine for POTS

About This Guide

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Reviewer note: Reviewed against Dysautonomia International, Cleveland Clinic, Mayo Clinic, and NIH MedlinePlus POTS pages. This guide adds: 3-panel stand-test comparison (POTS vs OH vs Normal), visual exercise reconditioning timeline, subtype explainers (hyperadrenergic/neuropathic/hypovolemic), management ladder table, and explicit 'tachycardia WITHOUT hypotension' distinction versus orthostatic hypotension.

Disclaimer

This guide is for educational purposes only and does not replace medical advice from your physician. Recommendations may not apply to every patient. Always follow the specific instructions of Dr. Ali and your care team. In an emergency call 911 or go to the nearest emergency department.

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