

For Knee Pain: The 5 Swaps at a Glance

Building strong legs when squats, lunges and step-ups hurt your knees. Print it — stick it where you train.

2.5×

standing up
out of a chair

3×

walking **up**
the stairs

3.5×

walking **down**
the stairs

Start here. That's your body weight going through your knee — measured inside real knee implants, not estimated. **Getting off the sofa already costs your knee more than most of the exercises you're afraid of.** The question was never *is load bad* — it's **which part of the bend, and how much. Bend deeper and two things happen:** your kneecap is pressed harder against the bone behind it, **and** your thigh bone and shin bone are squeezed together over a smaller area. And notice that going *down* costs more than going up.

The five swaps

	INSTEAD OF	DO THIS	WHY IT WORKS
1	Deep squats Full depth, to parallel or below	Sit-to-stand From a chair, bench or box at a height that doesn't hurt. Control the way down.	Kneecap pressure at the shallow end is about a sixth of what it is at the bottom of a squat.
2	Lunges Stepping forward, knee travelling over the toes	The long-step split squat Step out long , back foot on the floor, front shin upright. Hold on if you need to. And reverse lunges are easier on the knees than forward ones.	A longer step moves work off the knee and onto the glute — same movement, different place. And in a reverse lunge the loaded foot never moves, so there's no body weight to catch on a straightening knee.
3	Step-ups Stepping up onto a high step, and lowering yourself back down off it	Low step-ups only About four inches. Hold dumbbells and build the weight up progressively before you ever raise the height.	Going down costs your kneecap about twice what going up does. And the taller the step, the more it costs.
4	Avoiding the leg extension machine Because someone once told you it's bad for your knees	Use it — in the bent half Deep bend up to about halfway. Don't fully straighten. Remember, we squat in the straight half — the top half.	It loads the <i>opposite</i> half of the bend from a squat, and the top of the range is hardest on your kneecap. In a five-year trial against squats and leg presses, the machine group had less swelling and less pain on stairs and at night.
5	More exercises that bend the knees Adding more and more of them, and nothing above the knee	Hip and glute work Glute bridge, hip thrust, banded abduction, cable kickback, dumbbell RDL. Wall sits for the bad days.	Hip <i>plus</i> knee beats knee alone for kneecap pain. Your glutes keep your pelvis level on every step — weak there and you lurch, and the lurching can worsen knee pain.

How to run them — and how to test yourself

The one rule that carries you a long way

Add weight before you add bend.

Weight in your hands loads the muscle *without* asking the knee to bend further — so it's always what you add first. **On a sit-to-stand:** dumbbells before you lower the box — a *higher* box is *less* bend.

On a step-up: dumbbells before you raise the step — a *higher* step is *more* bend. The box goes opposite directions, but it's the same rule both times. **Weight or reps first — bend last, always.**

Range is the last thing you add, and the slowest. Once the knee is quiet, go a little deeper — every few weeks, not every session. If it complains, pull the range back.

2–3

of the swaps
you don't need all five

2–3

times a week
a full day off between

2–3

sets each
not counting a warm-up

10–15

reps per set
add weight when you're ready

The 30-second chair test

A kitchen chair, seat about **17 inches**, backed against a wall. Sit in the middle, feet flat, each hand on the opposite shoulder, crossed at the wrists — **no pushing off your thighs**. Back straight. Stand all the way up and sit all the way down, as many times as you can in thirty seconds.

12

early 60s

11

late 60s

10

70s

9

early 80s

8

late 80s

4

90+

Fewer than the number for your age is **below average** — that's your starting point, not a verdict.

Push off with your hands to stand at all? That's a zero. Write your number down, do these swaps for a month, then take the test again.

⚠ Stop the set right now — do not push through, *stop*

- × Pain that's **sharp** or **stabbing**
- × Something **catching**, like it's snagging inside the joint
- × The knee **buckling** or **giving way** underneath you
- × Pain that makes you **change how you're moving** to get away from it

Ache in the **muscle** a day later is soreness. Ache **inside the joint** is different. And importantly: **if this week your knees hurt more than last week, you've done too much.** Back the weight off, back the range off, build again. New swelling means the same.

Ready for the whole program?

These swaps tell you *what* to do. **Your First Strength Program** tells you how to put them together — the full plan for women over 50, and how to progress it week by week without guessing.

[Get Your First Strength Program →](#)

Swap it, don't stop it.

Health Yourself · Dr. Rachel Felber, MD · rachelfelber.com

General education only — not medical advice. If a doctor, surgeon or physical therapist who has examined you has told you not to do a movement, that overrides this guide completely. Don't train a knee that is hot, red and swollen, locked, unable to bear weight after a fall, or painful at rest.