



Phys Ed: Can Running Actually Help Your Knees?

BY GRETCHEN REYNOLDS AUGUST 11, 2009 11:59 PM



Lumifon.com/Getty Images



Phys Ed

An [article in Skeletal Radiology](#), a well-respected journal, created something of a sensation in Europe last year. It reported that researchers from Danube Hospital in Austria examined the knees of marathon runners using M.R.I. imaging, before and after the 1997 Vienna marathon. Ten years later, they scanned the same runners' knees again. The results were striking. "No major new internal damage in the knee joints of marathon runners was found after a 10-year interval," the researchers reported. Only one of the participants had a knee that was truly a mess, and he'd quit running before the 1997 marathon (but had been included in that study anyway). His 1997 knee M.R.I. revealed cartilage lesions, swelling and other abnormalities. In the years that followed, the knee became worse, showing augmented tissue damage and more serious lesions. His exam prompted the researchers to wonder whether he would have been better off persisting as a runner, because, as they speculate, "continuous exercise is protective, rather than destructive," to knees.



By Michele Monteleone | 3:09

Increasing Knee Stability

Athletic trainers Gene Schafer and Jason D'Amelio demonstrate four exercises that can help provide stability to the knee joint. By Michele Monteleone on August 11, 2009.



You can't be a runner past the age of 40, as I am, without hearing that running will ruin your knees, by which doomsayers usually mean that we'll develop "degeneration of the cartilage in the kneecap, which reduces its shock-absorbing capacity," says Ross Tucker, a physiologist in South Africa and co-author of the new book "The Runner's Body: How the Latest Exercise Science Can Help You Run Stronger, Longer and Faster." In other words, we'll be afflicted with arthritis.

It's not an unreasonable supposition; other sports have been linked with early-onset arthritis in knees. In a British study, almost half of the middle-aged, formerly elite soccer players were found to have crippling, bone-on-bone arthritis in at least one knee. Former weight lifters also have a high incidence of the condition, as do retired N.F.L. players.

But despite entrenched mythology to the contrary, runners don't seem prone to degenerating knees. [An important 2008 study](#), this one from Stanford University, followed middle-aged, longtime distance runners (not necessarily marathoners) for nearly 20 years, beginning in 1984, when most were in their 50s or 60s. At that time, 6.7 percent of the runners had creaky, mildly arthritic knees, while none of an age-matched control group did. After 20 years, however, the runners' knees were healthier; only 20 percent showed arthritic changes, versus 32 percent of the control group's knees. Barely 2 percent of the runners' knees were severely arthritic, while almost 10 percent of the control group's were. "We were quite surprised," says Eliza Chakravarty, an assistant professor at the Stanford University School of Medicine and lead author of the study. "Our hypothesis going in had been that runners, because of the repetitive pounding, would develop more frequent and more severe arthritis."

Instead, recent evidence suggests that running may actually shield somewhat against arthritis, in part because the knee develops a kind of motion

groove. A group of engineers and doctors at Stanford [published a study](#) in the February issue of The Journal of Bone and Joint Surgery that showed that by moving and loading your knee joint, as you do when walking or running, you "condition" your cartilage to the load. It grows accustomed to those particular movements. You can run for miles, decades, a lifetime, without harming it. But if this exquisite balance is disturbed, usually by an injury, the loading mechanisms shift, the moving parts of the knee are no longer in their accustomed alignment and a "degenerative pathway" seems to open. The cartilage, like an unbalanced tire, wears away. Pain, tissue disintegration and, eventually, arthritis can follow.

So, the best way to ensure that your knees aren't hurt by running is not to hurt them in the first place. "The biggest predictor of injury is previous injury," Tucker says, and one of the best deterrents against a first (or subsequent) knee injury is targeted strength training. "The hip stabilizers, quads, hamstrings and core must all be strong enough. As soon as there is weakness, some other muscle or joint must take over, and that's when injuries happen."

If you've injured your knee in the past, particularly if you've ever torn an A.C.L. (an injury that, in the Stanford gait study, was closely

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associated with misalignment and cartilage degeneration), talk to your physician before running. But for most runners, the scientific observations of Chakravarty will ring true. "What struck me," she says, "is that the runners we studied were still running, well into their 70s and 80s." They weren't running far, she says. They weren't running frequently. They averaged perhaps 90 minutes a week. "But they were still running."

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bert drass August 12, 2009 · 12:56 am

I am 69 yrs old and have been running regularly for 35 years. In 1980 I had crtilage removed from my left knee and in 1988 from my left. I continued running after a bit of rehab and in the last 20 yrs run numerous Marathons and other distance races. I know run 4 to 5 miloes every other day with an occassional 10K . I have absolutely no knee problems and hope to continue running and occassionally racing until it ends or I end.

ca August 12, 2009 · 4:29 am

I have a knee so weak that I can't run much more than a city block without feeling the twinge. So I don't run. I do, however, climb stairs and speedwalk hills for interval training. May not sound it, but I experience this regimen as low impact. Seems counter intuitive that I could dash up 150 flights of stairs without without stopping, but still can't run. Strange feet feat. I've never had an injury to my knees more serious than could be healed quickly with arnica gel or a thorough Topricin rub. I keep pumping them daily. I'm on my knees with thanks.

David J Fleiss MD August 12, 2009 · 6:01 am

The issue is weight, not running. The more you weigh, the greater the chance you will develop osteoarthritis as you age.

The control group members who developed arthritis were overweight, like much of the US population.

Runners weigh less than the average American. But so do serious tennis players, or for that matter vegetarians.

Yes, running burns calories, which helps control weight. But being a vegetarian also controls weight. Running is one way to remain slim. Running is not a panacea for healthy knees.

In more than thirty years of practice as an orthopedist, I've never seen a lifelong slim person with osteoarthritis of the knees unless they had suffered a serious injury, while osteoarthritis is usual in the elderly with lifelong obesity.

The key is to remain slim lifelong.

allan palmer August 12, 2009 · 6:04 am

I am 73 and run several miles a day as I have for many decades. About 6 months ago I experienced a pain in my left knee and saw an orthopedist. An x-ray revealed nothing and he prescribed physical therapy. At the same time he gave me an undated script for an MRI listing a possible meniscus tear.

After one PT session I had the MRI. The results showed a perfect knee without even a hint of arthritis. At that point I contacted a neurosurgeon I know and got a prescription for an MRI of my back. The radiologist report indicated nothing amiss to cause the knee pain. Fortunately this neurosurgeon asks for the MRI films to examine himself. He immediately saw a "problem" he said, with the L3, L4 discs. He prescribed a foramalin block which I had the same day. The next day I started running again totally pain free. I got an additional block 3 months later when some symptoms returned.

J.I. August 12, 2009 · 6:07 am

What a hopeful study! How about a follow up article on how to strengthen key muscles to prevent injuries during running?

PJTramdack August 12, 2009 · 6:08 am

The actual point of the article is anti-climactic: don't injure your knees in the first place and you can run for decades. Here are a few points not mentioned in the article: how much did the subjects weigh? What was their body-mass index? What was their strength to weight ratio? I wager that people blessed with elite runner physique, men who may average 5' 9" and 140 pounds or women 5' 3" and 105 pounds, without skeletal anomalies like over or under pronating can indeed run for years without damage.

What happens when you have, say, me, who at 5' 10" and 183 pounds (with 10% body fat) ran a 3:08 in 1981, but then who gradually added pounds up to 225 before quitting running after multiple injuries? The average person, and my stress here is on the word average, gains weight with age and wrecks that "balance" the article talks about.

The knee is a mechanical part with some regenerative qualities. Like any mechanical part, it has a warranty on its useful life or miles. At some point the warranty expires. I am sure there are sports medicine institutes that will assess your capability and potential as a runner and which can tell you if you are capable of running for decades, or not. On the other hand, I think you could save a bundle by looking at what it says on the scale, looking at yourself in the mirror, and measuring your body fat.

If you are a 50 year old man who weighs 140, you are 5' 9", run with perfect form, neither over or under pronate, and you have 12% body fat maybe you will be able to run for decades. If you WERE that person when you were 25 but now weigh 175, and have 17% body fat, and are showing signs of bow-leggedness I would say consider swimming as an alternative exercise.

Oh, and by the way, my personal experience is that one marathon or maybe two are fine. If you find yourself training for a third or fourth, you may be courting pain and disability down the road.

I am not sure articles like this are helpful for the average runner.

Sudha August 12, 2009 · 6:44 am

I am in my mid forties, and have been running for about 23 years now, six days a week, about 35 miles a week. I have not had a knee problem so far, and am incredibly agile on my feet and knees. I have been asked a million times how my knees haven't given way yet..

Now I have the answer.....

Ivis Bohlen August 12, 2009 · 6:58 am

How about some exercises for those who have already suffered knee injury or are developing arthritis? My knees hurt just looking at the exercises you recommend in the video.

nate August 12, 2009 · 7:03 am

As a fitness prof I have found most ppl have a strength imbalance btwn their quads and hamstrings, with the quad dominating to an extent that ultimately leads to on-going condition or injury. Train your quads less and your hams, calves and hips more in the weight room.

dbr in Ithaca August 12, 2009 · 7:10 am

The study should have included another group--those who spend a comparable time walking or on equivalent low-impact exercise.

Jim August 12, 2009 · 7:25 am

I do not believe that continuous running will not hurt your knee joints.

Camille August 12, 2009 · 7:25 am

Forget 40, as a runner over the age of 25, I am repeatedly warned that any running will damage my knees. I'm very happy to have this article to show the naysayers.

Even though there is a risk of injury from exercise, I believe that sitting a work desk all

even though there is a risk of injury from exercise, I believe that sitting a work desk all day is much worse for your body, mental and physical health.

Gerry August 12, 2009 · 7:27 am

This is me! According to the MRI, my meniscus is great.

WhoZer August 12, 2009 · 7:47 am

I would like to find out what the relationship between arthritis and "average" running is. The runners were marathoners and many, if not most, recreational runners complete nowhere near those distances. I'm not of a runner's build (5'5", 145 lbs) and I run far less than a marathoner (3 days per week, 2X around 3-4 miles, with a longer weekly run of about 12-14 miles, complemented with 2-3 days of stationary cycling, on flat Indiana terrain). I've never had a knee injury—in fact, my only "true" running injury (ankle twist) came about because I wasn't paying attention and tripped over a walnut on a dark morning run! Am I putting myself at risk by running? Am I helping myself? Can one develop this "groove" with less distance or is it actually the mileage that is the dominant factor? Interesting pilot study, but one that demands additional work.

Carlos August 12, 2009 · 7:47 am

I've found that the best "targeted strength training" for a sport is by doing the the sport itself, with intensity and increments appropriate to the level I'm at. This, coupled with my experience that times when I've gotten hurt running have been due to fatigue from over-training makes me skeptical of the advice quoted above

("one of the best deterrents against a first (or subsequent) knee injury is targeted strength training. "The hip stabilizers, quads, hamstrings and core must all be strong enough.")

Explanious Germanius August 12, 2009 · 7:58 am

I'd recommend running on dirt. I am one of those people with all the wrong running criteria, and I jog slowly, but at least on dirt I can bounce back day after day.

Julie.T. August 12, 2009 · 8:10 am

Hell no it tore up my knees no matter what I did to stop it

Peter August 12, 2009 · 8:15 am

Interesting stuff and great comments. As a 39 year-old ultra-marathoner, whose 5'2" 110 lb mother who is done running at 63 because of OA, I have wondered about how healthy it is to pile up the 50 to 80 mile weeks. My mom never had any significant injuries, and certainly has never been even remotely close to overweight has OA. So while being thin is likely protective for most OA, don't believe Dr. Fleiss that being thin is entirely protective of OA.

To me this article emphasizes the point that if you have knee pain when you run, then you should back off or stop. If there is no pain then by all means keep on running. Now, hopefully, there will be a prospective study on the even longer distance runners. My "n" of one study moves on.

Bill August 12, 2009 · 8:18 am

I'm 56 and have been running for about 40 years. My knees ached between runs when I was in my 20's so I assumed that I would be hobbled in later life. To my gradual surprise my knees don't ache any more now than they did then.

An important lesson I learned over the years is that long distance running makes my knees ache but augmenting it with intervals (speed work) at the track nearly alleviates it completely.

betsy August 12, 2009 · 8:23 am

I am not a marathon runner, but I jog a few times a week, and I find my knees are better when jogging is part of my routine, along with strengthening exercises. I thought I was just an oddball because everyone is always saying, running will "blow out your knees"

I always start having trouble with my knees when I do step classes or when I am not exercising enough in general.

Peter August 12, 2009 · 8:41 am

Brilliant comment Jim! Way to remain steadfast in the face of serious evidence to the contrary, without revealing a hint of the justification for your position.

Clodius Maximus August 12, 2009 · 8:42 am

Perfect balance, liveness, small of stature, and the agility of a cat may be helpful in being one of those inspiring aged runners, but it certainly isn't a requirement to run perpetually without knee damage.

I'm a mid-40's mesomorph (borderline "morbidly obese" in BMI-speak) who's run 30 marathons with under-pronation issues. Yet my knees are fine. Humans are marvelously designed to run long distances on uneven surfaces. So long as you keep doing that for a lifetime, almost everyone will enjoy healthier knees and a stronger heart.

Erica August 12, 2009 · 8:45 am

Like some of the other posters, I wonder about the weight/physique of the runners in the study. It seems like those that are likely to still be running for any extended mileage after decades are those that are naturally disposed to run in the first place. If you're naturally good at something, you're more likely to keep doing it or return to it again and again throughout your life. Without having read the study, I would guess that these are not people who are running solely as part of a forced diet and exercise regimen, but rather those that enjoy the activity because it comes naturally to them and has never caused pain or discomfort in the past. While it's interesting that their knees have not been damaged by extended years of pounding, I don't think the results can be extrapolated to the general population. Running, if it isn't a natural activity for a person, will not be performed in a sustainable way because improper form will lead to over-compensatory muscle use and injury.

PleaseFeedSatchmoHe'sStarving August 12, 2009 · 8:47 am

So, the best way to ensure that your knees aren't hurt by running is not to hurt them in the first place. "The biggest predictor of injury is previous injury," Tucker says, and one of the best deterrents against a first (or subsequent) knee injury is targeted strength training. "The hip stabilizers, quads, hamstrings and core must all be strong enough. As soon as there is weakness, some other muscle or joint must take over, and that's when injuries happen."

Hilary August 12, 2009 · 8:49 am

If any runners are looking for inspiration – you can read about Ruth Rothfarb – who started running to alleviate her arthritis pain at age 69. She ran her first race at age 75 and went on to run in hundreds of races and win world records in her age division. [//runningforfood.com/node/84](http://runningforfood.com/node/84)