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## The Food Lab: Perfect Boiled Eggs

Posted by J. Kenji Lopez-Alt, October 9, 2009 at 11:45 AM

**Note:** J. Kenji Lopez-Alt (of Good Eater) brought his analytical cooking expertise to us last week in his first installment of The Burger Lab. This week he starts another bi-weekly column, The Food Lab, dedicated to unraveling the science of cooking. Today, learn about what happens under the shell when boiling eggs and how to make the perfect soft and hard boiled eggs.


### Perfect Boiled Eggs Recipe

Want to go straight to the kitchen? Here's the recipe for Perfect Boiled Eggs.

I'd like to apologize in advance for the shameless, horrible egg puns that I'm inevitably going to *shell out* over the course of this story.

For the very first installment of The Food Lab, I thought I'd tackle one of the simplest, yet most vexing everyday challenges of the home kitchen: **perfectly boiling an egg.**

Nearly every basic cookbook offers conflicting techniques on how it should be done—start the egg in cold water, or gently lower it into boiling water; add vinegar to the water to lower its pH, or add baking soda to the water to raise it; cover the pot, don't cover the pot; use old eggs, or use new eggs, and on and on—but very few offer evidence as to why any one of these techniques should work any better than your average old wives' tale. Apparently, boiling is not...ahem...an *eggs*-act science.

The first few of these fairy tales were easy to banish with some easy tests.

### What Factors Matter When Boiling Eggs?

**Age of the Eggs**
"Old eggs are for boiling, fresh eggs are for frying," is the old chestnut. Well, it's true...to a degree. As anyone who's had fresh-from the hen eggs will tell you, they do fry up beautifully, giving you tall, tall yolks, and tight whites, and trying to peel a very freshly laid boiled egg is

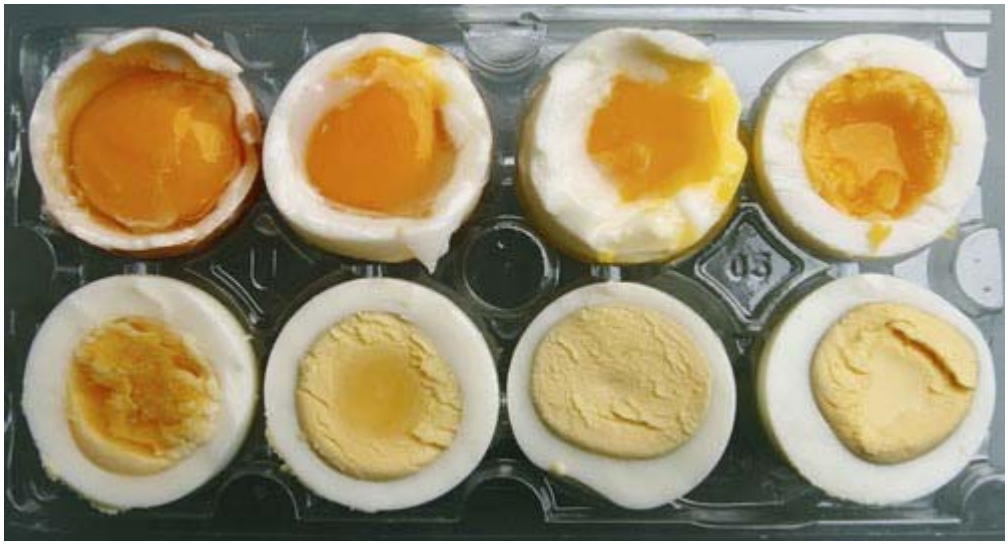
difficult—the inner membrane of the shell has a tendency to stick to the white, giving the peeled egg a pockmarked appearance. But these differences disappear within a few days after the egg has been laid. Since eggs in the supermarket can spend up to 30 days before they even hit the shelf, followed by a further 30 days before they hit their expiration date, the point is pretty much moot. So long as you don't keep your own chickens, you can boil eggs with impunity.

**pH of the Water**
It's true that over time, acidic liquid can dissolve the shell of an egg, and that alkaline liquid can both make the egg easier to peel, as well as boost that "rotten egg" aroma, but in the short period that an egg spends boiling, pH has little to nothing to do with how the egg cooks. Just use plain tap water; don't bother with vinegar or baking soda.

**Lid on, or Off?**
The only effect it has is on the heat retention and boiling point of the water. Since, as you'll see, we'll be cooking most eggs at below a boil, you don't want to use a cover.

Turns out, the only factors that really do matter when boiling an egg are **time** and **temperature.**

The photo below demonstrates **what happens when you lower an egg into boiling water.** The egg in the upper left corner was boiled for precisely one minute, the one directly to its right was boiled for three minutes, and so on down the line, at two minute intervals, until you finally get to the egg on the bottom right, which was boiled for 15 minutes.



It may seem obvious to state this, but it's such an important point in cooking that I'm going to say it anyway: when a mass is exposed to heat for a given period of time, a temperature gradient will form within that mass, with the area closest to the heat source being hottest, and the area furthest from the heat source being coolest. With very few exceptions, the temperature of a given spot in the food is proportional to the inverse square of its distance from the surface exposed to the heat source.

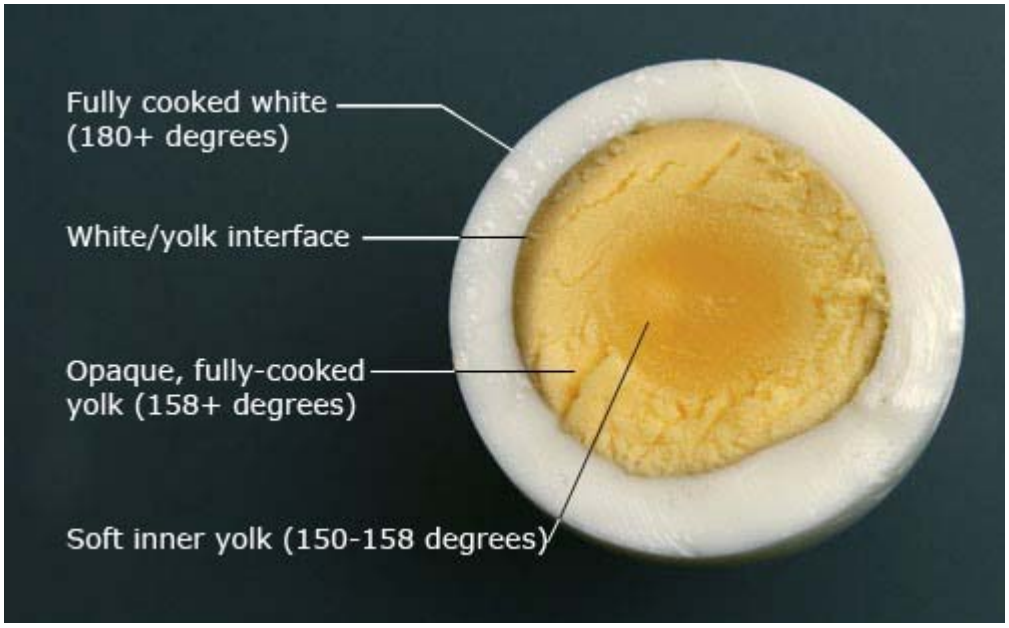
In other words, **the middle of your food is going to cook more slowly than the exterior**, and **the hotter the heat source, the bigger the temperature differential will be between**

**the center and the exterior**.

**The Temperature Timeline of Boiling an Egg**

Now, here's what happens as an egg white cooks:

- **From 30 -140 degrees:** As it gets hot, its proteins, which resemble coiled up balls of yarn, slowly start to uncoil.
- **At 140 degrees:** Some of these uncoiled proteins—called *ovotransferrin*—begin to bond with each other, creating a matrix, and turning the egg white milky and jelly-like (like the innermost layers of egg white in the 3-minute egg above).
- **At 155 degrees:** The ovotransferrin has formed and opaque solid, though it is still quite soft and moist (see the white of the 5-minute egg).
- **At 180 degrees:** The main protein in egg whites—*ovalbumen*—will cross-link and solidify, giving you a totally firm egg white (see the whites of the 7 and 9 minute eggs). This is very similar to the gunk that seeps out of the surface of overcooked salmon.
- **180 degrees-plus:** The hotter you get the egg, the tighter these proteins bond, and the firmer, drier, and rubbier the egg white becomes (the 11-15 minute eggs). Hydrogen Sulfide, or "rotten-egg" aromas, begin to develop. *Ick.*




Egg yolks, on the other hand, follow a different set of temperatures:

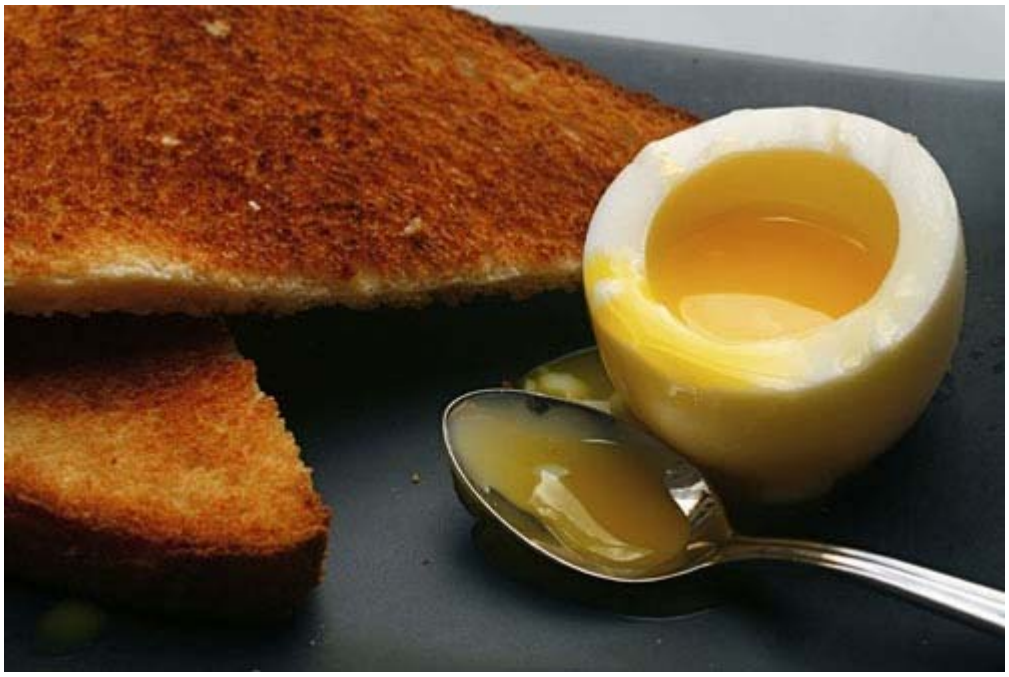
- **At 145 degrees:** They begin to thicken and set up.
- **At 158 degrees:** They become totally firm, but are still bright orange and shiny.
- **At 170 degrees:** They become pale yellow and start to turn crumbly.
- **170 degrees-plus:** They dry out and turn chalky. The sulfur in the whites rapidly reacts with the iron in the yolks, creating ferrous sulfide, and tinging the yolks.

The five degree temperature difference between when the egg white and the egg yolks firm is what allows chefs at fancy-pants restaurants to serve those "slow-cooked" eggs. They simply place the egg in a 140 degree water bath, wait about 45 minutes (by which point the egg has reached 140 degrees all the way from edge to center), then carefully crack them. The results is

a white that is soft and translucent but holds it's shape, and a yolk that is still completely liquid. *Beautiful.*

So far so good? Is this all going *over easy?* Now with all this background information dealt with, we can move on to something a little more *eggs*-citing: perfecting the boil.

**Perfect Soft Eggs**



The French have got all kinds of wild descriptions for eggs cooked to various degrees of doneness, but in American culinary terms, in the ideal soft-boiled egg, the **white should be completely opaque,** but not to the point of rubberiness (somewhere in the range of 155 to 180 degrees), and the **yolk should be completely liquid** (no hotter than 158 degrees). In this way, with each spoonful, you get tender bites of soft, velvety-smooth white, bathed in a sauce of glorious, bright golden, rich, flavorful yolk. These are the type of soft boiled eggs that'll get you *laid.*

> So long as your water never come above 180 degrees—at sea level, that's the quivering stage just below a simmer—you have no chance of overcooking

So long as your water never come above 180 degrees—at sea level, that's the quivering stage just below a simmer—you have no chance of overcooking and toughening the whites beyond the stage where ovalbumen just begins to set. Given that you're using **large eggs** (eggs are remarkably well-sized, and are very consistent from carton to carton), that the **eggs came from the fridge** (around 37 degrees), and that you're starting with a **volume of 180 degree water** large enough that it doesn't significantly drop in temperature when you lower your eggs into it (three quarts of water is enough for anywhere from one to a half dozen eggs), then the only other variable remaining is the length of time you cook it for.

After a couple cartons of eggs, and a whole mess of egg salad, and what initially seemed like an un-winnable *shell* game, I determined that time to be *eggs*-actly 6 minutes, delivering the soft-boiled beauty you see above. Since whites set at 155 degrees and yolks set at 158, you

have a tolerance of three degrees to work with, which translates to about 15 seconds in either direction. **Use a timer!**

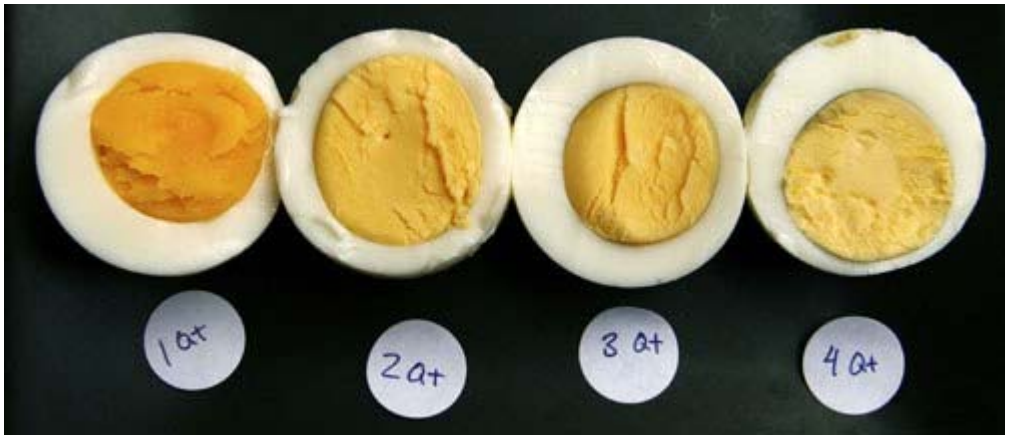
**Perfect Hard Boiled Eggs**

Hard boiled eggs are a little more complicated. The goal is to have both your white and your yolk at the point where they are opaque, but not rubbery. Again, if you are a fancy-pants chef with a thermal circulator, set it at 170 degrees, drop in your eggs, and just wait. At home, we don't have that luxury.

We already know that if we drop the eggs directly into boiling water, the exterior heats up much faster than the interior; by the time the very center of the yolk reaches 170 degrees, **the white and outer layers of yolk are hopelessly overcooked,** and smell worse than that guy in the elevator.

On the other hand, if you start the eggs in cold water, as the water gently heats up over the burner the eggs gently heat up right along with it, **greatly reducing the temperature differential between the interior and exterior** (remember the rule: the temperature differential between edge and center is proportional to the strength of the heat source).

This is nothing new. Many recipes instruct you to place the eggs in cold water, bring them to a simmer, shut off the heat, and wait for a prescribed period of time. However, as the photos below demonstrate, this doesn't really work consistently.

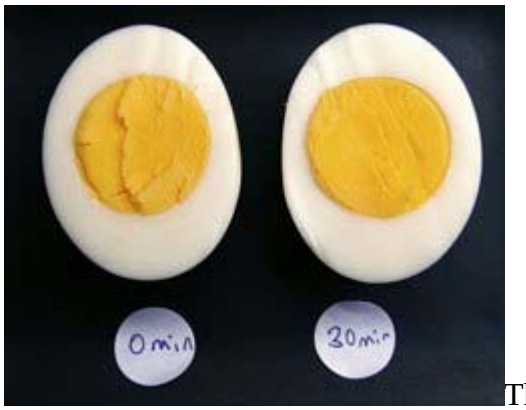



In each case, I placed the egg in a volume of cold water, brought the water to a simmer, shut it off, then left the egg in it for precisely ten minutes. As you can clearly see, depending on the initial volume of water (between one quart and four quarts in this case), the cooked eggs run the gamut from slightly undercooked, to totally overcooked! Taking the temperature of the water after 10 minutes confirmed the reason: the one quart pot had **dropped to around 145 degrees**, while the four quarts pot was **still well above 175**. No wonder it was overcooking!

> there is a precise volume of water I can use to hard boil an egg

So this is what I discovered: given that my burner is consistent in its heat output, given that I use the same pot each time, given that my tap water always comes out at around 40 to 45 degrees, and given that my apartment is at a relatively stable temperature year around, there is a precise volume of water I can use to hard boil an egg such that if I start it cold, bring it up to a bare simmer, then immediately shut off the heat, the water temperature will drop to below 170 degrees just as the central yolk temperature reaches 170 degrees, thereby guaranteeing that my egg will be perfectly cooked every single time.

After some more fiddling and a few dozen deviled eggs, I discovered this volume to be **1.5 quarts.**




The best part about using this method is that **even if you accidentally forget about your egg and leave it sitting in the water, there is no chance that it will overcook,** because by the time the egg is done (about ten minutes), the water temperature has dropped far enough that the egg will stop cooking. These two eggs were cooked in the same pot of water—one was removed after 10 minutes, while the other was left for a full thirty. As you can see, **they are both perfectly cooked**.

The unfortunate part of this technique is that if you use a range that is vastly stronger or weaker than one you are used to, or if you have a very odd-shaped cooking vessel that drastically alters the surface-area to volume ratio of the water, it will require some fiddling with. But for most practical purposes, this will deliver perfect hard boiled eggs every time.

Perfect eggs, but the *yolk*'s on me—all this egg boiling has left me *fried*.

**Continue here for the recipe for Perfect Boiled Eggs »**

**About the author:** After graduating from MIT, J. Kenji Lopez-Alt spent many years as a chef, recipe developer, writer, and editor in Boston. He now lives in New York with his wife, where he runs a private chef business, KA Cuisine, and co-writes the blog GoodEater.org.

56 Comments Favorite this! (31)
Tags: cooking, eggs, science, The Food Lab

**56 Comments:**

Seriously, all this reading on how to boil an egg? If you want a nice and creamy but firm yolk, put eggs in a small pot, just enough to cover the top. Bring to a boil. Once the water reaches a rolling boil, take the pot off the heat. Let it sit for 5 minutes for a firm/creamy yolk. 4 minutes for a runny yolk. 6minutes for a stiff but not overcooked yolk
dre2112 at 12:19PM on 10/09/09

Let us not forget, in this country of gigantic agri-farms and unfresh eggs, raw egg yolks can mean salmonella. Better only do soft-boiled eggs that'll get you laid with farmers market products.
SinoSoul at 12:29PM on 10/09/09

I think this is great, Thanks!
I wondered why I would get different results sometimes, as I use a 12 minute rest after it reaches a simmer, now I know it's the size of the pan. Pretty fascinating how they were the same after 10 and 30 minutes.
Now if only someone would give the perfect way to peel a hard boiled egg with consistent results everytime!
bobcatsteph3 at 12:33PM on 10/09/09

@bobcatsteph3
Peeling can be tough, but back when I was doing tests at Cook's Illustrated, I did one where we boiled 200 eggs and peeled them using various methods. Not a single one of them worked perfectly every time - some eggs just seem stubborn no matter what you do to them - but the most consistent method was to shock them in ice water immediately after cooking, then peeling them under cool running water.
Shocking them causes the whites to quickly contract, but since the shell walls are rigid, they don't contract in the same way. So the white pull away from the walls slightly, making it easier to separate them. Running water helps because it runs in between the membrane and the white, also helping to separate it. Finally, start by peeling eggs at the fat end where the air pocket is. It gives you a good access point so you can get the first bits of shell off without having to harm the egg underneath.

The only problem with the method is that you then have to reheat the eggs if you want to eat them hot!
When I was working at a restaurant many years ago where we sered soft boiled eggs on a dish (this was in the days before sous-vide makes it easy and foolproof to do), I used to cook at least twice as many as I needed, knowing that half of them would end up stuck to their shells and turn into family meal later in the day.
J. Kenji Lopez-Alt at 12:39PM on 10/09/09

ooooh the soft boiled egg looks perfect. I turned to poaching as my go-to to achieve the cooked white and liquidy yolk, but I'll have to give this at try.
joyyy at 12:40PM on 10/09/09

@dre2112 - I do the same thing. Works perfectly every time.
bitchincamero at 12:43PM on 10/09/09

I am really impressed that you conducted all these trials in your apartment kitchen. It's one thing to do this kind of thorough experimentation at Cook's Illustrated where I imagine there are plenty of hungry bellies willing to make sure failed trials don't go to waste, but to do this on your own requires either a limitless love for eggs or a steadfast commitment to sacrificing in the name of science. Did you get sick of egg salad and deviled eggs?
Tombolo at 12:50PM on 10/09/09

@dre2112,
That won't work correctly all the time. It's highly dependent on the size and shape of your pot, and how much water is in it.
arbeck at 12:56PM on 10/09/09

6 minutes for a soft boiled egg? mama mia The center might be soft-ish, but not soft boiled.
I put eggs in a small saucepan, cover with cold water and bring to a boil over medium high heat. When the water starts to bubble, I reduce the heat to a simmer and cook for 3-1/2 to 4 minutes. Then I drain, pour cool water over them to stop the cooking, quickly drain again and crack them open with the edge of a knife. Into a warmed bowl with a dab of butter, salt and pepper; toast on the side. Done.
CJ McD at 12:56PM on 10/09/09

@Tombolo
"Did you get sick of egg salad and deviled eggs?"
No, but my wife sure did!

(I pack her lunch every day and use it as an excuse to pass off as many failed experiments as she will stomach)
J. Kenji Lopez-Alt at 1:00PM on 10/09/09

As a research scientist I love this article. I always wanted to tinker in food science but it is a difficult field to find a career in..Bravo, I look forward to future features.
JessMS at 1:02PM on 10/09/09

@CJ McD
yep - 6 minutes might be overcooked at a simmer, but these eggs are cooked at a sub-simmer. 180-degrees, when the water is barely quivering. It ensures that the exterior of the whites

don't get too tough, and six minutes really does work (especially if you have a thermometer and a timer)!
That said - of course, if you have a method that gives you eggs to your liking, there's absolutely no reason to change anything about what you're doing. Any method that gives you results you like is a good method!
J. Kenji Lopez-Alt at 1:11PM on 10/09/09

Fantastic article!
Had a question - I tend to buy my eggs at the farmers market... as a result, they're not refrigerated, making the internal temperature higher.
Have you done any tests with such an egg?
For a soft boil, saying they rest at around 68 degrees, would that cut my time in half?
Thanks!
Dan
danieldelaney at 1:12PM on 10/09/09

I take it you missed this one by Tim Ferriss:
http://bit.ly/4i5CJN
The Wandering Foodie at 1:30PM on 10/09/09

Very good article. I'm not bad with hb eggs but my sb need some improvement. This should do it.
Thanks. Looking forward to more Food Lab.
@SinoSoul: You might get tastier eggs at the farmers market, but all eggs come from hens and are delivered by the same mechanism ie: out their bums. I have bought farmers market eggs that still had hen poop on them. That you think hand farmed are safer than factory farmed is simply wrong.
porchetta at 1:37PM on 10/09/09

What eggcellent article. Did you have to shell out for all the eggs. As altitude and type of pan make a difference it proves its not an eggact science. Altogether this item was no yoke.
Boy I feel better now!
Perhaps we all need to get out more!
wooythefoodie at 1:46PM on 10/09/09

@SinoSoul: I wouldn't worry about the egg yolks. The salmonella in any egg is on the shell and comes from exposure to the hen's digestive tract on its way out of the body via the cloaca. Add to that the fact that all of these cooking methods bring the yolk to at least 140 degrees and virtually all risk disappears
Wonderful article though, I really enjoyed reading the science of cooking eggs. And now I know why I've managed to undercook hard-boiled eggs before, apparently I used too much water in the pot.
toad3000 at 2:03PM on 10/09/09

Your visuals—especially the eggs sitting in a carton, cooked for increasing time periods—are fantastic! Thank you for this article. I look forward to reading more =)
Wan Yan Ling at 2:27PM on 10/09/09

Great article. Very informative. I'd really like to try out fancy-pants restaurant, slow-cooked egg method you mention. It must have been fantastic to work for Cook's Illustrated!

yayfood at 2:29PM on 10/09/09

@toad3000- actually egg yolks can have salmonella if the hen's ovaria is infected. Unlike egg white yolks don't have lysozyme to kill bacteria, so they can grow inside yolks.
However, in agri-company mass produced eggs the possibility of salmonella-infected eggs are like 0.00001% (don't remember exactly how many 0s), so you have to be pretty unlucky to get sick from eating runny yolk. I think nobody knows the % of infected eggs from small farms.
hmw0029 at 3:38PM on 10/09/09

That article was eggsceptionally written. And the photo of the perfectly cooked egg with the liquid gold yolk and firm white was some seriously sexy food porn.
juliebugsmama at 3:45PM on 10/09/09

@J. Kenji Lopez-Alt, thanks for the peeling tips. as a somewhat obsessed fan--only had 1 failed recipe from the ATK company in 4 years out of hundreds I've made--I get pretty much all of my info from the ATK knowledge bank and follow those peeling tips, as you said, sometimes it just doesn't go as planned, and I also make a few extra, though my duds go to two very happy dogs.
I also have muscular dystrophy that affects my dexterity big time, and makes it hard for me not to throw difficult hard boiled eggs or potatoes I'm trying to peel across my kitchen at times!
I can picture your wife opening her lunch box saying "Eggs again! hopefully she has some good swap buddies where she works!"
Again, thanks for the article, tips, and yes, the pics do indeed rock!
bobcatsteph3 at 4:08PM on 10/09/09

how about your guys' link: http://www.kjemi.uio.no/publikum/popularkjemi/egg/
why such a long article when it can be summed up in a flash app? scientifically researched and all?
attgig at 4:59PM on 10/09/09

Amazing pictorial analysis => A+
jojoprice at 7:43PM on 10/09/09

I was hoping this article would address the green yolks I would get when I either overcooked the eggs or didn't shock them immediately after cooking them.
Also, to the person who used to work at ATK -- did you ever use the technique of blowing the egg out of its shell? It didn't always work for me, but it was fun trying it out. Admittedly, I won't use that technique if I'm making eggs for a public gathering.
Finally, I thought salmonella came from the shells, not from the yolks?
louanne at 12:19AM on 10/10/09

First i see these kind of think .I could imagine this
Dazzle Smile Pro at 6:20AM on 10/10/09

One thing you didn't analyze - supermarket eggs vs direct from farmer free range organic eggs. The eggs I use.
Shells on the supermarket eggs are much thinner than the eggs I use. That has some effect on heat transfer, but even more of an effect on peeling!
Frondly, Fern

FernWise at 9:53AM on 10/10/09

As a former scientist, I'm thrilled to see the detailed research that went into this - eggcellent job! I anxiously await your future hypotheses and methods.
finewinendine at 5:10PM on 10/10/09

This whole article articulates in such details on how to perfect the texture of the eggs. But it didn't mention about a big factor - how to remove the sulfuric taste of the egg yolk!
I watched Chef Pepin's cookshow once he taught the audience an important trick: to poke a tiny hole at the broad end of the egg (using a push pin or similar) before boiling. With this you can effectively eliminate the sulfuric smell and taste of the egg yolk, and simultaneously remove the greyish green "rim" around the yolk (which you can see between the egg white and the egg yolk from the pictures above).
This method has work perfectly for me! And these small details are what make a perfect egg!
kobetobiko at 3:17AM on 10/11/09

As the previous post alluded to, Chef Jacques Pepin's simple method will always yield perfect hard boiled eggs without a rubbery white, or the dreaded black ring around the yolk.
However, there is a little more to it.
Poking a tiny hole in the end with a push-pin allows the air pocket to escape, so the egg does not crack. What you also must do is shock the boiled eggs in ice water for several minutes. This forces the sulfer to pass though the shell by osmosis and escape.
This is THE recipe for perfect hard boiled eggs:
Pierce the large end of each egg with a push-pin. Place the eggs in a saucepan with a generous amount of water. Bring to a boil, then reduce heat to a low simmer. Cook 10 minutes. Drain water, and shake pan to crack eggshells. Submerge eggs an ice water bath to cool completely (15 min.) Peel under running water.
salpico at 8:38AM on 10/11/09

J-Kenji- I've usualy done what salpico does - (Julia's instructions, as I recall), but I've been having trouble lately getting the eggs to peel. I notice that he does as do I, and cracks the eggshells before submerging in ice water (and I've put a hole in the large end), whereas you seem to suggest that you let it shock in cold water *before* you crack it. Does this make a difference in whether the membrane pulls away?
lemonfair at 11:46AM on 10/11/09

So many great memories of soft-boiled egg on toast at the kitchen table on Saturday mornings. Thanks for the article! Got me all ramped up to bake some bread and boil some eggs. Damn my electric stove for temp control, but it still worked out pretty well.
kitchengeeking at 1:03PM on 10/11/09

"Any method that gives you results you like is a good method!
J. Kenji Lopez-Alt at 1:11PM on 10/09/09"
Indeed! :o)
CJ McD at 1:30PM on 10/11/09

Fantastic article. I just tried the method for hard boiled eggs and it was amazing. I didn't know that my hard-cooked eggs could ever come out with a bright yellow, non-smelly, slightly creamy yolk and no green anywhere!
I may have to share this recipe with my mother. She's going to ask me "What's wrong with my

eggs?!" until she tries it for herself, I'm sure of it.
urban bohemian at 3:46PM on 10/11/09

Great article! I have always loved cooking shows that are educational in this manner. The incremental deviations were informative. I look forward to more!
Cassaendra at 8:39PM on 10/11/09

@lemonfair-
Pepin suggests cracking the eggs before cooling, as opposed to afterwards. I have done it both ways, and don't see a big difference.
The trick is to peel the eggs under running water, which makes it easier to separate the membrane and the shell from the egg.
salpico at 10:20AM on 10/12/09

We spent about 2 hours of our family vacation time in August discussing this very question, followed by heated back-and-forth e-mails after we returned home. The battle revolved around whether or not to put salt in the water, how long to cook, and whether to add the eggs to boiling water or not. We were all wrong, but as usual my mother was closest to the right answer.
Thanks for helping settle the dispute!
cathelou at 11:05AM on 10/12/09

re: farm fresh eggs vs. factory...it's not the chicken poop on the egg that you have to worry about (although, yes wash it with a warm soapy scrubby) it's the fact that mouse and rat poop get into the chicken feed at the factories (more bulk feeding, more feed laying around, more mice/rats to worry about) and then the chicken's eating that causing the salmonella. When the feed is stored properly and chickens fed properly, this doesn't happen nearly as much. Small farm chickens are usually healthier, usually getting sun and a variety of vegetable (grass, weeds) and meat (worms, bugs) products in their diet.
A healthier chicken means a healthier egg.
Brooklynfarmboy at 1:50PM on 10/12/09

I think you should do part 2 of this in a high altitude location. I've been working on getting it right for about a year and a half now, and still don't have a foolproof way. The again, I'm not nearly as scientific about it as you are.
Embackus at 6:13PM on 10/12/09

In Jaque Pepin's PBS techniques video he does and explains all this, even preventing the inner green color from appearing...wonderful and quite a few years old. And real simple to do and follow.
No need to re-invent the wheel, or boiled egg...just go to your local library and/or find Jaques DVD.
tyronebcookin at 9:49PM on 10/12/09

@Embackus - indeed. I just tried the soft-boiled per the above method with the water hitting 187F for 6 minutes ... and they resembled something between the eggs above between 1 and 3 minutes. I pouted, tossed them down the disposal, and fried two more sunny-side up for dinner instead. If I could get a dedicated egg-shelling slave I'd be happy to do a high-altitude test.

joyyy at 11:55PM on 10/12/09

Just a thought but if you have an oven with digital control of the temperature, couldn't you use that to cook your eggs. Set the oven to 140F/155F/170F then add an oven-proof bowl with cold water and the eggs in it and leave it. Eventually, the eggs will reach the right temperature all the way through for the style you want. Anybody with a Gaggenau BO270 or similar out there willing to give it a go?
braciole at 8:27PM on 10/13/09

Very nice! Geeky and cheesy...reminds me of my husband, who I adore.
FoodMayhem at 3:06PM on 10/14/09

I also like the systematic approach you've presented -- especially the influence of the cooking water volume. Others have already mentioned possible variables that apparently weren't considered (initial temperature of the egg, shell thickness, etc). Previous comments have brough up Pepin's riff on boiled eggs. I remember him also saying that he sometimes gauges a restaurant by its ability to properly cook a HB egg (especially in terms of the dreaded green ring).
Confession time: fueled by a desire for a precise cooking method and innate laziness, sometime ago I bought a Krups egg cooker. They're inexpensive and do a pretty darn good job at hard, soft and medium boiled eggs. Anybody else use one?
Cheers!
Frank Bascombe at 5:23PM on 10/14/09

J. Kenji Lopez-Alt, I salute you.
mscommerce at 6:42PM on 10/14/09

I find eggs much more likely to crack as a result of rapid change in temperature when taken straight from the fridge and added to boiling water. Adding salt draws out some of the liquid in the egg, so that it is less likely to crack.
Oddly, two factors that in my experience make a significant difference are not mentioned: height above sea level and weather (the higher and rainier, the lower the boiling point of water, and the longer it takes for eggs to set.)
mynah at 9:11PM on 10/14/09

When I was a brunch cook in Greenwich Village, peeling HB eggs was a snap. I shocked the eggs in ice water, then cracked the shell as I rolled the egg away from me. As the egg rolled the shell continued to crack away from the egg. Then I directed a stream of cold water underneath the shell to help separate egg from shell
I never cooked any egg unless it was at warm room temperature, they never ever stuck to a pan.
When I poached eggs I warmed them first in hot water to prevent the egg going everywhere. Lastly, before introducing an egg to the poaching pan, make a gentle whirlpool around where you intend to place the egg. This to give it shape. Then slide the egg in as close to the surface of the water as possible.
I did not notice where you mentioned the importance of egg temperature before cooking.
mymymichl at 10:34PM on 10/14/09

Sorry, but this is way to much info for a lonely egg. I just want to eat it, and frankly I don't care if its not "perfect" and I doubt if I could even tell the difference.

dmcavanagh at 12:59PM on 10/17/09

Thank you, thank you! This was egg-citing to read because being a food nerd, I did always want to know egg-xactly how to boil the perfect egg. So thank you for shelling out this info!!!
Jbout at 2:10PM on 10/17/09

Ah....why am I only now finding this site??? The first article I read is the best thing since my Food Science class in culinary AND I find that it references the chef I admire most! I am ova-ly eggstatic! This has been worth the hunt...Knowing the whys and hows only make us better at what we love doing most.
pateberry at 3:02PM on 10/17/09

I tried but could not get the "perfect soft-cooked egg" by placing an egg taken straight from the fridge into 180F water, despite meticulously maintaining the water bath at eggsactly 180F for the six minutes the egg was immersed. The egg was considerably undercooked, with the whites fairly liquidy. I'm going to try egg-en.
Lorenzo at 3:20PM on 10/17/09

I love this article! I've always thought I was an idiot since every time I boil eggs (I'm a hard boil-type), there is always something wrong with them. Now I know why! Soft boiled eggs look fascinating, but runny yolks gross me out big time.
darkchoco at 11:07PM on 10/17/09

We did an entire series on "how to eggs" back in July. From getting the basics down we moved the egg out of its normal breakfast role into dinner as well as methods were really fool proof, we tried and tried until, well, perfect! http://www.chezus.com/?s=incredible+egg&x=0&y=0
ChezUS at 10:56AM on 10/19/09

I've been doing it the way that Sara Moulton mentioned on her show many years ago - put the eggs in a saucepan covered with water. Bring it to a boil, not a hard boil. Turn off heat. Cover and let sit on a cold burner for a specific amount of time (I think she said 13 minutes but I do it for 16 minutes).
Remove carefully. Crack. Peel.
I find that if I crack them a bit and then refrigerate for awhile, they peel much easier.
So I am not really boiling per-say. This way I never over-boil, I never get a green line around the yolk, and I don't get that horrid sulphur smell you get from over boiling. Works well every time for me.
RisaG at 4:11PM on 10/19/09

I will beg to differ on the instructions given here.
You *can* have more control and reduce the variables involved in cooking your eggs. First of all, starting with cold eggs right out of the fridge is a mistake. You are maximizing the temperature difference between the egg's starting temperature and its final temperature. You will have much more control if you warm the eggs first. I place them in a bath of hot tap water for 10 minutes while I heat my water.
Secondly, I place the eggs directly into boiling water. The reason I put the eggs directly into boiling water is that waiting for a boil is a "soft target". What you consider a boil or a simmer could be as much as a minute different from someone else.
Lastly, I stop the cooking after a prescribed period of time by pouring off most of the hot

water and replacing it with water and ice.
In summary: 1) I reduce the temperature change that will be required from the starting point of the egg to the end point of the process by warming the eggs up. 2) I avoid soft milestones by placing the eggs directly into boiling water at the beginning of the cooking process. 3) I stop the cooking (and improve the peel of the egg) by using an ice wash at the end.
BTW, if you want hot eggs, pull them out after only 10 or 15 seconds. The ice water will have already improved the peel by cooling the membrane and surface of the egg without cooling the inside of the egg. You can even peel the egg most of the time before the heat rebounds and makes the egg too hot to hold. A neat trick!
AlanX at 10:03PM on 10/23/09

I love the scientific approach to the art of boiling an egg. However, I am surprised the author did not mention the temperature of the egg going into the water. Were his eggs right out of the refrigerator (I don't thing so) or were they at room temperature? This is an important consideration and I am surprised that it wasn't mentioned!
Rogerdob at 12:20PM on 10/24/09