

# How Fish Oil & Omega-3s Can Help Reduce Headaches | Dr. Andrew Huberman

What I'd like to discuss next I find extremely exciting Why Well what I'm about to describe is a compound or I should say a set of compounds that are available over the counter that have been shown to be very effective in reducing the frequency and intensity of headaches and not just one kind of headache but multiple types of headaches So what I'll describe has been shown to have significant effects in reducing the intensity or frequency of tension type headaches migraine type headaches as well as hormone type headaches that are related to the menstrual cycles that I described earlier Now there are a lot of data centered around this general topic but I'm gonna focus on three main papers What I haven't told you yet of course is what is the compound that I'm referring to What is this over the counter compound Well it turns out this over the counter compound is not just available over the counter it's also available in food So it turns out that nutrition can have a very strong impact on the frequency and intensity of headache Although supplementation with this particular compound can accomplish the same thing as well What I'm referring to here are omega three fatty acids Many of you are probably familiar with Omega three fatty acids These are fatty acids that come in the form of so called EPA and DH A and Omega Three fatty acids are commonly distinguished from the so called omega six fatty acids Omega six fatty acids come in a bunch of different foods and they of course can be supplemented as well Omega three fatty acids come in a bunch of different foods and can be supplemented as well Common forms of omega three fatty acids or I should say common sources of omega Three fatty acids in foods include fatty ocean fish including salmon salmon skin sardines anchovies things of that sort Common sources in supplement form are so called fish oil capsules or liquid fish oil Again omega three fatty acids and almost always when we're talking about omega three fatty acids we're talking about a combination of epa and DH A But really it is the quantity of epa omega three fatty acids that seems to be the most impactful for the sorts of health metrics that we're gonna talk about in a few minutes Now with respect to Omega six fatty acids the most typical food sources of Omega six fatty acids are seed oils I know nowadays seed oils have become quite controversial I've given my stance on this in a uh prior podcast but I'll just repeat it for those of you that haven't heard it I am not of the belief that all

seed oils are bad that they're all inflammatory that they are killing us or making us sick that they are the major cause of metabolic dysfunction et cetera. However, I think it is very clear and I learned this from Doctor Lee Norton when he was a guest on this podcast and taught us all about nutrition in great depth. I highly recommend that episode if you're interested in nutrition that people are consuming a lot more oil generally. And a lot of those oils that people are consuming more of nowadays include a lot of the so-called omega six fatty acids and a lot of those oils are seed oils. The particular omega six fatty acid that's going to be relevant for today's discussion is linoleic acid and that is common in a lot of seed oils. So again, I'm not going to tell you that seed oils are bad. However, it does seem to be the case that many people are consuming far too many seed oils and in doing so are consuming far too many calories and perhaps are consuming too much of the omega six fatty acids relative to the omega three fatty acids. Now with that said, I think there is general agreement among nutritionists and health professionals that we could all stand to get more Omega three fatty acids, perhaps for cardiovascular health. Although that's a little bit debated but certainly for immune system function, for mood, and for functioning of the brain and for the potent anti-inflammatory effects of omega three. So again, Omega threes can be sourced from food, both animal-based and plant-based. You can simply go online and look up the various food-based sources. But in thinking about headache and different treatments for headache, there are some recent studies exploring how supplementing with omega three fatty acids and in one case how supplementing with omega three fatty acids and deliberately reducing the amount of lino acid, the omega six fatty acids, how that can impact headache. So the first study I'd like to describe in reference to the role of omega three fatty acids in headache was published in 2018 and the title of the paper is Long Chain omega three fatty acids and headache in the US population. There are a number of things that I really like about this study. Uh, a few of those include the fact that they looked at an enormous number of people. Uh, that is they included 12,317 men and women. I like the fact that they included men and women in the study, age 20 or older, and that they broke down the population into categories that included age. They certainly looked at uh, race and ethnicity, they looked at uh, educational background, they looked at body mass, total energy intake, which is really important. If you think about it, people are going to be eating and within the things that they eat, they're going to be consuming some Omega threes, hopefully as well as some Omega Sixes. And if they're eating far more than

they're going to get far more of likely going to get far more of both of those things than they would ordinarily if they were eating smaller amounts So they controlled for total caloric intake in a way that I find uh particularly useful for looking at these kind of data So the reason they explored omega threes is worth mentioning Omega three fatty acids are known to have an anti inflammatory effect That anti inflammatory effect is mediated through a couple of different pathways We won't go into these in too much detail now But the omega three fatty acids keep in mind actually make up various parts of cells in the brain and body That's right The membrane that remember I talked before about how steroid hormones can go through the different membranes of the cells the outer membrane and the inner membrane A lot of those actual membranes the structural constituents of neurons and other cells are actually made up of or include certain fatty acid long chain fatty acids And the omega three fatty acids are important for the actual construction of those tissues as well as having anti inflammatory effects through things like limiting prostaglandins and other things that can cause inflammation Ok So there are a bunch of different ways that omega three fatty acids can be useful They refer in this study to an earlier study that looked at the so called analgesic effect The pain relieving effect analgesic means pain relieving effect of omega three fatty acids in what had been a a randomized control trial And in that previous paper what they found was that diets high in omega threes and low in omega sixes Ok So high three low six And as compared to diets that were just reduced Omega sixes they found a greater analgesic effect of increasing Omega threes while also reducing Omega six fatty acids So in the context of the seed oil discussion although keeping in mind that Omega sixes can come from other sources as well If Omega sixes were just reduced on their own there wasn't as great an effect in terms of reducing pain and inflammation as there was when Omega three fatty acids were deliberately increased and omega six fatty acids were reduced again in all of these studies because these are the ones in which they uh controlled things Well as we as we say they are holding constant the caloric intake So it's not just that you're removing fat eating less fat there's actually a removal of certain fats and fatty acids and a replacement of those with Omega three fatty acids In one case in the other case it's just a reduction in Omega sixes and you're using other food types and macronutrients to offset that reduction in calories caused by reducing omega sixes The basic takeaway that they're relying on marching into the study is that increasing omega threes and reducing omega sixes seems to be beneficial for reducing pain And indeed in

this study they find something quite similar which is that when you hold caloric intake constant and when you look at omega sixes whether or not you decrease omega six fatty acids or not you find is that increasing Omega three fatty acids in the diet So either consumed through food sources or by supplementation was associated with a lower prevalence of severe headache or migraine So severe tension type headache or migraine So this is promising and points to the fact that long chain Omega three fatty acids are likely to have either a pain reducing and there's evidence for that and or an inflammation reducing effect that can significantly reduce the severity of headache in both tension type headache and in migraine So that's the first study The second study is a more recent study was published in 2021 that used A I would say a more or less similar type of overall design is the one I referred to earlier Uh The title of this paper is dietary alteration of what they call N three but those are Omega three and N six Omega six Sorry for this shift in nomenclature I didn't write the paper Dietary alteration of Omega three and Omega six fatty acids for headache reductions in adults with migraine And this was a randomized control trial Randomized control trials involve having people be in one condition where they do one thing and then they get swapped randomly into another condition So they serve as their own internal control And that controls for all sorts of things like differences in sex differences in age differences in health background and any number of other variables as best as one can in this study they had people either ingest a diet that had increased omega threes So increased epa and DH A or increased epa and DH A and reduced amounts of lino acid Ok So that's going to reduce omega sixes or a control diet in which they had people taking well it's essentially the average intake of omega threes and omega sixes And you can probably already guess what the general results of the study are going to be The general results were that there were reductions in headaches Ok The really cool thing is is it was a massive reduction in headache Ok This was uh they refer to it as a robust reduction in head headache in particular for the subjects that increase their omega threes and reduce the amount of lino acid that they took The other thing that I really like about this study is that while they don't know the exact underlying mechanism for the effect they did spend some time delineating what it is that the omega three and omega six fatty acids are likely doing to either offset or exacerbate headache Now I didn't say that Omega six fatty acids exacerbate headache but it does seem that people who ingest more lino acid in omega six are experiencing more inflammation and that is evident in a bunch of different conditions One for

instance is are increases in things like CGRP PC GRP is a molecule that's associated with the calcium signaling pathway It's involved in vasodilation the expansion of the blood vessels and capillaries And that's known as I mentioned earlier to exacerbate certain forms of headache Right There are also forms of headache that could be caused by vasoconstriction We'll talk about one very dramatic example perhaps as we get toward the end Um it's a very uncommon example but um it's uh it's called the thunderclap headache And trust me you do not want thunderclap headache In any case In this paper they they didn't study mechanism directly but they're resting on this known analgesic anti pain as well as known anti inflammatory pathways related to increasing omega three intake and simultaneously resting on the idea or I think there's I think we now can say conclusion that omega six fatty acids in particular lino acid can increase inflammation by way of increasing things like CGRP vasodilation and some other pathways related to the so called inflammatory cytokine pathways And there's a whole discussion nowadays of what's called the inflamma tome So the basic takeaway is that if you are interested in reducing headache it may be beneficial at least according to these two studies And another one I'll talk about in a moment to increase amounts of omega three fatty acids And that can be done again through the ingestions of foods Although based on the dosages that we'll talk about in a moment increasing omega three fatty acids by taking liquid form fish oil which is perhaps the most cost effective way to supplement Omega threes or capsules which is perhaps the most efficient way to supplement Omega threes really to a level of 1 g or more of EPA per day Again that's the EPA form in particular So if you're for instance taking supplemental fish oil or you're getting your omega threes from food and you're getting um what you determine to be 2000 mg or 2 g per day of omega threes Keep in mind that's going to include EPA and DH A and it does seem that getting above 1 g per day of epa Omega three fatty either through food or supplements or both is going to be the critical threshold for reductions in the frequency and intensity of headaches that include both tension headaches and migraine headaches Now some people will find actually that ingesting far more Omega three fatty acids generally through supplementation But again can be accomplished through foods as well Can also be beneficial for other things such as mood And indeed there's a whole literature related to effects of ingesting 1 to 3 g again 3 g per day of epa So that's going to require quite a high intake of omega threes in whatever form or supplement you decide to take those into your body But that that can improve mood and so forth the

basic range that I was able to find in the meta analysis So meta analyses are where a researcher will um look at the results of a bunch of different studies focused on the same thing Look at um the different strength of those studies They'll do all sorts of um cool statistical gymnastics like remove the most potent study The one that had the greatest effect and see whether or not there's still in effect of some treatment or for instance they will um swap in and out uh different studies and different combinations to see whether or not any one study is really leading to the conclusion that a given treatment does something in any case in the meta analysis of omega three fatty acids for the treatment of headache And that includes all the different kinds of headache They found in exploring a huge range of omega three supplementation ranging from 200 mg all the way up to 2000 mg per day It really was at the 1 g or higher dosage per day where the significant impact on reducing headache frequency and intensity was found And just very briefly Earlier I mentioned that not only has omega three fatty acid supplementation been shown to be effective in reducing the frequency and intensity of headache intention type and migraine type headache But it's also been shown to improve outcomes for premenstrual syndrome related headaches These are what we referred to earlier as hormone based headaches Again the low estrogen low progesterone associated with certain phases of the menstrual cycle as well as other phases of the menstrual cycle are often associated with headache In a study entitled effective Omega three fatty acids on premenstrual syndrome a systematic review and again meta analysis what they found And here I'm paraphrasing The conclusion was that Omega three fatty acids could yes effectively reduce the severity of P MS symptoms And one of the symptoms in particular that they found that was reduced was the pain related symptoms associated with headache And they actually had some very nice hypotheses as to why that likely would be Um And in fact point out that in earlier studies Omega three fatty acids have actually been considered as non steroidal anti inflammatory drugs in some cases And indeed there are prescription forms of omega three fatty acids And I highlight that not because I think people need to run out and get the prescription form of Omega three fatty acids They're actually quite hard to obtain and quite expensive But because I think oftentimes when we're talking about something like Omega three fatty acids The fact that they are available over the counter in a supplement or by liquid or available in food for that matter leads many people to conclude that oh you know this is supplementation this is something that um you know it's going to have

relatively weak or minor impact on things like headache or other health metrics But uh let's just say that the fact that it exists as a prescription drug in its highest potency form At least in my opinion points to the potency of omega three fatty acids in dealing with analgesic effects that is reducing pain and anti inflammation as well as some of the known cardiovascular improvements that are associated with increasing omega three fatty acid intake Put simply Omega threes are not just something that comes from food or supplements they are also being marketed as prescription drugs So I do think they need to be considered as quite potent And at least as far as these papers that again include meta analysis of many other papers and data sets indicate that supplementing with omega three fatty acids to a point where you're getting above 1 g per day of epa is not just going to be beneficial for treating and reducing the frequency and intensity of one particular type of headache but many types of headaches And when you combine hormonal headaches tension headaches and migraine headaches you account for more than 70% of the total types of headaches that are out there Uh the effects of Omega threes on cluster headaches and some of the other types of headaches at least to my knowledge have not been evaluated Uh There's no reason to think that Omega threes would not be beneficial for those types of headaches But at least as far as the data sets we talked about here are concerned it is clear Omega three fatty acids are going to be a very potent way to reduce pain and to reduce inflammation in ways that can reduce the frequency and the intensity of different kinds of headache