



How Much Alcohol Is Too Much?

We've been told a lot in recent years about the protective effect of moderate alcohol use. It's a message that people are eager to hear. But how much alcohol is too much?

When drunk to excess and over a long period of time, alcohol can damage the liver, as well as increase cancer risk.

I've argued that much or most of the association between moderate drinking and better health is not causal, but related to the fact that [the higher your intelligence, the more likely you are to drink](#), and higher IQ is associated with longer lifespan and better health.

If the effect of drinking on health were controlled for IQ, the answer might become more definitive.

Whether alcohol causes better health or whether it merely associates with it, we do know that heavy drinking causes disease. What constitutes heavy drinking?

Alcohol and cirrhosis

Perhaps the most serious disease associated with alcohol is cirrhosis of the liver, in which the liver becomes scarred and fibrotic and loses function.

One consequence of cirrhosis is bleeding, since the liver makes blood clotting factors.

Long ago, when I worked in blood banking, I was fascinated (morbidly?) by the fact of hard-core alcoholics needing transfusions. It's a relatively frequent occurrence. I asked a doctor friend who sometimes treated these people how much drinking was necessary to cause the need for a transfusion.

His reply: a bottle of liquor a day for ten years.

Damn, that's a lot of booze. I did a little research recently and it turns out that his estimate is indeed in the ballpark.

A paper called "Cirrhosis in the alcoholic and its relation to the volume of alcohol abuse" details the investigations of a doctor who looked at hundreds of alcoholics at a clinic in Germany.[1. Lebach, Werner K. "Cirrhosis in the alcoholic and its relation to the volume of alcohol abuse." *Annals of the New York Academy of Sciences* 252.1 (1975): 85-105.]

Several factors must be taken into account for the study of alcohol and its relation to health and disease. Among these are

- amount
- lifetime duration
- intensity

Getting a handle on these is difficult due to high variation among drinkers, recalling amounts and times, differences in the type of alcohol, male vs female, etc.

The doctor found the results shown in the following graph, which charts the incidence of cirrhosis versus lifetime alcohol intake in grams per kilogram of body weight per day, multiplied by the number of years of drinking. This is helpfully translated into lifetime equivalent intake of liters of 100 proof whiskey.

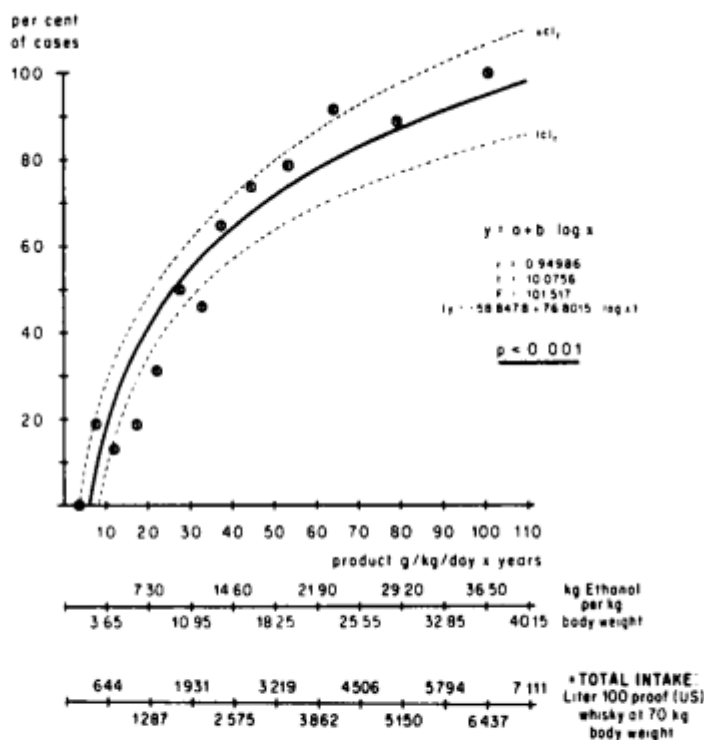


FIGURE 4. Correlation between total amounts of ethanol consumed per kg of body weight during drinking life (with corresponding figures for 100-proof U.S. whiskey) and incidence of severe liver damage (n = 108; severe steatofibrosis with inflammatory reactions; chronic alcoholic hepatitis; cirrhosis) in 265 alcoholics.⁷² --ucl_r and lcl_r = upper and lower confidence limits of regression.

At a total lifetime intake of 7,100 liters of 100 proof whiskey, you're guaranteed to get cirrhosis. However, 50% of the alcoholics had cirrhosis at an intake of about 2,000 liters.

That's a lot of drinking.

Nevertheless, it's estimated that only between 8 and 30% of alcoholics show signs of liver damage. You can also see in the above chart that some drinkers got liver damage at much lower levels of drinking. What accounts for this?

Diet and alcohol

One variant between people who experience liver damage and those who don't may be diet.

Dietary saturated fat protects rats from alcohol-induced liver disease. In fact, saturated fats not only protect, but reverse it.[2. Nanji, Amin A., et al. "Dietary saturated fatty acids down-regulate cyclooxygenase-2 and tumor necrosis factor alpha and reverse fibrosis in alcohol-induced liver disease in the rat." *Hepatology* 26.6 (1997): 1538-1545.]

Rats that were fed both ethanol continuously plus palm oil showed a reversal in liver damage due to down-regulation of COX-2 and TNF alpha.

Rats that were fed ethanol plus fish oil showed the worst liver damage.

In another experiment by the same group, beef tallow wholly prevented alcoholic liver disease in rats, whereas those fed corn oil got a severe case of it.[3. Nanji, Amin A., Charles L. Mendenhall, and Samuel W. French. "Beef fat prevents alcoholic liver disease in the rat." *Alcoholism: Clinical and Experimental Research* 13.1 (1989): 15-19.]

So, it could be that among humans, those who get cirrhosis eat a high amount of polyunsaturated fats. Those who don't may eat lots of meat and butter.

Normal drinking and liver damage

We now have a ballpark figure of how much alcohol causes liver damage. Generally, it's a lot.

What about "normal" drinking, say, a couple glasses of wine or a couple cocktails in the evening – does that have a potential to cause damage?

A "standard drink" in the U.S. is deemed to be [one that contains 14 grams of pure ethanol](#). Translated into everyday terms, a standard drink is

- one 12-ounce beer, if that beer is 5% alcohol
- one glass (5 ounces) of wine, at 12% alcohol
- 1.5 ounces of spirits, at 40% alcohol

In "A meta-analysis of alcohol consumption and the risk of 15 diseases"[3. Corrao, Giovanni, et al. "A meta-analysis of alcohol consumption and the risk of 15 diseases." *Preventive medicine* 38.5 (2004): 613-619.], the authors found

Strong trends in risk were observed for cancers of the oral cavity, esophagus and larynx, hypertension, liver cirrhosis, chronic pancreatitis, and injuries and violence. Less strong direct relations were observed for cancers of the colon, rectum, liver, and breast. For all these conditions, significant increased risks were also found for ethanol intake of 25 g per day.

Conclusions. This meta-analysis shows no evidence of a threshold effect for both neoplasms and several non-neoplastic diseases. J-shaped relations were observed only for coronary heart disease.

The effect of alcohol in causing disease showed no threshold effect – that is, any amount led to increased incidence of a number of cancers as well as liver and pancreatic damage, as well as the more obvious injuries and violence.

Significantly increased risks were found at consumption of more than 25 grams of ethanol daily, that is, the amount in about 2 drinks.

They found a protective effect of alcohol only for coronary heart disease, with a minimum risk at up to 20 grams of ethanol daily, or less than 2 drinks – although up to 72 grams a day, or about 5 drinks, still showed protection.

While heart disease is the leading killer of Americans, cancer isn't far behind.

If you're in shape, eat right, exercise regularly, do the important things for your health, you're likely at low risk for heart disease already.

Drinking alcohol won't offer you additional protection from heart disease. It will, however, increase your risk of cancer and a number of other conditions that you don't want.

Alcohol and blood pressure

Regular drinking has a significant effect in raising blood pressure.[4. Puddey, Ian B., and Lawrence J. Beilin. "Alcohol is bad for blood pressure." *Clinical and Experimental Pharmacology and Physiology* 33.9 (2006): 847-852.]

However, blood pressure drops rapidly upon cessation of or even cutting back on drinking, within a few days.[5. Maheswaran, Ravi, et al. "High blood pressure due to alcohol. A rapidly reversible effect." *Hypertension* 17.6 Pt 1 (1991): 787-792.] Alcohol consumption increased blood pressure only if that consumption was in the 3 days prior to blood pressure testing. If the consumption was prior to 3 days before examination, no effect was seen.

If you've been told you have high blood pressure, and you drink alcohol, abstaining from drinking for a few days and retesting may be wise. It could save you from being medicated for it with drugs that have a high incidence of adverse side effects, like fatigue.

Conclusion: Moderate drinking

Heavy drinking has well-defined adverse effects, but we're told that moderate drinking of a couple drinks daily may be protective when it comes to heart disease.

Moderate drinking may be protective, or there may just be an association among intelligence, health, and drinking. And the protective effect of alcohol with regard to heart disease is typically seen in older populations and/or those who have a high background risk of heart disease.

If you're in-shape and/or less than old, alcohol probably won't decrease your risk of heart disease.

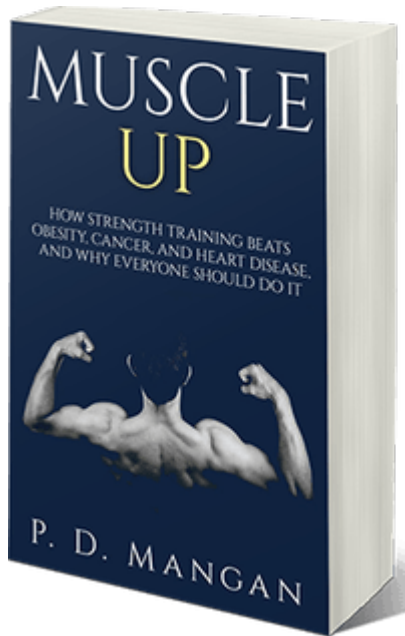
However, moderate drinking can cause other illnesses, including cancer.

I'm forced to conclude that the benefits of alcohol have been overblown. However, in moderate drinking, the risks may be small – nonetheless, they are there.

Don't fool yourself that your moderate drinking is good for you. It facilitates social interaction, makes you temporarily less anxious – but good for your health? Seems doubtful.

I don't intend this article to be an exercise in puritanism. I like a drink myself, and perhaps for that reason wanted to get to the bottom line on alcohol and health.

PS: Whether you drink or not, staying in good shape is your best bet for health; find out how in my book [Muscle Up](#).



I also discuss alcohol at length in my latest book, [Best Supplements for Men](#).

PPS: [Check out my Supplements Buying Guide for Men](#).