

"Fat and Happy?"
Show 1110
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INTRO

ALAN ALDA (NARRATION) To be slim... attractive... the perfect shape. It's what just about everybody desires, but most of us are missing the mark. Now, for the first time in history, over fifty percent of all American adults are overweight. One third of us are clinically obese -- which means for an average person, 30 pounds or more over the appropriate weight. It's not just a question of fitting into the latest fashions, it's an enormous medical problem. Doctors are calling obesity an epidemic, with consequences -- like diabetes and heart disease -- as serious and widespread as smoking. In this program, we're going to report on new research which suggests obesity begins at home, in childhood. We're going to have lots to say about different foods, and different eating habits. And we're going to look at the potentially life-saving qualities being re-discovered in some traditional Native American foods. But first -- diets and weight loss. Is there anything that really works? Don't touch that dial -- and the same goes for the potato chips.

DOCTOR EMPATHY

ALAN ALDA (NARRATION) Dr. Blackburn understands how difficult it is to lose weight. In recent years he's lost 20 pounds, and he'd like to lose another 10. Doctors need empathy, he says.

ALAN ALDA This is our... This is going to be our empathy test here.

DR. BLACKBURN That's correct.

ALAN ALDA (NARRATION) These empathy suits are made to simulate about 40 pounds of fat. I was too tall for mine, but George Blackburn showed me what he wants doctors to learn.

DR. BLACKBURN Now what we want to do, we can...

ALAN ALDA Well, you look really good.

DR. BLACKBURN Well, I...

ALAN ALDA It's a good fit. So now, you would ask a doctor to wear this, right?

DR. BLACKBURN That's right.

ALAN ALDA And the doctor would see how hard it is to put on a pair of pants and a jacket, when you have this much bulk.

DR. BLACKBURN That's right.

ALAN ALDA Be careful you don't topple over them. This is a comedy suit. I know it's a serious subject, but it's very hard to get into this without laughing. You would need suspenders, why?

DR. BLACKBURN Because the belt would slide down.

ALAN ALDA I see.

DR. BLACKBURN See, you're hipless. But, crossing your legs is essentially out of the question.

ALAN ALDA Yeah.

DR. BLACKBURN And getting your shoes on...

ALAN ALDA Yeah, yeah.

DR. BLACKBURN ...you can't.

ALAN ALDA How much do you think an average person should look forward to taking off in how long a time?

DR. BLACKBURN Well, we're talking about 2 to 4 pounds a month is a healthy weight loss, one that you're likely to be able to keep off and, whatever you did to do that -- eat less and be more active -- you could do for the rest of your life.

ALAN ALDA (NARRATION) Laura has been working with Heather McCormick, a nutritionist at Blackburn's center, for 4 months, and she's losing a modest 2 pounds a month. Above all, Blackburn wants goals that are moderate and realistic. HEATHER MCCORMICK Okay, good. You can let it out. OK, you can step down.

ALAN ALDA (NARRATION) Looking at Laura when she was young -- a little girl of normal weight -- you might imagine that she now has some kind of mysterious problem with metabolism. OK, says Blackburn, let's be realistic here, too. So everyone gets what's called their resting metabolism measured - that's the energy our bodies use up just existing. If it's normal, you can't blame your weight on glands or something. At 2000 calories a day, Laura's metabolism is absolutely normal. In Blackburn's program everyone has to become more active. They check your condition at every visit, about once a month. Activity has a double benefit. It burns calories directly, and as muscles develop more calories are needed just to run them. HEATHER MCCORMICK Things like fried foods, the Chinese fried rice, that kind of thing, you want to try to stay away from.

ALAN ALDA (NARRATION) Food diaries are another part of the monthly visit. Heather's looking to make helpful, small changes. Nothing extreme, nothing too scary. HEATHER MCCORMICK One day you had, you know, two ham and cheese sandwiches, and instead, you know, maybe having one sandwich.

LAURA OK. HEATHER MCCORMICK And then the potato chips, you want to try to stay away from them and have something, you know if you need the crunch, you know, carrots or pretzels or something like crackers instead of the potato chips.

LAURA One of the things that I was kind of nervous about was changing the way that I eat and just cutting down all the portions that I eat and going completely to salad all the time or something like that. These are fears you get from watching different fad diets and things like that. What I really liked about Heather was she said, "Listen, let's just take this one step at a time."

ALAN ALDA Get up here? HANNAH BOULTON Get on the scale for me. OK. And you're not holding on anywhere?

ALAN ALDA No, I'm not holding on. HANNAH BOULTON Alright. Well, we just...

ALAN ALDA But I'm exhaling. I'd like patch pockets with a belt in the back.

DR. BLACKBURN Okay. HANNAH BOULTON And you're not holding your breath?

ALAN ALDA No, I'm not holding my breath. HANNAH BOULTON It's instinctive. It's instinctive. Another item I need from you -- this is based on your age, your sex, your weight and your height. So...

ALAN ALDA You want the frequency of sex? HANNAH BOULTON No, no, no.

ALAN ALDA Oh, I'm sorry. HANNAH BOULTON I'd like to know your, er, age.

ALAN ALDA My age is 64. Same as my waist. HANNAH BOULTON Alright. Well, no, your waist is much improved.

ALAN ALDA (NARRATION) I did have a little fun with the Center's terrific staff, but there's a serious point here. Paying detailed attention to weight like this is very unusual. Most doctors never raise the subject, even with obviously obese patients, and that's something that Blackburn says has to change. My resting metabolism, by the way, was normal. This is Diane Scott, a graduate of Blackburn's program.

DIANE SCOTT I was extremely overweight. I was over 200 pounds. I was a heavy smoker. I rarely exercised. I watched a lot of TV. I was constantly getting colds and upper respiratory infections. It was a struggle if the escalator was broken at the T -- and I work in Boston -- to get to the top of the stairs. And I realized I wasn't even 40 and I was just really compromising my health.

ALAN ALDA (NARRATION) Working with the nutritionists, Diane, who's an avid chef, learned how to greatly reduce the fat in her cooking, while maintaining its appeal. So for example, cornstarch with chicken broth is a nonfat way of giving the same smooth texture in the mouth that we get from high calorie fat or oil. We're going to compare a George Blackburn-style of menu to a couple of popular extreme diets.

ALAN ALDA What are you folks up to?

ROBERTA DOWLING Oh, I'm starting the sauce for the high fat diet. And what I have in here is some, a little bit of butter, and then I'm going to add a lot of heavy cream -- two cups of heavy cream, because we're in high fat.

ALAN ALDA We've come into the enemy's camp here. How long are you cooking the fish?

CHRISTIAN DOWLING Er, the fish will probably take five minutes to cook. Um, and what we're going to do is basically get a sear. This one I put in first.

ALAN ALDA (NARRATION) Here's the first menu - very low fat, vegetarian. Grilled portobello, pepper and onion burgers. Cucumber salad with horseradish and dill. Pumpkin tofu cheesecake. Looks pretty good to me.

ALAN ALDA In your opinion, what's wrong with this diet? That sounds like a good diet. I mean, if you can stick to it, it sounds great.

DR. BLACKBURN And that would be exactly our point, that we have to have a diet that you can live with the rest of your life. And this is the challenge. This is such a departure from the normal food that people would see. To adhere to this really requires a lot of motivation, a lot of belief and a lot of training.

ALAN ALDA (NARRATION) Menu 2 - high protein, high fat, low carbohydrate. Avocado cream soup with bacon. Beef tenderloin with parsley cream sauce. Fried Brussels sprout crisps. And strawberries with heavy cream. Wow!

ALAN ALDA This is no fat...

DR. BLACKBURN No fat.

ALAN ALDA This is...

DR. BLACKBURN ...all fat.

ALAN ALDA All fat. Largely fat. What's good about this diet?

DR. BLACKBURN All that fat delays gastric emptying, and therefore you fill up very fast. And therefore it turns out that all the calories one consumes when it's all protein and fat is about 1200 calories a day. And you're so satisfied you don't want to eat one more thing.

ALAN ALDA Right. But if you keep this up for 15 or 20 years, what do you do to your body?

DR. BLACKBURN Our greatest concern is that the delicate lining of your arteries will be injured by that saturated fat.

ALAN ALDA (NARRATION) OK, here we're making Blackburn's menu. He allows some fat, and he wants lots of different ingredients, so flavors are complex and fun. He wants you to like this food.

DR. BLACKBURN It's moderate in its calorie intake per bite and it's nutrient very dense. Variations of this diet people could tolerate you know, every day of their life and enjoy it.

ALAN ALDA (NARRATION) Because calories are moderate, you can eat enough volume of food to fill up.

ALAN ALDA You know what Miss Piggy says? Never eat anything larger than your head. That's... I think that's a good idea.

DR. BLACKBURN Well, she's got the serving sizes. If we can just get it to her hand or her paw we'd be OK.

ALAN ALDA This is really good. Well just enjoy yourselves. Now what's this?

ALAN ALDA (NARRATION) You find some unexpected treats on a Blackburn menu - but in carefully modified versions.

CHRISTIAN DOWLING Basically a type of a trifle. It's got peaches...

ALAN ALDA Trifle I happen to love. And is this a safe trifle, or is this an ordinary trifle?

DR. BLACKBURN Listen, this is an anti-oxidant power trifle.

ALAN ALDA (NARRATION) It's low fat, so a generous portion's only about 200 calories.

ALAN ALDA That's not too bad.

ROBERTA DOWLING This is a trifle that doesn't have any cream in it.

ALAN ALDA No cream in this trifle.

DR. BLACKBURN Right. But just, you know, wait 'til you taste the ambrosia of this, and realize you don't need cream in it, you know, that it's...

ALAN ALDA Why does that taste so good? What's in this?

CHRISTIAN DOWLING It's a simple sugar syrup with fruit.

DR. BLACKBURN We want people to be chefs. We want them to have elegant recipes, because by taking the time to have all these ingredients, you get all the taste that a short cut would require you put a lot of cream on it.

ALAN ALDA (NARRATION) Moderate dishes like these that you can eat essentially forever are a key part of the Blackburn strategy, because if you try to

lose weight too fast, hunger signals become very hard to resist. We don't fully understand the mechanism, but our bodies naturally try to maintain a particular weight. Depriving your body of no more than about 500 calories a day is the only way to avoid triggering those signals, says Blackburn. Otherwise you'll just become a yo-yo dieter.

DIANE SCOTT I've been a yo-yo dieter most of my life. I mean I've tried the extreme diets of, you know... grapefruit juice diets, and boiled egg diets, and cabbage soup diets. I've tried Fen-Phen. I've tried the Atkins diet. And a lot of them I was very successful at. I mean, I lost a lot of weight. Some of them I lost more weight than I have lost up to this point in time, but I never kept it off. As soon as the diet ended, then the whole... all the changes that I had made in my lifestyle to lose that weight stopped, and I went right back to my old ways of eating.

ALAN ALDA (NARRATION) Diane's no longer a yo-yo dieter because she's staying within Blackburn's maximum weight loss limit of 4 pounds a month, equivalent to 480 fewer calories a day - not enough to trigger hunger signals. And because she doesn't feel deprived, she knows her new way of life is permanent. Laura's got that message, too.

LAURA It really is a lifetime commitment. It's not, you can't just not have potato chips now 'cause you're on a diet, you know. You really need to make sure that, you know, instead of me picking potato chips going forward that I have a carrot stick or I have a piece of fruit instead. It's wanting to be healthier and putting better things in my body, because this is what I'm going to be walking around in for the next, hopefully 50 more years at least, so...

OBESITY BEGINS AT HOME

ALAN ALDA (NARRATION) Our next two stories are about kids. Fifty years ago fat kids were virtually unknown. Now one in four American children is obese, and it's getting worse. They're heading for adult lives of heart disease, stroke or diabetes. Somehow, our kids have become too inactive, or they're eating too much, or both.

LORI FRANCIS Hey guys, welcome back. Now do you guys know why you're here today? GIRL To eat.

LORI FRANCIS Right. To eat lunch. Now, do you have to eat everything on your plate? No, right, you can eat whatever you want. Anything you don't want, you can leave it on you plate, OK?

ALAN ALDA (NARRATION) This classic experiment explores our most basic relationship with food - the judgment we have of the right amount to eat. There are 5 children, between 3 and 5 years old. Their lunches are the right size for this age group, about 400 calories. They're told to just eat what they want, and as the meal ends, three trays still have food. But a couple are almost empty, and they belong to the older kids. That's because young kids listen to their bodies telling them when to stop, whereas older kids and adults are controlled by outside influences.

LEANN BIRCH As kids get older, because we try to socialize them into eating when it's time to eat and finishing what's on their plate, they begin to really learn that there are other things in the world that can control their eating.

JENNIFER FISHER OK, today these slices are going to be about twice the size that they were in yesterday's condition.

JEN SHUNK OK.

ALAN ALDA (NARRATION) The next day the same 5 kids come for lunch, but this time their portions are doubled - much more food than they need. And now the split between younger and older is obvious. The two 5 year-olds have cleaned their plates - just like you're supposed to.

LEANN BIRCH What children may be learning when we serve them larger portion sizes, and encourage them to finish those portion sizes, is that that's the amount that's appropriate for them to eat.

ALAN ALDA (NARRATION) There's nothing wrong with finishing your food - so long as what was on your plate was the right amount.

LEANN BIRCH I would like a Happy Meal with cheeseburger, a quarter-pounder with cheese, a medium fries and a medium coke. SERVER OK. Thirteen sixty six.

LEANN BIRCH Thank you.

ALAN ALDA (NARRATION) Leann Birch, who has been studying children and eating for 25 years, believes that our view of appropriate portion sizes has been steadily going up.

LEANN BIRCH What you see here is a Happy Meal, which has about 630 calories in it. This is for a young child -- probably nearly half the energy that the child should have for a whole day.

ALAN ALDA (NARRATION) Large portions are regarded as appropriate for adults as well, with the trend to "super-sizing."

LEANN BIRCH The super-size meal, which has about 1830 calories, would just about do it for me for the entire day, with my 2000 calories. And yet these are the kinds of portion sizes that are out there that are supposed to be consumed in a single meal.

ALAN ALDA (NARRATION) We're back in the lab for another experiment on kids' attitudes to food. We're going to turn one of these foods into forbidden fruit.

JENNIFER FISHER In the beginning of this study we basically are offering children a wheat cracker and a Goldfish cracker, and we're offering them in equal amounts because we want children to have the ability to have equal sort of access to both of these foods.

ALAN ALDA (NARRATION) First they want to make sure the kids will at least eat Goldfish. In fact they all eat a bit of both, but not a lot of anything. But now, the status of Goldfish is about to be transformed.

JENNIFER FISHER In the second part, we're actually going to change the rules, so that they can still have as many wheat crackers as they want, but the Goldfish crackers are going to become off limits. When I ring the bell, you guys are going to be able to eat the Goldfish crackers, okay? So there are no goldfish crackers until we ring the bell.

ALAN ALDA (NARRATION) For an agonizing 5 minutes, those delicious, desirable, fantastic Goldfish are absolutely unobtainable.

JENNIFER FISHER In one more minute I'm going to ring the bell, OK? Do you know what that means when we ring the bell? OK.

ALAN ALDA (NARRATION) At last it's Goldfish time, and you don't have to be a psychologist to figure out what happens. The kids pig out. It's a forbidden fruit effect.

GIRL She got a lot.

ALAN ALDA (NARRATION) Clearly this isn't the way to change kids' eating habits.

JENNIFER FISHER Paradoxically, restriction not only is not an effective way of promoting moderation, but it seems to promote the behaviors that parents intend to avoid by using that practice.

LORI FRANCIS Do you know what tummy that is?

ELIZABETH Empty.

LORI FRANCIS That's an empty tummy, alright. What kind of tummy is this?

ELIZABETH Um...

LORI FRANCIS You'd be full, right? How do you feel right now?

ALAN ALDA (NARRATION) In our next experiment, we're working with kids who've just had a meal. They shouldn't feel hungry.

ELIZABETH Full.

LORI FRANCIS It's full. OK. We've got pretzels, peanuts...

ALAN ALDA (NARRATION) Now Elizabeth is shown a large tray of snacks - chips, ice cream, cookies -- and popcorn, which she likes.

LORI FRANCIS ...and chocolate chip cookies. Alright? Now I need to go next door for about ten minutes to do some work, alright? I'm just going to leave this. This is extra food that we have. If you don't want it, you know, you don't have to eat it, but if you want to, you can eat anything you want. And we also have this box of toys here, this pen here, it's a drawing pen, so, you can write on that. So, I'm going to leave this box with you and I'm also going to leave the tray with you.

ALAN ALDA (NARRATION) Elizabeth, once left alone, behaves in a way that might surprise you. She ignores the food.

LEANN BIRCH So far at least, Elizabeth is...um...not terribly interested in eating.

ALAN ALDA (NARRATION) It takes a while before, bored with the toys, she finally gets around to trying just some popcorn - her favorite food. Now take a look at Morgan. When he's left alone he digs in. Here's the important point. Morgan comes from a home where access to these attractive sweet or salty snack foods is strictly controlled, whereas Elizabeth is unrestricted.

LEANN BIRCH Parents who tended to use a fair amount of restrictive feeding practices -- namely parents who are concerned about their kids consuming too many of these kinds of palatable foods and who restricted their kids' opportunities to eat those things -- actually had the children who ate the most.

JEN SHUNK If you came home and had any one of those snack foods without asking your parents first, would they be upset? And when you have ice cream, can you have as much as you want, or does your mom dish out a certain amount for you?

MORGAN She dishes out a certain amount for me.

JEN SHUNK And if you want more, does she let you have more? No?

MORGAN Just one.

JEN SHUNK Just one.

LEANN BIRCH Restriction actually tends to foster consumption in the absence of hunger in children, and increased interest in the very foods that parents think children shouldn't be eating, and conversely, pressuring children to eat, er, healthy foods tends to turn them off, with respect to those foods. So what do you do instead? I would think, as a parent, that's really the tough part. I think there are a couple of things. One is, we need to help parents to understand what are reasonable portion sizes for children, so that parents have reasonable expectations about how much foods kids need to eat. The other thing is we need to, I think, help parents to appreciate how children learn to like foods that aren't sweet and that aren't salty. And the way that you do that is you have to, I think, be pretty patient as a parent. We know that kids initially reject a lot of new foods unless they're sweet or salty, and it's only with repeated presentations, non-coercive presentations, that kids learn to eat a lot of those foods.

ALAN ALDA (NARRATION) Without that kind of perceptive parenting, our kids are caught in two terrible traps. First we say finish your food, then we put too much food on the plate. Then we say that high fat, high calorie snack foods are forbidden -- so kids want to binge on them. But it gets worse. Take a look at our next story.

COUCH POTATO KIDS

DEBORAH WATSON Come on, guys. Time for lunch.

ALAN ALDA (NARRATION) This is the Watson family, in Buffalo, New York. It's summer, school's out, and the kids are free to do what they want. Nine-year-old Taylor is of course interested in seeing if she can annoy her younger brother.

TAYLOR Dwight, how come you look like a monkey when you eat?

ALAN ALDA (NARRATION) But apart from that, Taylor's going to have a lot to do this summer. She's part of a University of Buffalo study looking at the relationship between physical activity in kids, and eating.

TAMMY SCHOLL Hi Taylor, hi Deborah.

DEBORAH WATSON Come on in.

TAMMY SCHOLL How are you?

DEBORAH WATSON Good.

TAMMY SCHOLL Good to see you again. OK Taylor, this is the activity monitor. It's just this little box here. Take it out of this pouch. OK it's just going to kind of be like a belt. You might put it on your belt loops, through your pants, or you can just put it right around your waist.

ALAN ALDA (NARRATION) Taylor's going to wear the activity monitor for the next 9 weeks. At the same time, the TVs and computers in the house are going to have their activity monitored. Every time one's switched on or off, that will be recorded. And there's no cheating allowed. TV Hey. This isn't working with just the two of us...

ALAN ALDA (NARRATION) So now there's a minute by minute record developing of how active Taylor is, and how much TV and computer time she puts in.

LEN EPSTEIN How'd the families do this week?

TAMMY SCHOLL The families did great...

ALAN ALDA (NARRATION) The study was conceived by psychologist, Len Epstein.

TAMMY SCHOLL ...all the 24-hour recalls were conducted.

LEN EPSTEIN Now one-quarter of kids are obese. That's doubling in the last 20 years. And part of the reason for that, most people think, is the increase in sedentary behaviors -- the amount of TV kids watch, the amount of computer games kids watch. If you look at prospective data you can identify which kids are likely to become obese over the next five years as a function of how much TV.

ALAN ALDA (NARRATION) Ten-year-old Brian MacDiarmid's another of the 13 kids in the study. You can see what he likes to do.

SUE MACDIARMID How did you do on the spelling bee, did you pass?

ALAN ALDA (NARRATION) While the kids had to wear their activity monitors, the mothers were asked to keep careful track of everything their children ate. The information was called in regularly.

TAMMY SCHOLL Hi Sue, this is Tammy from the University of Buffalo. I'm just calling to conduct the 24-hour recall. And what was the first thing that Brian had to eat or drink after he woke up?

SUE MACDIARMID OK, about nine o'clock in the morning he had four mini waffles. He had about two teaspoons of syrup with that.

TAMMY SCHOLL And was he watching TV or on the computer or playing video games?

SUE MACDIARMID He was watching TV.

DEBORAH WATSON OK, Taylor, you need to fill out your booklet.

TAYLOR OK.

ALAN ALDA (NARRATION) There were activity logs as well.

DEBORAH WATSON The show ended at 8 o'clock.

TAYLOR OK.

ALAN ALDA (NARRATION) Taylor's mother was surprised at how things were looking.

DEBORAH WATSON We had always thought that they really weren't avid TV viewers, that maybe an hour here, two hours here, an unusual day where there'd be more than that. But when you looked at the numbers over the course of a seven day period, we were somewhat astounded by that, that our children could be spending 12, 15 upwards of 20 hours or more a week in front of a television or at a computer, not doing anything else, and that's almost an entire day out of a 7-day period. So that was kind of shocking for us.

ALAN ALDA (NARRATION) After three weeks, all the activity monitors, TV and computer records, and activity logs were compiled. It turned out that the average time spent in front of the TV or computer was 24 hours a week - three and a half

hours a day. So now they knew the normal behaviors of their wired-up families, the researchers set about changing the kids' activity levels.

LEN EPSTEIN It could be that as kids become more sedentary, that eats into their physical activity time, and they're not as physically active, or it could be that a lot of kids when they're sedentary are also eating.

ALAN ALDA (NARRATION) For the next three weeks, the kids were asked to increase their original TV and computer time by half - for Taylor, 9 more hours a week... And for Brian, 20 more hours. They got a few dollars' reward if they succeeded, and amazingly they all managed it. One result was that eating in front of the TV went up a whopping 45%, on average. Total calories consumed increased 10%, and physical activity decreased by more than 2 hours a week. So it seems TV and computers have a double effect - kids are less active, and they eat more. For the final three weeks the researchers reversed things. Now the kids had to decrease their TV and computer time by half.

DEBORAH WATSON I think in many ways it was sort of a culture shock for our family, because all of a sudden this ubiquitous presence in the house, the TV that's always on or on quite a bit, was gone. And initially it was a little bit awkward and yet it was a very good experience for us because, um, Taylor, for instance, she rode a bike more, she read books more, she did more athletic activities, be it swimming, whatever, playing basketball. And we started to realize we really didn't miss it that much.

TAYLOR Can you just clean the house for me...

ALAN ALDA (NARRATION) In fact Taylor and all the other kids found plenty to do. Not all of it was physically active of course... But a lot was. The average increase in activity was more than three and a half hours a week, and they ate a few percent less, too.

LEN EPSTEIN In our study we found that about one-third of the time that they reduced from being sedentary they reallocated to physical activity. So if they reduced 20 hours a week, sedentary time, 7 hours were dedicated now to being physically active. So you don't have to have a one to one change, you don't have to take every single minute you were watching television in being physically active. But reallocation of one-third of the time really produces most of the activity anybody would need.

BRIAN'S DAD Right, turn.

ALAN ALDA (NARRATION) So the study revealed another trap our kids are falling into. They could be more active, and eat less, but instead they're becoming less active and eating more. It's a trap that will last for life.

LEN EPSTEIN Kids who were sedentary when they are young become sedentary adolescents, become sedentary adults. Really active kids become active adolescents and become active adults. So kids now who are very sedentary are establishing a life long pattern that would be very hard to break later. Now is the time when they're kids to try to change their lifestyle, and get them to be more physically active and less sedentary.

EAT LESS -- LIVE LONGER

ALAN ALDA Hello... Hi Dr. Walford?

ALAN ALDA. Glad to meet you. How are you? I brought my lunch.

ROY WALFORD Oh you did, great.

ALAN ALDA (NARRATION) I've come to see Roy Walford, in Venice, California. For 30 years, Dr. Walford has been studying the relationship between food and long life.

ROY WALFORD I think it would be better if it were like whole wheat bread. Instead of...I would say that's two slices of white bread.

ALAN ALDA Let's see what else I have. You probably don't like this. Sometimes I like something crunchy while I have a sandwich.

ROY WALFORD Well pretzels are empty calories so, I don't like that.

ALAN ALDA How about pickles?

ROY WALFORD OK. That's all right.

ALAN ALDA Well this is all just for taste. How do you feel about mustard?

ROY WALFORD It doesn't add much in the way of calories unless you use a huge amount.

ALAN ALDA (NARRATION) For Walford, watching calories is only one of the keys. He believes if you eat less, you'll live longer -- so long as you make sure that what you do eat has high nutritional value. I'm aiming to make a pretty lo-cal lunch -- no more than 500 calories.

ALAN ALDA You use a lot of calories getting the pickle jar open you know.

ROY WALFORD Yes, that's the whole point.

ALAN ALDA This is about it. This is what I could...now, now, let's see that wouldn't be enough though. I'd still be interested in more. I'd probably eat five or six of these pretzels. I would take the salt off the pretzels. I don't like to eat a lot of salt. Then I would have probably, to make myself feel better, I'd either have about four ounces frozen yogurt or ah, if I was feeling really healthy, health minded, I'd have an apple. Let's say an apple.

ROY WALFORD OK.

ALAN ALDA I would give myself the benefit of the doubt.

ROY WALFORD OK.

ALAN ALDA (NARRATION) Now let's see what kind of nutrition my lo-cal lunch delivers.

ROY WALFORD Let's see, turkey breast-no skin, roasted is about as close, and you didn't have half a breast but maybe a quarter of a breast. You added a piece of tomato in that.

ALAN ALDA Yeah, two little slices of tomato.

ALAN ALDA (NARRATION) When you add it all up, I did fine on the calories -- but that's about all.

ROY WALFORD What you had is deficient in A, B12, C, E, folic acid and panithinic acid. Among minerals it is deficient in calcium, copper, magnesium, manganese and zinc.

ALAN ALDA And what's that big tall yellow one? What's that? I don't seem to be doing okay there.

ROY WALFORD Well that means it has a great deal of sodium.

ALAN ALDA Oh, I'm doing fine with the sodium. OK.

ROY WALFORD And you have too much cholesterol, 'cause you multiply...

ALAN ALDA Where'd I get that from? The turkey?

ROY WALFORD From the turkey probably, yeah.

ALAN ALDA (NARRATION) But here's what goes into Walford's lunch. Every one of his 500 calories packs a high nutritional punch.

ALAN ALDA How did you first get interested in this?

ROY WALFORD I got interested in this kind of nutrition because it's been known since 1935 that if you keep animals on a very low calorie diet but one that is not deficient in vitamins and so forth, you extend their maximum lifespan and their average lifespan.

ALAN ALDA (NARRATION) In the 1960's Walford, who's a researcher at UCLA medical school, set out to refine the low-calorie studies. He confirmed that laboratory mice live up to twice the normal age if calorie intake is reduced by up to half. At the same time he detected intriguing signs of improved health -- lower blood pressure, lower insulin and cholesterol; and stronger immune systems. Then in 1991 Walford joined Biosphere 2 as the project doctor. He was part of the team which sealed itself inside a 3-acre greenhouse. The aim was to be self-supporting -- to subsist entirely on the miniature ecosystems growing inside. Things didn't turn out as expected. Food production was about 40% short, but for Walford it was a lucky accident. Like it or not, the team found itself on a low-calorie, high-nutrition diet. The team members went hungry. But in regular medical exams, Walford discovered they were developing the same good health patterns as the lab animals. Biosphere 2 confirmed for Walford that a low-calorie, high nutrition diet is likely to benefit humans, and he's been following it ever since. It sounded pretty good to me. How do you get started?

ROY WALFORD What you wanna do is lower the calorie content so that you lose weight gradually until you're 10-20% below your set point - where your set point is defined as what you would weight normally if you ate just kind of a normal diet.

ALAN ALDA That sounds like, ah, a lot of weight loss. I mean I'd be a bean pole without the beans, I think. I mean, that's very...that sounds severe to me.

ALAN ALDA (NARRATION) These lively rhesus monkeys are on just such a severe regimen. I'm visiting Rick Weindruch at the University of Wisconsin.

ALAN ALDA Is this for my protection, or for the monkeys'?

RICK WEINDRUCH I think its mutual for both, yes.

ALAN ALDA OK.

ALAN ALDA (NARRATION) Weindruch has about 80 monkeys -- half on restricted calories, half normal. The study has been running for a decade, and the animals are now 20 years old -- middle age for rhesus monkeys -- so there won't be any results on life span for a while.

ALAN ALDA Which kind? What does he get? Researcher This guy up above.

ALAN ALDA (NARRATION) The restricted diet is exactly like Walford's. In fact Rick Weindruch was his student at UCLA.

ALAN ALDA Here you go, pal.

ALAN ALDA (NARRATION) The monkeys' calories are reduced, but their nutrition is excellent -- it's not in any way a starvation diet. So within the next few years, as old age should be approaching, the expectation is that the normally-fed group will begin to lose its health, while the calorie-restricted group will stay healthy.

RICK WEINDRUCH We're starting to see signs of better health in our restricted animals. It's going to really be, shall we say, show time for these diets over the next five years.

ALAN ALDA (NARRATION) Just like Walford's Biosphere team, the monkeys get regular checkups, although they're sedated for some procedures. This is a scan for bone mass, which tends to become reduced with age. They also examine tiny samples of muscle from the monkeys, looking for signs of cellular damage which normally develops with age.

ALAN ALDA Is this part of a cell?

RICK WEINDRUCH This is a component of a cell and this is the stuff that makes your muscles contract, basically.

ALAN ALDA (NARRATION) This black dot in the muscle of a 4 year-old monkey is damage caused by things called free radicals. Free radicals could explain why eating less helps you stay healthier and live longer. Nutrients from the food we eat get absorbed by every cell of our body. These nutrients normally combine with oxygen to make essential energy-storing chemicals. But an unavoidable by-product is the production of free radicals -- reactive oxygen compounds that damage whatever they hit. The body makes chemicals, called anti-oxidants, which defend against free radicals. But damage still accumulates over the years, leading to all kinds of old-age diseases. The exciting thing about Weindruch's study is that while 20-year-old monkeys on normal diets show extensive free

radical damage, calorie-restricted monkeys -- who are the same age -- look like young kids.

ALAN ALDA So this is a 17-year-old monkey with about the same amount of free radical damage as, how old a monkey?

RICK WEINDRUCH A four-year-old.

ALAN ALDA A 17-year-old as healthy as a 4-year-old.

RICK WEINDRUCH Yes. That's right.

ALAN ALDA (NARRATION) Weindruch is also pursuing the free radical theory with a large-scale mouse study.

ALAN ALDA So one bunch is on a restricted diet and one... ah, I'll tell you something that I see right away. These are really active and these are just sitting around.

ALAN ALDA (NARRATION) These are senior-citizen mice -- about 2 years old -- and they're on a normal diet. And these are on calorie restriction. But Weindruch also has four other groups being fed normal diets plus some special extra ingredients. He's adding combinations of the anti-oxidant supplements, like vitamins C, E, and beta-carotene, that so many of us are taking now. The result so far -- not very encouraging. Anti-oxidant dietary supplements are no substitute for calorie restriction. They don't seem to affect life span one way or the other.

RICK WEINDRUCH The best survival at this point in time is group 5 - our calorically restricted animals.

ALAN ALDA Who aren't taking any supplements.

RICK WEINDRUCH No, no they're not.

ALAN ALDA So, so far taking supplements, if you have a normal diet, or any kind of diet, it doesn't make you live longer, so far and you have a lot of time to go on this, but so far you are living the longest...

RICK WEINDRUCH ...just plain old caloric restriction...

ALAN ALDA ...with high nutrition.

RICK WEINDRUCH Right, but again it's early so come back in a year, please.

ALAN ALDA Yeah, yeah. Well meanwhile I'm taking the pills.

RICK WEINDRUCH Me too!

ROY WALFORD So Alan, I made 4 servings in the wooden bowl. This is one serving and it's about 500, 550 calories.

ALAN ALDA This is one serving? This is a lot of food!

ROY WALFORD That would be one serving, yes.

ALAN ALDA And this is equal to that sandwich I made?

ROY WALFORD More or less. It's about equal in calorie content to your turkey sandwich.

ALAN ALDA It's very good. How old do you think you're going to be, eventually?

ROY WALFORD Well, older than I would be. I've just been on this diet for about 10 years or so, maybe a little more so, I certainly didn't start when I was young. If my destiny on a normal diet had been to live to be 90, then on the diet I should add another 15 or 20 years. So that would put me out to be 110, starting at 60.

ALAN ALDA That's where it would put me, if I started around now. 110. See I always thought it'd be nice to live to 106. 110 is even better!

ALAN ALDA This doesn't look so appetizing anymore. I got plenty of crunch. I didn't need the pretzels. And this wouldn't be bad for dessert, or am I denied dessert now?

ROY WALFORD No, that would be fine. Sure. An apple is good dessert.

ALAN ALDA Your heart would sink if I took out the frozen yogurt probably.

ROY WALFORD Well no, yours would.

THE DESERT'S PERFECT FOODS

ALAN ALDA (NARRATION) We're on the Tohono O'Odham tribal reservation in Arizona. It's rainy and cold today, but most of the time it's baking hot and bone dry. The plants have evolved to thrive in such extremes, and the Tohono O'Odham people in turn based their way of life on the plants. It was a rich bounty - and I do mean "was," because by the 1940s widespread use of traditional foods was dying out. Today, only a few of the elders, like

FRANCIS MANUEL, are familiar with the old foods. This is Francis's daughter, Dolores.

DOLORES This is wild spinach. We've been eating it since we were little.

ALAN ALDA (NARRATION) Tortillas were once made with desert ingredients. Now the elders are saying it's time to revive the old ways.

ALAN ALDA Is this an attempt to go back totally to the food that used to be eaten? Or to just introduce some of it into the diet?

DANNY LOPEZ It is an attempt to kind of create an awareness to people that they have to change. Something has to be done.

ALAN ALDA (NARRATION) This is what something has to be done about. Caroline Jackson, who lives on the nearby Pima reservation, has diabetes. So do half of all adult Pima and Tohono O'Odham - 15 times the national average. The two tribes also have exceptionally high rates of obesity, even though their diets are average. Extensive study has suggested that in one special way these people are not average. They have what's called the thrifty gene, which allowed them to put on weight very efficiently during the desert's times of plenty, so they could get through the bad times. The problem is it's good times all the time now. Nowadays, like all Americans they get their food from a supermarket shelf. They spend a lot of time in front of the TV. And they drive practically everywhere. Only 50 years ago the two tribes were tough and active farmers, hunters and gatherers, with no obesity and no diabetes. Things began to break down when the region's water was pumped away to growing cities. And even though they still had the skills to gather wild food, or divert flash floods to their fields, it became impossible to resist adopting a typical American lifestyle.

ALAN ALDA So you make a brush out of this and you rub the fruit with it? And that gets the needles off?

DANNY LOPEZ Yeah, see the fruit's always sitting up here, you know, like that, and you brush 'em off, brush 'em off pretty good.

ALAN ALDA (NARRATION) A brush made from the creosote bush gets off the almost invisible coating of tiny, sharp spines. Prickly pear fruit and pads were important foods - although you had to avoid the poisonous seeds, Danny said.

DANNY LOPEZ That's a mesquite tree right here. See here's some that are dried, beans. They'd all be hanging, hanging on the trees, and the kids all walk by and pull them off and eat them

ALAN ALDA (NARRATION) Ground up mesquite pods gave a sweet and nutritious flour. They were good to just chew on, as well.

ALAN ALDA Taste it, yeah, can I? I'll just take off a little bit. I don't want to spoil it for somebody...

DOLORES Don't swallow the seeds too.

ALAN ALDA Don't swallow the seeds. What'll happen to me if I swallow...

DOLORES Same thing that happens when you eat the prickly pear with the seeds.

ALAN ALDA I have to go to the hospital.

DOLORES Yeah, give you an enema.

ALAN ALDA Boy, I'll tell ya, this program is really dangerous. It's all seeds. What do you mean, don't swallow the seeds? There's nothing but seeds here.

FRANCIS MANUEL Chew it.

ALAN ALDA I got to get rid of the seed. Wait a minute.

DOLORES Yeah.

FRANCIS MANUEL Yeah.

ALAN ALDA It's sweet. Sweet and chewy and the taste, like something that I know. It tastes like, you know what it tastes like? Like a Box of Cracker Jacks. You know, it's sweet and crunchy. It's a snack bush. Nice. Francis, how did you learn about all this?

FRANCIS MANUEL My grandmother tell me.

ALAN ALDA Your grandmother?

FRANCIS MANUEL When we were kids, uhuh. Yeah.

DANNY LOPEZ On this plant, the cholla buds grow.

ALAN ALDA (NARRATION) In spring, when the rains came, everyone had to gather cholla cactus buds.

ALAN ALDA So that's where they grow. And then if you don't pick it, it grows into this.

DANNY LOPEZ Yes, uhuh.

ALAN ALDA (NARRATION) Like mesquite pods, cholla buds were gathered, dried and stored in large quantities.

ALAN ALDA What is it that you eat off of this?

TONY JOHNSON Um. Saguaro fruit. It grows on the end of it, of the arms of the cactus.

ALAN ALDA Yeah.

TONY JOHNSON Usually it'll grow in bunches, you know, on each arm, all the way up into the top.

ALAN ALDA (NARRATION) Saguaro fruit was gathered in late June. Every family had its own long poles for reaching the fruit - poles made with the skeleton of the saguaro cactus itself. The desert for most of us looks to be a barren and inhospitable place, but for the Pima and Tohono O'Odham it was the source of life.

DANNY LOPEZ Our food came from the desert. We had to work for it, you know, it's a lot of work to go out and gather. When we planted, there was a lot of time in the field. Back then, we were people who were in good shape. Prior to 1960, there was no diabetes and then, but after that it just kinda came upon us.

GROUP [Song]

ALAN ALDA (NARRATION) The blessing speaks of the pleasure given by plants growing and covering the earth. It's appropriate because we're going to have a meal made entirely of crops which grow in the desert around us.

GROUP [Song]

DANNY LOPEZ That's good.

ALAN ALDA (NARRATION) We're joined by Gary Nabhan, a botanist who specializes in the desert plants of the southwest.

ALAN ALDA These are beans?

DANNY LOPEZ Red tepary.

ALAN ALDA (NARRATION) Tepary beans were grown in the flood plains. They resist desert heat, and they're digested slowly - good for diabetics who need to avoid spikes in blood sugar. It turns out all the foods have some special quality.

DANNY LOPEZ It's spinach.

GARY NABHAN It's a wild spinach...

ALAN ALDA Wild spinach?

GARY NABHAN And it comes up in the summer, and it's really the best tasting spinach in the world.

ALAN ALDA (NARRATION) These are sliced prickly pear pads - we'll talk more about them in a minute. And here's the wild spinach - amaranth greens, with high protein seeds, and high calcium leaves.

ALAN ALDA What is this?

FRANCIS MANUEL Mesquite beans.

ALAN ALDA Oh, mesquite. OK, so just, like, one teaspoonful?

FRANCIS MANUEL Two.

ALAN ALDA Two. OK. One, two.

FRANCIS MANUEL That's enough.

ALAN ALDA (NARRATION) The mesquite drink is full of sugar, but it's a kind a sugar that you don't need insulin to digest.

FRANCIS MANUEL You know if you don't like it...

ALAN ALDA That's good. What do you mean, if I don't like it? That's good.

ALAN ALDA (NARRATION) Next -- cholla cactus buds. Francis gathered and dried these herself last Spring, six months ago. And, finally, my personal favorite - really powerful little wild chilies, gathered up in the mountains on the reservation. At last it was time to dig in.

ALAN ALDA This is a fantastic meal. What are the ways in which this food reconnects you to the culture?

DANNY LOPEZ Well I just thought about this to tell kids. You know, when you try to get kids to eat, things like the spinach or the cholla buds. They used to say like if you don't eat it, he -- like that's the creator that they believed in, years ago -- will cause a flood, you know. So you better eat your spinach or your cholla buds.

ALAN ALDA Or there will be a flood.

DANNY LOPEZ We'll all drown, like maybe right now.

ALAN ALDA (NARRATION) Because these foods are adapted to the desert, they all share one attribute - the ability to retain scarce water. How they do it was demonstrated by Gary Nabhan with a bowl of chia seeds, from a type of desert mint. Over the course of a few minutes the dry seeds swell up, absorbing about 15 times their volume of water. It's how they'd react to a sudden rainstorm in the desert. Desert plants have to be able to absorb water, and then hold on to it for as long as possible. They do it with a kind of natural glue.

GARY NABHAN It's all called soluble fiber. But, ah, prickly pear cacti and their relatives, the cholla cactus, are among the richest sources of that. And so when we look at a prickly pear pad like this -- and I'm going to get the spines in my fingers but I don't mind that because I'm a botanist -- when you look at this stuff, all this stuff is extra cellular mucilage. There's a goo in between the cells here that holds water in the pad, so that even during times of drought that water is only slowly lost from the plant. That's why a prickly pear can survive years without rain.

ALAN ALDA In the cactus, that goo gets in between the cells. What does it do when it goes into my body. It doesn't go in between my cells, does it?

GARY NABHAN Well, that's a great thing. When we put it in our stomachs, it keeps any sugars or carbohydrates from being rapidly released into our bloodstream. So that instead of our blood sugar level spiking, peaking very rapidly and then our pancreas trying to make insulin to keep up with that...

ALAN ALDA So you don't get a jolt of it.

GARY NABHAN No jolts.

ALAN ALDA You get it more on a ...It's doled out more evenly.

GARY NABHAN Go ahead.

ALAN ALDA (NARRATION) This slow release is the secret to the desert foods because it provides natural protection against diabetes. So as the desert people were yo-yoing up and down in weight, tracking the feast or famine of their crops, their metabolisms were always maintained on an even keel by these perfect foods. I was learning some interesting stuff on this visit. Then I really got excited when it looked like Francis was ready to reveal to me an ancient, precious piece of tribal wisdom.

FRANCIS MANUEL Why were the Indians here first?

ALAN ALDA The question is, Why did the Indians live here first? Well, they lived here first because...

FRANCIS MANUEL Because...

ALAN ALDA Because, ah, they didn't live anyplace else yet. No, I haven't finished yet. I think I'm stuck. I think...I'd actually most like to hear your answer.

FRANCIS MANUEL My answer is easy. Because they have a reservation.

ALAN ALDA That's terrible!

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