WEBVTT

NOTE duration: ”01:02:14.272”

NOTE Confidence: 0.6384125

00:01:37.465 --> 00:01:38.384 I'm just gonna post for

NOTE Confidence: 0.6384125

00:01:38.384 --> 00:01:39.165 a new park.

NOTE Confidence: 0.8337484

00:01:40.985 --> 00:01:42.505 Megan, you ready? You do

NOTE Confidence: 0.8337484

00:01:42.505 --> 00:01:43.545 it. No. You don't have

NOTE Confidence: 0.8337484

00:01:43.545 --> 00:01:44.685 to come up yet. Yeah.

NOTE Confidence: 0.9656657

00:01:46.825 --> 00:01:48.025 Hi, everyone. I think we'll

NOTE Confidence: 0.9656657

00:01:48.025 --> 00:01:49.065 go ahead and get started

NOTE Confidence: 0.9656657

00:01:49.065 --> 00:01:50.665 since it's twelve o two,

NOTE Confidence: 0.99645996

00:01:51.540 --> 00:01:52.760 as people come in.

NOTE Confidence: 0.98602295

00:01:53.060 --> 00:01:54.200 Just a few announcements.

NOTE Confidence: 0.8414714

00:01:56.820 --> 00:01:58.520 Please remember to

NOTE Confidence: 0.8899469

00:01:59.460 --> 00:02:01.160 register for, CME.

NOTE Confidence: 0.92785645

00:02:02.580 --> 00:02:04.040 Welcome to all our,

NOTE Confidence: 0.977946

00:02:04.580 --> 00:02:06.245 folks in the room as

NOTE Confidence: 0.977946

00:02:06.245 --> 00:02:06.745 well

NOTE Confidence: 0.9970703

00:02:07.285 --> 00:02:07.785 as

NOTE Confidence: 0.6845703

00:02:08.165 --> 00:02:08.665 as,

NOTE Confidence: 0.9330167

00:02:09.205 --> 00:02:10.645 across all our many watch

NOTE Confidence: 0.9330167

00:02:10.645 --> 00:02:12.405 parties across the system and

NOTE Confidence: 0.9330167

00:02:12.405 --> 00:02:12.645 our,

NOTE Confidence: 0.9579381

00:02:14.885 --> 00:02:16.565 and, we're we're in for

NOTE Confidence: 0.9579381

00:02:16.565 --> 00:02:17.315 a treat

NOTE Confidence: 0.9090576

00:02:18.460 --> 00:02:19.660 today, and so I I

NOTE Confidence: 0.9090576

00:02:19.660 --> 00:02:21.360 am looking forward to learning

NOTE Confidence: 0.9090576

00:02:21.500 --> 00:02:22.960 this more this afternoon,

NOTE Confidence: 0.9536133

00:02:23.580 --> 00:02:24.780 and we'll ask Rachel in

NOTE Confidence: 0.9536133

00:02:24.780 --> 00:02:25.740 a moment to introduce our

NOTE Confidence: 0.9536133

00:02:25.740 --> 00:02:26.240 speaker.

NOTE Confidence: 0.9763997

00:02:26.780 --> 00:02:28.000 Just some announcements.

NOTE Confidence: 0.9888916

00:02:28.940 --> 00:02:29.760 Next week,

NOTE Confidence: 0.810791

00:02:31.100 --> 00:02:31.920 grand rounds

NOTE Confidence: 0.9412109

00:02:32.775 --> 00:02:34.875 will, for us will be

NOTE Confidence: 0.9327698

00:02:35.255 --> 00:02:36.695 in the morning on Thursday

NOTE Confidence: 0.9327698

00:02:36.695 --> 00:02:37.755 morning. So remember,

NOTE Confidence: 0.966156

00:02:38.135 --> 00:02:39.335 to next week, there will

NOTE Confidence: 0.966156

00:02:39.335 --> 00:02:40.315 be no Wednesday

NOTE Confidence: 0.94140625

00:02:40.615 --> 00:02:41.595 noon conference.

NOTE Confidence: 0.9610748

00:02:42.935 --> 00:02:44.155 I got that right, Jeff?

NOTE Confidence: 0.9610748

00:02:44.215 --> 00:02:45.195 That's right. Okay.

NOTE Confidence: 0.9621989

00:02:45.575 --> 00:02:47.575 And, we're very excited to

NOTE Confidence: 0.9621989

00:02:47.575 --> 00:02:47.815 have,

NOTE Confidence: 0.93444824

00:02:48.530 --> 00:02:49.349 doctor Shivkumar,

NOTE Confidence: 0.9588623

00:02:49.810 --> 00:02:50.870 who will be our,

NOTE Confidence: 0.8955078

00:02:51.250 --> 00:02:52.470 Calabresi lecturer,

NOTE Confidence: 0.9724121

00:02:53.569 --> 00:02:54.389 from UCLA,

NOTE Confidence: 0.91855466

00:02:54.930 --> 00:02:56.690 on Thursday, and there'll be,

NOTE Confidence: 0.99369305

00:02:57.489 --> 00:02:59.489 different activities and involvements for

NOTE Confidence: 0.99369305

00:02:59.489 --> 00:02:59.989 folks,

NOTE Confidence: 0.98950195

00:03:00.849 --> 00:03:02.129 through, that part of the

NOTE Confidence: 0.98950195

00:03:02.129 --> 00:03:02.629 week.

NOTE Confidence: 0.86376953

00:03:03.625 --> 00:03:04.125 And,

NOTE Confidence: 0.98269314

00:03:05.705 --> 00:03:07.065 following that, we are also

NOTE Confidence: 0.98269314

00:03:07.065 --> 00:03:08.644 excited to have the,

NOTE Confidence: 0.9430147

00:03:09.065 --> 00:03:11.065 annual Linda Rosenfeld lecture given

NOTE Confidence: 0.9430147

00:03:11.065 --> 00:03:12.745 by Mina Chung, which will

NOTE Confidence: 0.9430147

00:03:12.745 --> 00:03:14.345 be on Wednesday as is

NOTE Confidence: 0.9430147

00:03:14.345 --> 00:03:15.084 our standard.

NOTE Confidence: 0.94521487

00:03:15.800 --> 00:03:17.000 On the tenth, we have

NOTE Confidence: 0.94521487

00:03:17.000 --> 00:03:18.760 a faculty research seminar led

NOTE Confidence: 0.94521487

00:03:18.760 --> 00:03:20.460 by actor Bender next door

NOTE Confidence: 0.97605205

00:03:20.919 --> 00:03:21.960 the next week. And then

NOTE Confidence: 0.97605205

00:03:21.960 --> 00:03:23.560 to end the year, we

NOTE Confidence: 0.97605205

00:03:23.560 --> 00:03:23.960 have,

NOTE Confidence: 0.85223573

00:03:25.240 --> 00:03:27.560 professor Zainab Samad, who's the

NOTE Confidence: 0.85223573

00:03:27.560 --> 00:03:28.840 chair of medicine at Khan

NOTE Confidence: 0.85223573

00:03:28.840 --> 00:03:29.340 University,

NOTE Confidence: 0.99276966

00:03:29.720 --> 00:03:31.225 coming to to visit with

NOTE Confidence: 0.99276966

00:03:31.225 --> 00:03:32.025 us at the end of

NOTE Confidence: 0.99276966

00:03:32.025 --> 00:03:32.825 the month. So,

NOTE Confidence: 0.95351565

00:03:33.225 --> 00:03:34.765 in between, there's some other,

NOTE Confidence: 0.96931964

00:03:35.225 --> 00:03:37.005 exciting opportunities to,

NOTE Confidence: 0.9482422

00:03:37.625 --> 00:03:38.105 share,

NOTE Confidence: 0.97839355

00:03:39.225 --> 00:03:39.965 time together,

NOTE Confidence: 0.8804687

00:03:40.985 --> 00:03:43.325 fellowship graduation, and other things,

NOTE Confidence: 0.94954425

00:03:43.785 --> 00:03:45.385 will be, there'll be information

NOTE Confidence: 0.94954425

00:03:45.385 --> 00:03:46.769 on that coming out.

NOTE Confidence: 0.91918945

00:03:47.549 --> 00:03:48.530 These are our disclosures

NOTE Confidence: 0.8598633

00:03:48.909 --> 00:03:50.049 and, information.

NOTE Confidence: 0.99198407

00:03:51.629 --> 00:03:52.750 And with that, I'm gonna

NOTE Confidence: 0.99198407

00:03:52.750 --> 00:03:53.150 ask,

NOTE Confidence: 0.930896

00:03:53.870 --> 00:03:55.470 Rachel, doctor Lampert to come

NOTE Confidence: 0.930896

00:03:55.470 --> 00:03:56.849 up and introduce our speaker.

NOTE Confidence: 0.94943964

00:03:59.115 --> 00:04:00.235 I'm so pleased to be

NOTE Confidence: 0.94943964

00:04:00.235 --> 00:04:01.755 introducing our grand round speaker

NOTE Confidence: 0.94943964

00:04:01.755 --> 00:04:03.375 today, doctor Megan Wasfi.

NOTE Confidence: 0.98787093

00:04:04.075 --> 00:04:05.755 Doctor Wasfi arrived at Harvard

NOTE Confidence: 0.98787093

00:04:05.755 --> 00:04:07.275 as a college freshman and

NOTE Confidence: 0.98787093

00:04:07.275 --> 00:04:09.055 has never left. She graduated

NOTE Confidence: 0.98787093

00:04:09.115 --> 00:04:10.395 medical school, Miles per hour,

NOTE Confidence: 0.98787093

00:04:10.395 --> 00:04:11.935 did fellowships in cardiology,

NOTE Confidence: 0.9947103

00:04:12.315 --> 00:04:13.215 sports cardiology,

NOTE Confidence: 0.91615516

00:04:13.515 --> 00:04:15.330 and echo at, Mass General

NOTE Confidence: 0.91615516

00:04:15.330 --> 00:04:16.370 and the Brigham and is

NOTE Confidence: 0.91615516

00:04:16.370 --> 00:04:17.970 now an associate professor there

NOTE Confidence: 0.91615516

00:04:17.970 --> 00:04:19.410 at Harvard base at Mass

NOTE Confidence: 0.91615516

00:04:19.410 --> 00:04:19.910 General.

NOTE Confidence: 0.9860491

00:04:20.930 --> 00:04:23.029 Doctor Wasfi, is a consummate

NOTE Confidence: 0.9860491

00:04:23.089 --> 00:04:24.690 sports cardiologist in both her

NOTE Confidence: 0.9860491

00:04:24.690 --> 00:04:26.310 clinical and research endeavors.

NOTE Confidence: 0.97877604

00:04:26.805 --> 00:04:28.325 She's the team cardiologist for

NOTE Confidence: 0.97877604

00:04:28.325 --> 00:04:29.685 Harvard Athletics and the medical,

NOTE Confidence: 0.97877604

00:04:30.085 --> 00:04:31.545 director of the Boston Marathon.

NOTE Confidence: 0.97351074

00:04:32.325 --> 00:04:33.285 She's a member of the

NOTE Confidence: 0.97351074

00:04:33.285 --> 00:04:33.785 ACC,

NOTE Confidence: 0.9530963

00:04:34.165 --> 00:04:36.085 sports leadership council and, had,

NOTE Confidence: 0.9530963

00:04:36.404 --> 00:04:37.765 spent several years chairing the

NOTE Confidence: 0.9530963

00:04:37.765 --> 00:04:39.065 annual care of the athletic

NOTE Confidence: 0.9530963

00:04:39.125 --> 00:04:39.865 heart meeting.

NOTE Confidence: 0.99853516

00:04:40.449 --> 00:04:41.190 She's on

NOTE Confidence: 0.90681964

00:04:41.569 --> 00:04:43.409 multiple other committees, including American

NOTE Confidence: 0.90681964

00:04:43.409 --> 00:04:44.710 College of Sports Medicine,

NOTE Confidence: 0.9427185

00:04:45.169 --> 00:04:46.529 and has, led and been

NOTE Confidence: 0.9427185

00:04:46.529 --> 00:04:47.509 part of multiple,

NOTE Confidence: 0.99560547

00:04:47.889 --> 00:04:49.909 guidance documents from multiple societies

NOTE Confidence: 0.99560547

00:04:49.970 --> 00:04:51.110 around sports cardiology.

NOTE Confidence: 0.9805036

00:04:52.305 --> 00:04:53.265 She has been the recipient

NOTE Confidence: 0.9805036

00:04:53.265 --> 00:04:54.245 of, multiple

NOTE Confidence: 0.933849

00:04:54.625 --> 00:04:56.785 grants for her, research most

NOTE Confidence: 0.933849

00:04:56.785 --> 00:04:58.225 recently having gotten a grant,

NOTE Confidence: 0.933849

00:04:58.225 --> 00:04:59.265 I think, yesterday or the

NOTE Confidence: 0.933849

00:04:59.265 --> 00:05:00.625 day before in r o

NOTE Confidence: 0.933849

00:05:00.625 --> 00:05:01.505 one. And,

NOTE Confidence: 0.9639282

00:05:02.225 --> 00:05:03.904 her, focus is the impact

NOTE Confidence: 0.9639282

00:05:03.904 --> 00:05:05.425 of sports and exercise on

NOTE Confidence: 0.9639282

00:05:05.425 --> 00:05:06.485 cardiac physiology.

NOTE Confidence: 0.9076538

00:05:07.190 --> 00:05:08.550 Please join me in welcoming

NOTE Confidence: 0.9076538

00:05:08.550 --> 00:05:09.449 Doctor. Waspy.

NOTE Confidence: 0.9631522

00:05:17.830 --> 00:05:18.949 Thank you. What a kind

NOTE Confidence: 0.9631522

00:05:18.949 --> 00:05:20.630 intro. It's really a pleasure

NOTE Confidence: 0.9631522

00:05:20.630 --> 00:05:21.904 to be here today,

NOTE Confidence: 0.9698181

00:05:22.284 --> 00:05:23.565 and thank you to the

NOTE Confidence: 0.9698181

00:05:23.565 --> 00:05:24.764 division for the invite and

NOTE Confidence: 0.9698181

00:05:24.764 --> 00:05:26.044 especially Rachel for the invite.

NOTE Confidence: 0.9698181

00:05:26.044 --> 00:05:27.345 You know, I look up

NOTE Confidence: 0.9698181

00:05:27.485 --> 00:05:28.845 to it, admire Rachel a

NOTE Confidence: 0.9698181

00:05:28.845 --> 00:05:30.044 lot. She's really a giant

NOTE Confidence: 0.9698181

00:05:30.044 --> 00:05:31.004 in the field of sports

NOTE Confidence: 0.9698181

00:05:31.004 --> 00:05:32.764 cardiology and an excellent host

NOTE Confidence: 0.9698181

00:05:32.764 --> 00:05:33.824 through the day today.

NOTE Confidence: 0.9849121

00:05:35.400 --> 00:05:36.199 And so the goal of

NOTE Confidence: 0.9849121

00:05:36.199 --> 00:05:37.080 the talk is to take

NOTE Confidence: 0.9849121

00:05:37.080 --> 00:05:39.020 you guys through our field.

NOTE Confidence: 0.9916992

00:05:39.479 --> 00:05:39.979 And,

NOTE Confidence: 0.9939575

00:05:40.759 --> 00:05:41.720 I'll go through I don't

NOTE Confidence: 0.9939575

00:05:41.720 --> 00:05:42.779 have any disclosures,

NOTE Confidence: 0.9988281

00:05:43.639 --> 00:05:45.339 to speak of relevant to

NOTE Confidence: 0.9414673

00:05:45.960 --> 00:05:47.080 the talk, but this,

NOTE Confidence: 0.9901874

00:05:47.639 --> 00:05:48.945 I'll add in some of

NOTE Confidence: 0.9901874

00:05:48.945 --> 00:05:50.385 my research throughout the topics

NOTE Confidence: 0.9901874

00:05:50.385 --> 00:05:52.065 that we cover, and these

NOTE Confidence: 0.9901874

00:05:52.065 --> 00:05:53.345 have been the generous funders

NOTE Confidence: 0.9901874

00:05:53.345 --> 00:05:54.385 of that work over the

NOTE Confidence: 0.9901874

00:05:54.385 --> 00:05:54.885 years.

NOTE Confidence: 0.9973958

00:05:55.665 --> 00:05:56.625 As an outline of where

NOTE Confidence: 0.9973958

00:05:56.625 --> 00:05:57.665 we'll head you know, we'll

NOTE Confidence: 0.9973958

00:05:57.665 --> 00:05:58.404 talk about

NOTE Confidence: 0.9951579

00:05:58.865 --> 00:06:00.705 the, disease states and the

NOTE Confidence: 0.9951579

00:06:00.705 --> 00:06:01.205 conditions

NOTE Confidence: 0.97898173

00:06:01.660 --> 00:06:03.020 that really focus our attention

NOTE Confidence: 0.97898173

00:06:03.020 --> 00:06:04.380 in sports cardiology, and these

NOTE Confidence: 0.97898173

00:06:04.380 --> 00:06:05.500 are the causes of sudden

NOTE Confidence: 0.97898173

00:06:05.500 --> 00:06:06.700 cardiac arrest and death in

NOTE Confidence: 0.97898173

00:06:06.700 --> 00:06:08.300 athletic populations. These are also

NOTE Confidence: 0.97898173

00:06:08.300 --> 00:06:10.060 the causes of major clinical

NOTE Confidence: 0.97898173

00:06:10.060 --> 00:06:11.580 events in these populations. You

NOTE Confidence: 0.97898173

00:06:11.580 --> 00:06:13.420 know, what what conditions enriched

NOTE Confidence: 0.97898173

00:06:13.420 --> 00:06:14.625 for sport related events

NOTE Confidence: 0.92502314

00:06:15.025 --> 00:06:16.464 and cover the exercise paradox,

NOTE Confidence: 0.92502314

00:06:16.464 --> 00:06:17.665 the idea that exercise is

NOTE Confidence: 0.92502314

00:06:17.665 --> 00:06:18.625 medicine, but can be a

NOTE Confidence: 0.92502314

00:06:18.625 --> 00:06:20.005 trigger for sudden events.

NOTE Confidence: 0.9724908

00:06:20.464 --> 00:06:21.265 And then we'll break it

NOTE Confidence: 0.9724908

00:06:21.265 --> 00:06:22.705 down by age demographics. When

NOTE Confidence: 0.9724908

00:06:22.705 --> 00:06:23.745 I say young athlete, I

NOTE Confidence: 0.9724908

00:06:23.745 --> 00:06:24.464 I mean, I will see

NOTE Confidence: 0.9724908

00:06:24.464 --> 00:06:25.665 sixteen or seventeen year olds,

NOTE Confidence: 0.9724908

00:06:25.665 --> 00:06:26.705 but we're thinking sort of

NOTE Confidence: 0.9724908

00:06:26.705 --> 00:06:28.890 young teen athletes through around

NOTE Confidence: 0.9724908

00:06:28.890 --> 00:06:30.250 age thirty five, what causes

NOTE Confidence: 0.9724908

00:06:30.250 --> 00:06:31.870 events in in that population.

NOTE Confidence: 0.8877719

00:06:32.650 --> 00:06:34.010 And dip into the work

NOTE Confidence: 0.8877719

00:06:34.010 --> 00:06:35.770 I've done, as oftentimes when

NOTE Confidence: 0.8877719

00:06:35.770 --> 00:06:37.370 we're evaluating athletes that will

NOTE Confidence: 0.8877719

00:06:37.370 --> 00:06:38.410 result in a lot of

NOTE Confidence: 0.8877719

00:06:38.410 --> 00:06:39.850 imaging and ECGs, how do

NOTE Confidence: 0.8877719

00:06:39.850 --> 00:06:40.730 you tell if it's an

NOTE Confidence: 0.8877719

00:06:40.730 --> 00:06:42.330 athlete's heart versus the beginning

NOTE Confidence: 0.8877719

00:06:42.330 --> 00:06:42.730 stages of a pathologic state

NOTE Confidence: 0.8877719

00:06:42.730 --> 00:06:44.035 that could pathologic state that

NOTE Confidence: 0.8877719

00:06:44.035 --> 00:06:45.795 could risk for rich for

NOTE Confidence: 0.8877719

00:06:45.795 --> 00:06:46.295 risk?

NOTE Confidence: 0.9654134

00:06:47.315 --> 00:06:48.115 And then we'll take the

NOTE Confidence: 0.9654134

00:06:48.115 --> 00:06:48.995 lens of the so called

NOTE Confidence: 0.9654134

00:06:48.995 --> 00:06:49.895 masters athlete.

NOTE Confidence: 0.99487305

00:06:50.835 --> 00:06:51.714 Age wise, we think of

NOTE Confidence: 0.99487305

00:06:51.714 --> 00:06:52.755 that as thirty five and

NOTE Confidence: 0.99487305

00:06:52.755 --> 00:06:53.255 above.

NOTE Confidence: 0.8708496

00:06:54.355 --> 00:06:54.855 Yep.

NOTE Confidence: 0.9632462

00:06:56.039 --> 00:06:57.319 So lens that changes as

NOTE Confidence: 0.9632462

00:06:57.319 --> 00:06:58.759 you get older, and really

NOTE Confidence: 0.9632462

00:06:58.759 --> 00:07:00.120 focus on ASCVD in this

NOTE Confidence: 0.9632462

00:07:00.120 --> 00:07:01.240 population as it's the most

NOTE Confidence: 0.9632462

00:07:01.240 --> 00:07:02.680 common cause of events. And

NOTE Confidence: 0.9632462

00:07:02.680 --> 00:07:03.560 then end, you know, through

NOTE Confidence: 0.9632462

00:07:03.560 --> 00:07:05.000 the lens of sports medicine

NOTE Confidence: 0.9632462

00:07:05.000 --> 00:07:05.879 of, you know, we're gonna

NOTE Confidence: 0.9632462

00:07:05.879 --> 00:07:07.400 be incomplete whenever we're trying

NOTE Confidence: 0.9632462

00:07:07.400 --> 00:07:07.815 to

NOTE Confidence: 0.9783748

00:07:08.295 --> 00:07:09.495 prevent prevent events from happening.

NOTE Confidence: 0.9783748

00:07:09.495 --> 00:07:10.855 Even if we understand the

NOTE Confidence: 0.9783748

00:07:10.855 --> 00:07:11.975 problems that we encounter in

NOTE Confidence: 0.9783748

00:07:11.975 --> 00:07:13.495 sports cardiology better, we'll still

NOTE Confidence: 0.9783748

00:07:13.495 --> 00:07:15.015 not find and manage the

NOTE Confidence: 0.9783748

00:07:15.015 --> 00:07:15.515 risk,

NOTE Confidence: 0.9848047

00:07:16.215 --> 00:07:17.735 in all athletes. So, what

NOTE Confidence: 0.9848047

00:07:17.735 --> 00:07:18.455 do we do to make

NOTE Confidence: 0.9848047

00:07:18.455 --> 00:07:19.335 sure that there is an

NOTE Confidence: 0.9848047

00:07:19.335 --> 00:07:20.855 event that, we have athletes

NOTE Confidence: 0.9848047

00:07:20.855 --> 00:07:22.955 surviving? So emergency action planning.

NOTE Confidence: 0.9647217

00:07:23.610 --> 00:07:24.669 So that's our outline.

NOTE Confidence: 0.98322403

00:07:25.370 --> 00:07:26.569 And we'll we'll talk with

NOTE Confidence: 0.98322403

00:07:26.569 --> 00:07:28.330 discussing sudden cardiac death in

NOTE Confidence: 0.98322403

00:07:28.330 --> 00:07:29.370 athletes. And, you know, these

NOTE Confidence: 0.98322403

00:07:29.370 --> 00:07:30.909 are always very highly impactful

NOTE Confidence: 0.98322403

00:07:30.969 --> 00:07:31.469 events.

NOTE Confidence: 0.92731583

00:07:32.250 --> 00:07:33.370 The most famous story I

NOTE Confidence: 0.92731583

00:07:33.370 --> 00:07:34.189 think codified,

NOTE Confidence: 0.99902344

00:07:34.729 --> 00:07:35.229 through

NOTE Confidence: 0.9906142

00:07:35.610 --> 00:07:36.889 many hundreds of years is

NOTE Confidence: 0.9906142

00:07:36.889 --> 00:07:38.270 the story of Philippides.

NOTE Confidence: 0.990743

00:07:39.585 --> 00:07:40.705 He was a soldier who

NOTE Confidence: 0.990743

00:07:40.705 --> 00:07:42.785 apparently ran about the modern

NOTE Confidence: 0.990743

00:07:42.785 --> 00:07:44.785 marathon distance to deliver, news

NOTE Confidence: 0.990743

00:07:44.785 --> 00:07:45.985 of victory in battle and

NOTE Confidence: 0.990743

00:07:45.985 --> 00:07:47.525 promptly collapsed and died.

NOTE Confidence: 0.975179

00:07:48.465 --> 00:07:49.585 So that's a that's a

NOTE Confidence: 0.975179

00:07:49.585 --> 00:07:51.104 famous case of sudden cardiac

NOTE Confidence: 0.975179

00:07:51.104 --> 00:07:52.865 arrest and death, inspired the

NOTE Confidence: 0.975179

00:07:52.865 --> 00:07:54.164 modern marathon distance.

NOTE Confidence: 0.6269531

00:07:54.544 --> 00:07:55.044 These

NOTE Confidence: 0.943533

00:07:55.720 --> 00:07:57.180 events even if they're happening

NOTE Confidence: 0.943533

00:07:57.240 --> 00:07:58.360 very very long ago or

NOTE Confidence: 0.943533

00:07:58.360 --> 00:08:00.139 more recently are highly impactful,

NOTE Confidence: 0.9504266

00:08:00.520 --> 00:08:01.880 because it's this person that's

NOTE Confidence: 0.9504266

00:08:01.880 --> 00:08:03.639 the pinnacle of health, that

NOTE Confidence: 0.9504266

00:08:03.639 --> 00:08:05.000 drops while doing usually something

NOTE Confidence: 0.9504266

00:08:05.000 --> 00:08:06.060 they love a lot.

NOTE Confidence: 0.92028093

00:08:06.840 --> 00:08:08.040 Here's what the numbers look

NOTE Confidence: 0.92028093

00:08:08.040 --> 00:08:09.240 like and you could say

NOTE Confidence: 0.92028093

00:08:09.240 --> 00:08:09.880 I mean this is a

NOTE Confidence: 0.92028093

00:08:09.880 --> 00:08:11.080 rare event it's point five

NOTE Confidence: 0.92028093

00:08:11.080 --> 00:08:12.465 to two depending on whether

NOTE Confidence: 0.92028093

00:08:12.465 --> 00:08:13.665 you're looking at arrest and

NOTE Confidence: 0.92028093

00:08:13.665 --> 00:08:14.725 death or just death,

NOTE Confidence: 0.8779297

00:08:15.105 --> 00:08:16.385 per a hundred thousand athlete

NOTE Confidence: 0.8779297

00:08:16.385 --> 00:08:16.885 years.

NOTE Confidence: 0.94002277

00:08:17.585 --> 00:08:18.465 So that you could look

NOTE Confidence: 0.94002277

00:08:18.465 --> 00:08:19.425 through the lens of that

NOTE Confidence: 0.94002277

00:08:19.425 --> 00:08:20.325 being rare.

NOTE Confidence: 0.96372765

00:08:20.785 --> 00:08:22.065 It's more common in certain

NOTE Confidence: 0.96372765

00:08:22.065 --> 00:08:22.885 athlete populations,

NOTE Confidence: 0.95641446

00:08:23.360 --> 00:08:24.560 males more so than females,

NOTE Confidence: 0.95641446

00:08:24.560 --> 00:08:25.840 and certain higher risk sports

NOTE Confidence: 0.95641446

00:08:25.840 --> 00:08:27.700 like men's basketball, you'll see

NOTE Confidence: 0.95641446

00:08:27.760 --> 00:08:29.460 numbers that get, higher.

NOTE Confidence: 0.76660156

00:08:30.960 --> 00:08:31.460 And,

NOTE Confidence: 0.96072155

00:08:32.480 --> 00:08:33.760 so those numbers, while rare,

NOTE Confidence: 0.96072155

00:08:33.760 --> 00:08:34.720 I feel like it's because

NOTE Confidence: 0.96072155

00:08:34.720 --> 00:08:35.760 of the paradox of it

NOTE Confidence: 0.96072155

00:08:35.760 --> 00:08:37.195 happening in a highly active

NOTE Confidence: 0.96072155

00:08:37.195 --> 00:08:38.795 athletic person that centers our

NOTE Confidence: 0.96072155

00:08:38.795 --> 00:08:39.295 attention.

NOTE Confidence: 0.95388216

00:08:39.995 --> 00:08:42.175 It shouldn't decrease our enthusiasm

NOTE Confidence: 0.95388216

00:08:42.394 --> 00:08:44.315 for exercise, though. And in

NOTE Confidence: 0.95388216

00:08:44.315 --> 00:08:45.915 the vast majority of even

NOTE Confidence: 0.95388216

00:08:45.915 --> 00:08:47.595 my practice was enriched for

NOTE Confidence: 0.95388216

00:08:47.595 --> 00:08:48.875 athletic people. We need to

NOTE Confidence: 0.95388216

00:08:48.875 --> 00:08:50.795 be, you know, carrying the

NOTE Confidence: 0.95388216

00:08:50.795 --> 00:08:52.315 message that exercise is medicine

NOTE Confidence: 0.95388216

00:08:52.315 --> 00:08:53.090 and that we know higher

NOTE Confidence: 0.95388216

00:08:53.090 --> 00:08:54.610 levels of physical activity shown

NOTE Confidence: 0.95388216

00:08:54.610 --> 00:08:56.050 nicely on this graph. You

NOTE Confidence: 0.95388216

00:08:56.050 --> 00:08:56.850 don't even need to get

NOTE Confidence: 0.95388216

00:08:56.850 --> 00:08:58.290 out to, like, guideline recommended

NOTE Confidence: 0.95388216

00:08:58.290 --> 00:08:59.970 levels, even even less than

NOTE Confidence: 0.95388216

00:08:59.970 --> 00:09:01.570 that, twenty percent off the

NOTE Confidence: 0.95388216

00:09:01.570 --> 00:09:03.330 top of mortality risk. These

NOTE Confidence: 0.95388216

00:09:03.330 --> 00:09:04.870 are guideline recommended levels.

NOTE Confidence: 0.9870075

00:09:05.402 --> 00:09:06.035 And then you can get

NOTE Confidence: 0.9870075

00:09:06.035 --> 00:09:07.315 a little bit more reduction

NOTE Confidence: 0.9870075

00:09:07.315 --> 00:09:08.434 in mortality getting out to

NOTE Confidence: 0.9870075

00:09:08.434 --> 00:09:10.214 more what, like, athletic individuals

NOTE Confidence: 0.9870075

00:09:10.434 --> 00:09:11.255 might be doing.

NOTE Confidence: 0.9659831

00:09:12.274 --> 00:09:13.554 And so exercise as medicine

NOTE Confidence: 0.9659831

00:09:13.554 --> 00:09:14.355 is a message we need

NOTE Confidence: 0.9659831

00:09:14.355 --> 00:09:15.074 to carry through all of

NOTE Confidence: 0.9659831

00:09:15.074 --> 00:09:16.295 our cardiology visits.

NOTE Confidence: 0.96686196

00:09:16.755 --> 00:09:17.554 One thing I do say

NOTE Confidence: 0.96686196

00:09:17.554 --> 00:09:18.355 to patients, though, is you

NOTE Confidence: 0.96686196

00:09:18.355 --> 00:09:19.154 don't need to be out

NOTE Confidence: 0.96686196

00:09:19.154 --> 00:09:20.535 here on the dose response

NOTE Confidence: 0.96686196

00:09:20.595 --> 00:09:21.740 curve. It should be accruing

NOTE Confidence: 0.96686196

00:09:21.740 --> 00:09:23.360 all the benefits of exercise.

NOTE Confidence: 0.98605686

00:09:23.820 --> 00:09:24.620 A lot has been made

NOTE Confidence: 0.98605686

00:09:24.620 --> 00:09:25.740 about this dot, which,

NOTE Confidence: 0.9986725

00:09:26.380 --> 00:09:27.899 occurs in almost every study

NOTE Confidence: 0.9986725

00:09:27.899 --> 00:09:29.100 where you're looking at the

NOTE Confidence: 0.9986725

00:09:29.100 --> 00:09:31.179 relationship between physical activity and

NOTE Confidence: 0.9986725

00:09:31.179 --> 00:09:31.679 mortality.

NOTE Confidence: 0.9597168

00:09:32.220 --> 00:09:33.179 Suffice to say, in even

NOTE Confidence: 0.9597168

00:09:33.179 --> 00:09:34.380 cohorts that are quite large,

NOTE Confidence: 0.9597168

00:09:34.380 --> 00:09:35.760 there's never a statistically

NOTE Confidence: 0.9718506

00:09:36.220 --> 00:09:37.745 significant sort of too much

NOTE Confidence: 0.9718506

00:09:37.745 --> 00:09:39.605 exercise that can be demonstrated.

NOTE Confidence: 0.9767253

00:09:40.145 --> 00:09:41.585 But it's thought provoking, especially

NOTE Confidence: 0.9767253

00:09:41.585 --> 00:09:42.565 as we go through,

NOTE Confidence: 0.90955305

00:09:43.345 --> 00:09:44.705 how exercise can be a

NOTE Confidence: 0.90955305

00:09:44.705 --> 00:09:46.625 a a can provoke sudden

NOTE Confidence: 0.90955305

00:09:46.625 --> 00:09:47.665 events in those with risk

NOTE Confidence: 0.90955305

00:09:47.665 --> 00:09:48.645 producing conditions.

NOTE Confidence: 0.98755944

00:09:50.460 --> 00:09:52.300 And so that idea that

NOTE Confidence: 0.98755944

00:09:52.300 --> 00:09:53.340 exercise can serve as a

NOTE Confidence: 0.98755944

00:09:53.340 --> 00:09:54.460 trigger is what I like

NOTE Confidence: 0.98755944

00:09:54.460 --> 00:09:55.820 to call the exercise paradox.

NOTE Confidence: 0.98755944

00:09:55.820 --> 00:09:57.200 So exercise overall,

NOTE Confidence: 0.9955125

00:09:57.580 --> 00:09:59.020 you know, reduces your risk.

NOTE Confidence: 0.9955125

00:09:59.020 --> 00:10:00.300 If you're physically active, you're

NOTE Confidence: 0.9955125

00:10:00.300 --> 00:10:01.260 gonna have lower risk of

NOTE Confidence: 0.9955125

00:10:01.260 --> 00:10:03.179 sudden events and heart disease

NOTE Confidence: 0.9955125

00:10:03.179 --> 00:10:03.679 overall.

NOTE Confidence: 0.99580437

00:10:04.620 --> 00:10:06.035 But for that hour spent

NOTE Confidence: 0.99580437

00:10:06.035 --> 00:10:07.475 exercising, your risk is higher

NOTE Confidence: 0.99580437

00:10:07.475 --> 00:10:08.515 than an hour spent at

NOTE Confidence: 0.99580437

00:10:08.515 --> 00:10:09.875 rest. And this is a

NOTE Confidence: 0.99580437

00:10:09.875 --> 00:10:11.475 really old classic study that

NOTE Confidence: 0.99580437

00:10:11.475 --> 00:10:12.615 demonstrates that,

NOTE Confidence: 0.97369164

00:10:13.475 --> 00:10:14.675 individuals were quoted by the

NOTE Confidence: 0.97369164

00:10:14.675 --> 00:10:16.515 amount of habitual physical activity,

NOTE Confidence: 0.97369164

00:10:16.515 --> 00:10:18.115 sedentary versus more, you know,

NOTE Confidence: 0.97369164

00:10:18.115 --> 00:10:19.870 highly active, looking at the

NOTE Confidence: 0.97369164

00:10:19.870 --> 00:10:21.309 incidence of cardiac arrest and

NOTE Confidence: 0.97369164

00:10:21.309 --> 00:10:22.350 the relative risk of a

NOTE Confidence: 0.97369164

00:10:22.350 --> 00:10:23.629 cardiac arrest during an hour

NOTE Confidence: 0.97369164

00:10:23.629 --> 00:10:24.990 spent at exercise versus an

NOTE Confidence: 0.97369164

00:10:24.990 --> 00:10:26.350 hour spent at rest. If

NOTE Confidence: 0.97369164

00:10:26.350 --> 00:10:27.470 you're not active at all,

NOTE Confidence: 0.97369164

00:10:27.470 --> 00:10:28.589 you have a fifty times

NOTE Confidence: 0.97369164

00:10:28.589 --> 00:10:29.089 risk,

NOTE Confidence: 0.9512126

00:10:29.470 --> 00:10:30.990 during exercise as compared at

NOTE Confidence: 0.9512126

00:10:30.990 --> 00:10:31.490 rest.

NOTE Confidence: 0.9841064

00:10:32.029 --> 00:10:32.910 But even if you are

NOTE Confidence: 0.9841064

00:10:32.910 --> 00:10:34.485 regularly training, your risk is

NOTE Confidence: 0.9841064

00:10:34.485 --> 00:10:35.765 higher during that time spent

NOTE Confidence: 0.9841064

00:10:35.765 --> 00:10:37.145 in exercise than at rest.

NOTE Confidence: 0.9703369

00:10:37.765 --> 00:10:38.964 So that concept really,

NOTE Confidence: 0.9548828

00:10:39.765 --> 00:10:41.205 focuses our attention as sports

NOTE Confidence: 0.9548828

00:10:41.205 --> 00:10:42.804 cardiologists because we wanna understand

NOTE Confidence: 0.9548828

00:10:42.804 --> 00:10:44.245 what conditions are per in

NOTE Confidence: 0.9548828

00:10:44.245 --> 00:10:45.684 particular, the conditions that are

NOTE Confidence: 0.9548828

00:10:45.684 --> 00:10:46.885 most relevant to athletes are

NOTE Confidence: 0.9548828

00:10:46.885 --> 00:10:47.970 the ones that produce those

NOTE Confidence: 0.9548828

00:10:47.970 --> 00:10:49.829 those excess events during exercise.

NOTE Confidence: 0.9972549

00:10:50.449 --> 00:10:51.649 And we understand that pretty

NOTE Confidence: 0.9972549

00:10:51.649 --> 00:10:52.850 well. I think it it's

NOTE Confidence: 0.9972549

00:10:52.850 --> 00:10:53.569 taken a lot of work

NOTE Confidence: 0.9972549

00:10:53.569 --> 00:10:54.449 over the years, and there's

NOTE Confidence: 0.9972549

00:10:54.449 --> 00:10:55.649 still debate about, you know,

NOTE Confidence: 0.9972549

00:10:55.649 --> 00:10:57.490 the distribution and percentage of

NOTE Confidence: 0.9972549

00:10:57.490 --> 00:10:59.089 exactly how many events are

NOTE Confidence: 0.9972549

00:10:59.089 --> 00:11:00.290 caused by x or y

NOTE Confidence: 0.9972549

00:11:00.290 --> 00:11:00.790 condition.

NOTE Confidence: 0.97943705

00:11:01.170 --> 00:11:02.050 But I like this graph

NOTE Confidence: 0.97943705

00:11:02.050 --> 00:11:03.105 because it shows it mapped

NOTE Confidence: 0.97943705

00:11:03.105 --> 00:11:04.265 by age, and this is,

NOTE Confidence: 0.97943705

00:11:04.464 --> 00:11:05.985 the the incidence of sudden

NOTE Confidence: 0.97943705

00:11:05.985 --> 00:11:06.945 cardiac death and then the

NOTE Confidence: 0.97943705

00:11:06.945 --> 00:11:08.304 causes into, you know, big

NOTE Confidence: 0.97943705

00:11:08.304 --> 00:11:08.804 bins.

NOTE Confidence: 0.9721796

00:11:09.345 --> 00:11:10.945 After age thirty five, if

NOTE Confidence: 0.9721796

00:11:10.945 --> 00:11:12.065 you're talking about a master's

NOTE Confidence: 0.9721796

00:11:12.065 --> 00:11:13.584 athlete population, we can really

NOTE Confidence: 0.9721796

00:11:13.584 --> 00:11:15.205 focus our attention on atherosclerotic

NOTE Confidence: 0.9721796

00:11:15.425 --> 00:11:15.925 cardiovascular

NOTE Confidence: 0.9764404

00:11:16.304 --> 00:11:17.370 disease and coronary artery

NOTE Confidence: 0.9825521

00:11:18.250 --> 00:11:19.610 disease. Below age thirty five,

NOTE Confidence: 0.9825521

00:11:19.610 --> 00:11:20.330 though, it's more of a

NOTE Confidence: 0.9825521

00:11:20.330 --> 00:11:21.929 mixed bag, and it's it's

NOTE Confidence: 0.9825521

00:11:21.929 --> 00:11:23.290 not really just one condition

NOTE Confidence: 0.9825521

00:11:23.290 --> 00:11:24.250 we can focus on, but

NOTE Confidence: 0.9825521

00:11:24.250 --> 00:11:26.190 a whole variety of conditions.

NOTE Confidence: 0.98880285

00:11:26.650 --> 00:11:28.170 There's many different pie charts

NOTE Confidence: 0.98880285

00:11:28.170 --> 00:11:29.450 one could show to demonstrate

NOTE Confidence: 0.98880285

00:11:29.450 --> 00:11:30.395 this. I just like this

NOTE Confidence: 0.98880285

00:11:30.395 --> 00:11:31.355 one the best. It has

NOTE Confidence: 0.98880285

00:11:31.355 --> 00:11:32.095 nice colors.

NOTE Confidence: 0.9991862

00:11:32.635 --> 00:11:33.515 You can divide it up

NOTE Confidence: 0.9991862

00:11:33.515 --> 00:11:34.015 into

NOTE Confidence: 0.8819173

00:11:34.554 --> 00:11:35.054 cardiomyopathies.

NOTE Confidence: 0.9748493

00:11:35.595 --> 00:11:37.595 The most common overall and

NOTE Confidence: 0.9748493

00:11:37.595 --> 00:11:38.635 and as well as represented

NOTE Confidence: 0.9748493

00:11:38.635 --> 00:11:39.595 in these cohorts will be

NOTE Confidence: 0.9748493

00:11:39.595 --> 00:11:42.015 hypertrophic cardiomyopathy, but also arrhythmogenic

NOTE Confidence: 0.9748493

00:11:42.235 --> 00:11:43.695 and dilated cardiomyopathies,

NOTE Confidence: 0.9749885

00:11:44.670 --> 00:11:46.610 You know, primary arrhythmia syndromes,

NOTE Confidence: 0.9749885

00:11:46.829 --> 00:11:48.829 Rachel's oh, sorry. Coronary anomalies

NOTE Confidence: 0.9749885

00:11:48.829 --> 00:11:49.790 will always be second in

NOTE Confidence: 0.9749885

00:11:49.790 --> 00:11:50.829 the pizza pie. If there's

NOTE Confidence: 0.9749885

00:11:50.829 --> 00:11:52.190 a board question, it's always

NOTE Confidence: 0.9749885

00:11:52.190 --> 00:11:53.309 second. So what's the second

NOTE Confidence: 0.9749885

00:11:53.309 --> 00:11:54.829 most cause, common causes on

NOTE Confidence: 0.9749885

00:11:54.829 --> 00:11:56.190 cardiac arrest in young athletes?

NOTE Confidence: 0.9749885

00:11:56.190 --> 00:11:57.490 It's always coronary anomalies

NOTE Confidence: 0.96697366

00:11:57.870 --> 00:11:59.585 as compared to other adult

NOTE Confidence: 0.96697366

00:11:59.585 --> 00:12:00.785 cardiologists. I feel like I

NOTE Confidence: 0.96697366

00:12:00.785 --> 00:12:01.905 think and worry and wonder

NOTE Confidence: 0.96697366

00:12:01.905 --> 00:12:03.665 about coronary anomalies, much more

NOTE Confidence: 0.96697366

00:12:03.665 --> 00:12:05.265 commonly because of that. And

NOTE Confidence: 0.96697366

00:12:05.265 --> 00:12:07.265 then, primary arrhythmia syndromes will

NOTE Confidence: 0.96697366

00:12:07.265 --> 00:12:08.065 take up most of the

NOTE Confidence: 0.96697366

00:12:08.065 --> 00:12:09.105 rest of the pizza pie

NOTE Confidence: 0.96697366

00:12:09.105 --> 00:12:09.905 as far as things that

NOTE Confidence: 0.96697366

00:12:09.905 --> 00:12:11.505 you can identify and manage

NOTE Confidence: 0.96697366

00:12:11.505 --> 00:12:12.245 in advance.

NOTE Confidence: 0.98612255

00:12:13.950 --> 00:12:15.470 And so within young athletes,

NOTE Confidence: 0.98612255

00:12:15.470 --> 00:12:16.670 we're really not thinking just

NOTE Confidence: 0.98612255

00:12:16.670 --> 00:12:17.709 about one condition, but a

NOTE Confidence: 0.98612255

00:12:17.709 --> 00:12:18.770 whole host of conditions.

NOTE Confidence: 0.9428711

00:12:19.230 --> 00:12:19.730 And,

NOTE Confidence: 0.9011393

00:12:20.670 --> 00:12:22.270 we are already in Boston

NOTE Confidence: 0.9011393

00:12:22.270 --> 00:12:24.190 in some schools, and colleges

NOTE Confidence: 0.9011393

00:12:24.190 --> 00:12:26.529 cycling into a screening season.

NOTE Confidence: 0.98441726

00:12:26.985 --> 00:12:28.584 The idea being, I mean,

NOTE Confidence: 0.98441726

00:12:28.584 --> 00:12:29.304 those of us who have

NOTE Confidence: 0.98441726

00:12:29.304 --> 00:12:30.584 kids and who are at

NOTE Confidence: 0.98441726

00:12:30.584 --> 00:12:31.545 a certain level of youth

NOTE Confidence: 0.98441726

00:12:31.545 --> 00:12:32.745 sports, are used to having

NOTE Confidence: 0.98441726

00:12:32.745 --> 00:12:33.704 to have a form filled

NOTE Confidence: 0.98441726

00:12:33.704 --> 00:12:35.065 out before kids can participate

NOTE Confidence: 0.98441726

00:12:35.065 --> 00:12:36.765 in sport. And then typically,

NOTE Confidence: 0.98441726

00:12:36.825 --> 00:12:37.945 as we are thinking about

NOTE Confidence: 0.98441726

00:12:37.945 --> 00:12:39.704 athletes at higher incrementally higher

NOTE Confidence: 0.98441726

00:12:39.704 --> 00:12:40.605 levels, there's

NOTE Confidence: 0.98357284

00:12:40.990 --> 00:12:42.350 additional testing done in order

NOTE Confidence: 0.98357284

00:12:42.350 --> 00:12:44.110 to identify risk producing conditions

NOTE Confidence: 0.98357284

00:12:44.110 --> 00:12:45.250 in advance of sport.

NOTE Confidence: 0.98811144

00:12:46.350 --> 00:12:47.230 And I think the lens

NOTE Confidence: 0.98811144

00:12:47.230 --> 00:12:48.670 here is quite interesting because

NOTE Confidence: 0.98811144

00:12:48.670 --> 00:12:49.890 when we think about screening

NOTE Confidence: 0.98811144

00:12:49.950 --> 00:12:51.070 in in the rest of

NOTE Confidence: 0.98811144

00:12:51.070 --> 00:12:52.370 medicine, you're doing,

NOTE Confidence: 0.98600054

00:12:52.910 --> 00:12:54.190 you know, a mammogram to

NOTE Confidence: 0.98600054

00:12:54.190 --> 00:12:55.230 look for breast cancer or

NOTE Confidence: 0.98600054

00:12:55.230 --> 00:12:56.270 a colonoscopy to look for

NOTE Confidence: 0.98600054

00:12:56.270 --> 00:12:57.045 colon cancer. But when we're

NOTE Confidence: 0.98600054

00:12:57.045 --> 00:12:58.965 screening young athletes, I think

NOTE Confidence: 0.98600054

00:12:58.965 --> 00:13:00.245 it's unique because we're really

NOTE Confidence: 0.98600054

00:13:00.245 --> 00:13:01.705 screening for all these diagnoses,

NOTE Confidence: 0.98600054

00:13:01.845 --> 00:13:03.304 not just one diagnosis.

NOTE Confidence: 0.9912272

00:13:04.085 --> 00:13:05.125 And I'll say in advance,

NOTE Confidence: 0.9912272

00:13:05.125 --> 00:13:07.365 there's no, like, randomized controlled

NOTE Confidence: 0.9912272

00:13:07.365 --> 00:13:08.645 trial or or trial based

NOTE Confidence: 0.9912272

00:13:08.645 --> 00:13:09.605 data that tells us a

NOTE Confidence: 0.9912272

00:13:09.605 --> 00:13:11.519 given screening program is shown

NOTE Confidence: 0.9912272

00:13:11.519 --> 00:13:12.959 to reduce the outcome of

NOTE Confidence: 0.9912272

00:13:12.959 --> 00:13:14.320 interest, which is sudden cardiac

NOTE Confidence: 0.9912272

00:13:14.320 --> 00:13:16.160 arrest and death. Absolutely no

NOTE Confidence: 0.9912272

00:13:16.160 --> 00:13:17.540 studies that tell us that.

NOTE Confidence: 0.98743963

00:13:18.399 --> 00:13:19.679 This is the typical starting

NOTE Confidence: 0.98743963

00:13:19.679 --> 00:13:20.639 spot, which is we're gonna

NOTE Confidence: 0.98743963

00:13:20.639 --> 00:13:21.519 do a history and a

NOTE Confidence: 0.98743963

00:13:21.519 --> 00:13:23.040 physical. This is the one.

NOTE Confidence: 0.98743963

00:13:23.040 --> 00:13:24.160 There's also some that come

NOTE Confidence: 0.98743963

00:13:24.160 --> 00:13:25.839 out from the ACSM asking

NOTE Confidence: 0.98743963

00:13:25.839 --> 00:13:27.025 about chest pain and family

NOTE Confidence: 0.98743963

00:13:27.025 --> 00:13:27.925 history and such.

NOTE Confidence: 0.9732633

00:13:28.545 --> 00:13:29.585 A quirky story is I

NOTE Confidence: 0.9732633

00:13:29.585 --> 00:13:31.265 do do the, screenings for

NOTE Confidence: 0.9732633

00:13:31.265 --> 00:13:32.385 Harvard Athletics now, and I

NOTE Confidence: 0.9732633

00:13:32.385 --> 00:13:33.665 was a Harvard athlete. And

NOTE Confidence: 0.9732633

00:13:33.665 --> 00:13:34.545 maybe this was a sign

NOTE Confidence: 0.9732633

00:13:34.545 --> 00:13:35.425 of times to come, but

NOTE Confidence: 0.9732633

00:13:35.425 --> 00:13:36.885 I have a very linear,

NOTE Confidence: 0.9732633

00:13:36.945 --> 00:13:38.165 like, extremely

NOTE Confidence: 0.9588865

00:13:38.580 --> 00:13:40.260 consolidated memory of my PPE

NOTE Confidence: 0.9588865

00:13:40.260 --> 00:13:41.540 in college because it was

NOTE Confidence: 0.9588865

00:13:41.540 --> 00:13:42.660 the first time anyone had

NOTE Confidence: 0.9588865

00:13:42.660 --> 00:13:44.120 asked about my family history

NOTE Confidence: 0.9588865

00:13:44.260 --> 00:13:45.380 and my mother wasn't sitting

NOTE Confidence: 0.9588865

00:13:45.380 --> 00:13:46.500 next to me and there's

NOTE Confidence: 0.9588865

00:13:46.500 --> 00:13:47.620 no cell phones back then

NOTE Confidence: 0.9588865

00:13:47.620 --> 00:13:48.580 so they're asking does anyone

NOTE Confidence: 0.9588865

00:13:48.580 --> 00:13:49.720 in your family have cardiomyopathy

NOTE Confidence: 0.9588865

00:13:49.860 --> 00:13:50.580 this and that this and

NOTE Confidence: 0.9588865

00:13:50.580 --> 00:13:51.300 that and I thought I

NOTE Confidence: 0.9588865

00:13:51.300 --> 00:13:52.420 was flunking my first test

NOTE Confidence: 0.9588865

00:13:52.420 --> 00:13:53.380 at college because I didn't

NOTE Confidence: 0.9588865

00:13:53.380 --> 00:13:54.235 know the answer to any

NOTE Confidence: 0.9588865

00:13:54.235 --> 00:13:55.515 of those questions. So probably

NOTE Confidence: 0.9588865

00:13:55.515 --> 00:13:56.554 wasn't a very high yield

NOTE Confidence: 0.9588865

00:13:56.554 --> 00:13:57.995 question. And as such, you

NOTE Confidence: 0.9588865

00:13:57.995 --> 00:13:59.515 know, this is common. These

NOTE Confidence: 0.9588865

00:13:59.515 --> 00:14:00.475 are young people being asked

NOTE Confidence: 0.9588865

00:14:00.475 --> 00:14:01.355 these questions, and I think

NOTE Confidence: 0.9588865

00:14:01.355 --> 00:14:02.395 even if their parent is

NOTE Confidence: 0.9588865

00:14:02.395 --> 00:14:03.595 next to them, you can

NOTE Confidence: 0.9588865

00:14:03.595 --> 00:14:04.554 see if you're thinking about

NOTE Confidence: 0.9588865

00:14:04.554 --> 00:14:05.755 it as a diagnostic test,

NOTE Confidence: 0.9588865

00:14:05.755 --> 00:14:07.800 the sensitivity and specificity are

NOTE Confidence: 0.9588865

00:14:07.880 --> 00:14:09.160 really imperfect and,

NOTE Confidence: 0.96313477

00:14:09.959 --> 00:14:11.580 positive predictive value really

NOTE Confidence: 0.97741383

00:14:12.120 --> 00:14:13.800 quite poor. So this wouldn't

NOTE Confidence: 0.97741383

00:14:13.800 --> 00:14:14.839 pass muster if we were

NOTE Confidence: 0.97741383

00:14:14.839 --> 00:14:15.800 trying to, like, get it

NOTE Confidence: 0.97741383

00:14:15.800 --> 00:14:16.519 into you know, if it

NOTE Confidence: 0.97741383

00:14:16.519 --> 00:14:17.399 costs a lot of money

NOTE Confidence: 0.97741383

00:14:17.399 --> 00:14:19.000 as a screening test, this

NOTE Confidence: 0.97741383

00:14:19.000 --> 00:14:20.839 naturally promulgated the question of

NOTE Confidence: 0.97741383

00:14:20.839 --> 00:14:21.740 can we do better.

NOTE Confidence: 0.98920226

00:14:22.115 --> 00:14:23.954 And, quite a while ago

NOTE Confidence: 0.98920226

00:14:23.954 --> 00:14:25.475 now, before I even started

NOTE Confidence: 0.98920226

00:14:25.475 --> 00:14:26.834 as a sports cardiologist, the

NOTE Confidence: 0.98920226

00:14:26.834 --> 00:14:28.355 natural extension was to add

NOTE Confidence: 0.98920226

00:14:28.355 --> 00:14:29.014 an ECG,

NOTE Confidence: 0.9616783

00:14:29.475 --> 00:14:30.435 which we now do for

NOTE Confidence: 0.9616783

00:14:30.435 --> 00:14:32.115 all, not all d one

NOTE Confidence: 0.9616783

00:14:32.115 --> 00:14:33.394 programs, but within the Ivy

NOTE Confidence: 0.9616783

00:14:33.394 --> 00:14:34.675 League, all of the, sports

NOTE Confidence: 0.9616783

00:14:34.675 --> 00:14:35.795 programs do this in many

NOTE Confidence: 0.9616783

00:14:35.795 --> 00:14:37.095 other division one programs,

NOTE Confidence: 0.9572128

00:14:37.760 --> 00:14:38.880 and is even percolated down

NOTE Confidence: 0.9572128

00:14:38.880 --> 00:14:39.760 to the high school level

NOTE Confidence: 0.9572128

00:14:39.760 --> 00:14:40.660 in some areas.

NOTE Confidence: 0.94263804

00:14:41.839 --> 00:14:43.040 The problem was, though, initially,

NOTE Confidence: 0.94263804

00:14:43.040 --> 00:14:44.320 is that athletes' ECGs look

NOTE Confidence: 0.94263804

00:14:44.320 --> 00:14:45.520 quite different than the general

NOTE Confidence: 0.94263804

00:14:45.520 --> 00:14:47.279 population in part related to

NOTE Confidence: 0.94263804

00:14:47.279 --> 00:14:47.940 the remodeling

NOTE Confidence: 0.9951809

00:14:48.320 --> 00:14:49.360 that will happen to an

NOTE Confidence: 0.9951809

00:14:49.360 --> 00:14:50.965 athlete's heart. So the results

NOTE Confidence: 0.9951809

00:14:50.965 --> 00:14:52.565 were somewhat disastrous with, like,

NOTE Confidence: 0.9951809

00:14:52.565 --> 00:14:53.925 huge positive rates that were

NOTE Confidence: 0.9951809

00:14:53.925 --> 00:14:54.905 all false positives.

NOTE Confidence: 0.9830729

00:14:55.605 --> 00:14:56.565 Rachel's been part of this

NOTE Confidence: 0.9830729

00:14:56.565 --> 00:14:57.765 work all throughout, which is

NOTE Confidence: 0.9830729

00:14:57.765 --> 00:14:58.645 the idea that can we

NOTE Confidence: 0.9830729

00:14:58.645 --> 00:14:59.925 get better with refining what

NOTE Confidence: 0.9830729

00:14:59.925 --> 00:15:01.365 is completely normal on an

NOTE Confidence: 0.9830729

00:15:01.365 --> 00:15:03.205 athlete ECG, what's always gonna

NOTE Confidence: 0.9830729

00:15:03.205 --> 00:15:04.620 be abnormal, and what sort

NOTE Confidence: 0.9830729

00:15:04.620 --> 00:15:06.680 of requires some contextual cues.

NOTE Confidence: 0.983001

00:15:07.220 --> 00:15:08.100 And with the use of,

NOTE Confidence: 0.983001

00:15:08.420 --> 00:15:09.860 algorithms like this that are

NOTE Confidence: 0.983001

00:15:09.860 --> 00:15:10.980 just about to be updated,

NOTE Confidence: 0.983001

00:15:10.980 --> 00:15:11.700 maybe you can tell us

NOTE Confidence: 0.983001

00:15:11.700 --> 00:15:12.500 when the new ones will

NOTE Confidence: 0.983001

00:15:12.500 --> 00:15:13.800 be out, Rachel. We've incrementally

NOTE Confidence: 0.983001

00:15:13.860 --> 00:15:15.080 gotten down, like, the positivity

NOTE Confidence: 0.983001

00:15:15.300 --> 00:15:16.420 rate of the ECG to

NOTE Confidence: 0.983001

00:15:16.420 --> 00:15:17.400 around two percent.

NOTE Confidence: 0.9794881

00:15:18.245 --> 00:15:19.045 So it's still not a

NOTE Confidence: 0.9794881

00:15:19.045 --> 00:15:20.565 perfect test. It definitely has

NOTE Confidence: 0.9794881

00:15:20.565 --> 00:15:22.725 diagnostic criteria performance criteria that

NOTE Confidence: 0.9794881

00:15:22.725 --> 00:15:23.685 are much better than the

NOTE Confidence: 0.9794881

00:15:23.685 --> 00:15:25.365 history and physical alone. But

NOTE Confidence: 0.9794881

00:15:25.365 --> 00:15:26.165 still when you do an

NOTE Confidence: 0.9794881

00:15:26.165 --> 00:15:27.765 ECG, if it's positive, they'll

NOTE Confidence: 0.9794881

00:15:27.925 --> 00:15:29.525 you'll only find cardiovascular disease

NOTE Confidence: 0.9794881

00:15:29.525 --> 00:15:30.325 in about one out of

NOTE Confidence: 0.9794881

00:15:30.325 --> 00:15:31.199 ten of the athletes with

NOTE Confidence: 0.9794881

00:15:31.199 --> 00:15:32.959 positive ECGs. So I think

NOTE Confidence: 0.9794881

00:15:32.959 --> 00:15:34.180 we can still do better.

NOTE Confidence: 0.9584961

00:15:36.079 --> 00:15:37.040 But one thing we always

NOTE Confidence: 0.9584961

00:15:37.040 --> 00:15:38.399 have to acknowledge underscoring the

NOTE Confidence: 0.9584961

00:15:38.399 --> 00:15:40.000 importance of emergency action planning

NOTE Confidence: 0.9584961

00:15:40.000 --> 00:15:40.800 is there are certain things

NOTE Confidence: 0.9584961

00:15:40.800 --> 00:15:42.399 like coronary anomalies and then,

NOTE Confidence: 0.9584961

00:15:42.399 --> 00:15:43.904 you know, aortas and, of

NOTE Confidence: 0.9584961

00:15:43.904 --> 00:15:45.345 course, commotio cordis that will

NOTE Confidence: 0.9584961

00:15:45.345 --> 00:15:46.704 never pick up no matter

NOTE Confidence: 0.9584961

00:15:46.704 --> 00:15:48.245 how thorough our screening is.

NOTE Confidence: 0.99685574

00:15:49.584 --> 00:15:50.464 What happens when you do

NOTE Confidence: 0.99685574

00:15:50.464 --> 00:15:51.505 a lot of screening or

NOTE Confidence: 0.99685574

00:15:51.505 --> 00:15:52.545 you present as a sports

NOTE Confidence: 0.99685574

00:15:52.545 --> 00:15:54.144 cardiologist and are available to

NOTE Confidence: 0.99685574

00:15:54.144 --> 00:15:55.584 athletes with symptoms is that

NOTE Confidence: 0.99685574

00:15:55.584 --> 00:15:56.625 you end up doing a

NOTE Confidence: 0.99685574

00:15:56.625 --> 00:15:57.524 lot of imaging.

NOTE Confidence: 0.9247233

00:15:58.050 --> 00:15:59.910 And, trained as an echocardiography,

NOTE Confidence: 0.9444987

00:16:00.210 --> 00:16:01.110 I like multimodality

NOTE Confidence: 0.99338603

00:16:01.570 --> 00:16:03.890 imaging. And as I joined

NOTE Confidence: 0.99338603

00:16:03.890 --> 00:16:05.090 the staff at MGH early

NOTE Confidence: 0.99338603

00:16:05.090 --> 00:16:05.590 on,

NOTE Confidence: 0.9962158

00:16:06.050 --> 00:16:07.510 it really bothered me.

NOTE Confidence: 0.9809021

00:16:08.050 --> 00:16:09.650 The conceptual lens was such

NOTE Confidence: 0.9809021

00:16:09.650 --> 00:16:10.610 that, you know, you could

NOTE Confidence: 0.9809021

00:16:10.610 --> 00:16:12.665 have patients athlete patients with

NOTE Confidence: 0.9809021

00:16:12.665 --> 00:16:13.165 cardiomyopathy.

NOTE Confidence: 0.9651985

00:16:14.265 --> 00:16:15.545 You could have athletes with

NOTE Confidence: 0.9651985

00:16:15.545 --> 00:16:16.905 completely normal but sort of

NOTE Confidence: 0.9651985

00:16:16.905 --> 00:16:18.825 enlarged or thickens hearts, and

NOTE Confidence: 0.9651985

00:16:18.825 --> 00:16:19.625 that there was sort of

NOTE Confidence: 0.9651985

00:16:19.625 --> 00:16:20.825 this gray area or gray

NOTE Confidence: 0.9651985

00:16:20.825 --> 00:16:22.425 zone in between where with

NOTE Confidence: 0.9651985

00:16:22.425 --> 00:16:24.185 existing tools, whether it's thickness

NOTE Confidence: 0.9651985

00:16:24.185 --> 00:16:25.705 or dilation or an enlarged

NOTE Confidence: 0.9651985

00:16:25.705 --> 00:16:27.600 RV, it would be difficult

NOTE Confidence: 0.9651985

00:16:27.600 --> 00:16:29.120 or impossible to tell which

NOTE Confidence: 0.9651985

00:16:29.279 --> 00:16:30.240 whether it was sort of

NOTE Confidence: 0.9651985

00:16:30.240 --> 00:16:31.620 the beginnings of a pathologic

NOTE Confidence: 0.9651985

00:16:31.760 --> 00:16:33.380 state or just athlete's

NOTE Confidence: 0.9763517

00:16:33.760 --> 00:16:34.960 heart. And this was especially

NOTE Confidence: 0.9763517

00:16:34.960 --> 00:16:36.000 important back then. This was

NOTE Confidence: 0.9763517

00:16:36.000 --> 00:16:37.200 ten or eleven years ago

NOTE Confidence: 0.9763517

00:16:37.200 --> 00:16:39.279 because our sport our guidelines

NOTE Confidence: 0.9763517

00:16:39.279 --> 00:16:39.839 that help,

NOTE Confidence: 0.95674014

00:16:40.560 --> 00:16:43.095 helped to, help us to

NOTE Confidence: 0.95674014

00:16:43.175 --> 00:16:44.535 understand what athletes could return

NOTE Confidence: 0.95674014

00:16:44.535 --> 00:16:46.214 to sport versus re be

NOTE Confidence: 0.95674014

00:16:46.214 --> 00:16:47.894 restricted were quite restrictive. And

NOTE Confidence: 0.95674014

00:16:47.894 --> 00:16:48.615 that if you made a

NOTE Confidence: 0.95674014

00:16:48.615 --> 00:16:49.115 cardiomyopathy

NOTE Confidence: 0.9980469

00:16:49.495 --> 00:16:49.995 diagnosis,

NOTE Confidence: 0.97613794

00:16:50.694 --> 00:16:51.574 it may be in according

NOTE Confidence: 0.97613794

00:16:51.574 --> 00:16:53.095 to the published rules that

NOTE Confidence: 0.97613794

00:16:53.095 --> 00:16:54.214 they were no longer allowed

NOTE Confidence: 0.97613794

00:16:54.214 --> 00:16:55.495 to participate in their sport

NOTE Confidence: 0.97613794

00:16:55.495 --> 00:16:56.555 anymore. So getting

NOTE Confidence: 0.97159094

00:16:56.930 --> 00:16:58.209 it right had that very,

NOTE Confidence: 0.97159094

00:16:58.529 --> 00:16:59.410 sort of black and white

NOTE Confidence: 0.97159094

00:16:59.410 --> 00:16:59.910 ramifications.

NOTE Confidence: 0.9659697

00:17:00.610 --> 00:17:01.649 But it it also bothered

NOTE Confidence: 0.9659697

00:17:01.649 --> 00:17:02.850 me because leaving people in

NOTE Confidence: 0.9659697

00:17:02.850 --> 00:17:04.049 a gray area feels like

NOTE Confidence: 0.9659697

00:17:04.049 --> 00:17:05.330 purgatory. If you say, this

NOTE Confidence: 0.9659697

00:17:05.330 --> 00:17:06.789 could be HCM or dilated

NOTE Confidence: 0.9659697

00:17:06.850 --> 00:17:08.210 dilated cardiomyopathy, but I don't

NOTE Confidence: 0.9659697

00:17:08.210 --> 00:17:09.010 know yet. We're gonna have

NOTE Confidence: 0.9659697

00:17:09.010 --> 00:17:10.150 to follow you over time.

NOTE Confidence: 0.9659697

00:17:10.325 --> 00:17:11.765 Just felt like, we could

NOTE Confidence: 0.9659697

00:17:11.765 --> 00:17:13.684 do better with figuring out

NOTE Confidence: 0.9659697

00:17:13.684 --> 00:17:14.565 which bin they fit in,

NOTE Confidence: 0.9659697

00:17:14.565 --> 00:17:15.765 and that motivated a lot

NOTE Confidence: 0.9659697

00:17:15.765 --> 00:17:16.905 my early work.

NOTE Confidence: 0.988739

00:17:18.005 --> 00:17:19.385 We'll pause and talk about

NOTE Confidence: 0.988739

00:17:19.525 --> 00:17:21.605 cardiac adaptations to exercise, which

NOTE Confidence: 0.988739

00:17:21.605 --> 00:17:22.725 is the general lens that

NOTE Confidence: 0.988739

00:17:22.725 --> 00:17:23.445 if you do a lot

NOTE Confidence: 0.988739

00:17:23.445 --> 00:17:25.380 of exercise, it'll cause, changes

NOTE Confidence: 0.988739

00:17:25.380 --> 00:17:26.980 in your heart, structural and

NOTE Confidence: 0.988739

00:17:26.980 --> 00:17:28.500 functional changes in response to

NOTE Confidence: 0.988739

00:17:28.500 --> 00:17:30.440 that hemodynamic stress of exercise.

NOTE Confidence: 0.9248047

00:17:32.340 --> 00:17:33.320 There was some,

NOTE Confidence: 0.94502395

00:17:34.100 --> 00:17:35.619 there it's been long recognized.

NOTE Confidence: 0.94502395

00:17:35.619 --> 00:17:36.820 There's some studies from the

NOTE Confidence: 0.94502395

00:17:36.820 --> 00:17:37.940 eighteen nineties that show on

NOTE Confidence: 0.94502395

00:17:37.940 --> 00:17:39.554 radio graphs, or listening with

NOTE Confidence: 0.94502395

00:17:39.554 --> 00:17:41.075 the stethoscope that athletes hearts

NOTE Confidence: 0.94502395

00:17:41.075 --> 00:17:42.355 are bigger than their non

NOTE Confidence: 0.94502395

00:17:42.355 --> 00:17:43.655 athletic comp hearts.

NOTE Confidence: 0.9658203

00:17:44.115 --> 00:17:44.994 And I like this quote

NOTE Confidence: 0.9658203

00:17:44.994 --> 00:17:45.715 a lot from all the

NOTE Confidence: 0.9658203

00:17:45.715 --> 00:17:46.994 way back then eighteen ninety

NOTE Confidence: 0.9658203

00:17:46.994 --> 00:17:47.494 nine.

NOTE Confidence: 0.97805446

00:17:48.275 --> 00:17:49.075 You know, because I think

NOTE Confidence: 0.97805446

00:17:49.075 --> 00:17:50.434 we're now doing advanced cardiac

NOTE Confidence: 0.97805446

00:17:50.434 --> 00:17:51.600 imaging to get at this

NOTE Confidence: 0.97805446

00:17:51.600 --> 00:17:52.880 question. But even back then,

NOTE Confidence: 0.97805446

00:17:52.880 --> 00:17:53.760 you know, we have to

NOTE Confidence: 0.97805446

00:17:53.760 --> 00:17:54.960 consider carefully the way the

NOTE Confidence: 0.97805446

00:17:54.960 --> 00:17:56.320 heart's doing its work. It's

NOTE Confidence: 0.97805446

00:17:56.320 --> 00:17:57.359 not just the size of

NOTE Confidence: 0.97805446

00:17:57.359 --> 00:17:58.480 the the muscle like other

NOTE Confidence: 0.97805446

00:17:58.480 --> 00:17:59.760 muscles, but the quality that

NOTE Confidence: 0.97805446

00:17:59.760 --> 00:18:00.640 will tell on the long

NOTE Confidence: 0.97805446

00:18:00.640 --> 00:18:01.680 run. And here we're doing

NOTE Confidence: 0.97805446

00:18:01.680 --> 00:18:02.880 strain and ECV and all

NOTE Confidence: 0.97805446

00:18:02.880 --> 00:18:04.080 these fancy imaging ways to

NOTE Confidence: 0.97805446

00:18:04.080 --> 00:18:05.454 look at look at the

NOTE Confidence: 0.97805446

00:18:05.454 --> 00:18:06.654 quality of the heart muscle,

NOTE Confidence: 0.97805446

00:18:06.654 --> 00:18:07.534 but yet we still end

NOTE Confidence: 0.97805446

00:18:07.534 --> 00:18:08.654 up with cases where we

NOTE Confidence: 0.97805446

00:18:08.654 --> 00:18:09.855 don't know which bin to

NOTE Confidence: 0.97805446

00:18:09.855 --> 00:18:11.154 put the athlete in.

NOTE Confidence: 0.9843892

00:18:12.494 --> 00:18:13.455 When we're thinking about how

NOTE Confidence: 0.9843892

00:18:13.455 --> 00:18:14.734 the heart adapts to exercise

NOTE Confidence: 0.9843892

00:18:14.734 --> 00:18:15.855 and what we might expect

NOTE Confidence: 0.9843892

00:18:15.855 --> 00:18:17.294 on cardiac imaging, it's first

NOTE Confidence: 0.9843892

00:18:17.294 --> 00:18:18.654 important to point out that

NOTE Confidence: 0.9843892

00:18:18.654 --> 00:18:20.095 not all exercise is created

NOTE Confidence: 0.9843892

00:18:20.095 --> 00:18:21.670 equal. Even in our, like,

NOTE Confidence: 0.9843892

00:18:21.670 --> 00:18:23.530 gen pop PA guidelines, it's,

NOTE Confidence: 0.9886846

00:18:24.150 --> 00:18:25.109 divided up into our sort

NOTE Confidence: 0.9886846

00:18:25.109 --> 00:18:26.150 of cardio, and these are

NOTE Confidence: 0.9886846

00:18:26.150 --> 00:18:27.109 the various terms you could

NOTE Confidence: 0.9886846

00:18:27.109 --> 00:18:28.150 use for that versus our

NOTE Confidence: 0.9886846

00:18:28.150 --> 00:18:29.609 muscle strengthening activities.

NOTE Confidence: 0.96606445

00:18:30.310 --> 00:18:30.790 And,

NOTE Confidence: 0.9790001

00:18:31.430 --> 00:18:32.950 you can dichotomize sports like

NOTE Confidence: 0.9790001

00:18:32.950 --> 00:18:34.150 that, and the physiology is

NOTE Confidence: 0.9790001

00:18:34.150 --> 00:18:35.294 quite different. I put all

NOTE Confidence: 0.9790001

00:18:35.294 --> 00:18:36.414 these Harvard athlete pictures in

NOTE Confidence: 0.9790001

00:18:36.414 --> 00:18:37.215 just as a rub on

NOTE Confidence: 0.9790001

00:18:37.215 --> 00:18:38.414 purpose here as I'm visiting

NOTE Confidence: 0.9790001

00:18:38.414 --> 00:18:39.695 Yale today. But they are

NOTE Confidence: 0.9790001

00:18:39.695 --> 00:18:40.734 also the athletes that I

NOTE Confidence: 0.9790001

00:18:40.734 --> 00:18:41.554 take care of.

NOTE Confidence: 0.951435

00:18:42.335 --> 00:18:43.534 So your cardio you know,

NOTE Confidence: 0.951435

00:18:43.534 --> 00:18:44.734 I'm talking to physio to

NOTE Confidence: 0.951435

00:18:44.734 --> 00:18:46.575 physiology oriented cardiologists. You know,

NOTE Confidence: 0.951435

00:18:46.575 --> 00:18:47.695 your cardiac output's going up.

NOTE Confidence: 0.951435

00:18:47.695 --> 00:18:49.455 You're vasodilating out to exercising

NOTE Confidence: 0.951435

00:18:49.455 --> 00:18:51.830 muscle to support increased metabolic

NOTE Confidence: 0.951435

00:18:51.830 --> 00:18:53.590 demand. Physiology is quite different

NOTE Confidence: 0.951435

00:18:53.590 --> 00:18:55.350 than strength based activity where

NOTE Confidence: 0.951435

00:18:55.350 --> 00:18:57.450 you're just intensely contracting muscles,

NOTE Confidence: 0.9936133

00:18:58.710 --> 00:19:00.150 and you actually will see

NOTE Confidence: 0.9936133

00:19:00.150 --> 00:19:01.750 cyclical spikes in blood pressure

NOTE Confidence: 0.9936133

00:19:01.750 --> 00:19:03.270 without really much change in

NOTE Confidence: 0.9936133

00:19:03.270 --> 00:19:04.630 cardiac output if you're doing

NOTE Confidence: 0.9936133

00:19:04.630 --> 00:19:06.250 that in its purest sense.

NOTE Confidence: 0.9996745

00:19:06.845 --> 00:19:08.045 But most sports end up

NOTE Confidence: 0.9996745

00:19:08.045 --> 00:19:09.005 being a mix of these

NOTE Confidence: 0.9996745

00:19:09.005 --> 00:19:09.744 two physiologies.

NOTE Confidence: 0.99921876

00:19:10.365 --> 00:19:11.905 We just updated this diagram,

NOTE Confidence: 0.9811198

00:19:12.285 --> 00:19:13.165 for our new,

NOTE Confidence: 0.93481445

00:19:13.805 --> 00:19:14.305 athlete,

NOTE Confidence: 0.98706055

00:19:15.005 --> 00:19:15.905 sports participation

NOTE Confidence: 0.9733887

00:19:16.365 --> 00:19:16.865 document,

NOTE Confidence: 0.97962534

00:19:17.645 --> 00:19:18.525 which was great to work

NOTE Confidence: 0.97962534

00:19:18.525 --> 00:19:19.885 with Rachel on that as

NOTE Confidence: 0.97962534

00:19:19.885 --> 00:19:20.385 well.

NOTE Confidence: 0.9751282

00:19:20.980 --> 00:19:21.700 We used to sort of

NOTE Confidence: 0.9751282

00:19:21.700 --> 00:19:22.899 have sports divided up into,

NOTE Confidence: 0.9751282

00:19:22.899 --> 00:19:23.859 like, a three by three

NOTE Confidence: 0.9751282

00:19:23.859 --> 00:19:24.359 table

NOTE Confidence: 0.971228

00:19:24.980 --> 00:19:26.019 according to their sort of

NOTE Confidence: 0.971228

00:19:26.019 --> 00:19:28.260 physiology, but acknowledging everything's on

NOTE Confidence: 0.971228

00:19:28.260 --> 00:19:29.539 a spectrum, they're now divided

NOTE Confidence: 0.971228

00:19:29.539 --> 00:19:31.080 up more on a spectrum.

NOTE Confidence: 0.97060925

00:19:31.700 --> 00:19:32.595 And you've got things like

NOTE Confidence: 0.97060925

00:19:32.674 --> 00:19:33.955 if you're if you're walking

NOTE Confidence: 0.97060925

00:19:33.955 --> 00:19:35.155 a golf course that's not

NOTE Confidence: 0.97060925

00:19:35.155 --> 00:19:36.355 provoking much changes in your

NOTE Confidence: 0.97060925

00:19:36.355 --> 00:19:37.955 physiology at all, all the

NOTE Confidence: 0.97060925

00:19:37.955 --> 00:19:38.755 way up to, you know,

NOTE Confidence: 0.97060925

00:19:38.755 --> 00:19:40.275 sort of rowers and Nordic

NOTE Confidence: 0.97060925

00:19:40.275 --> 00:19:41.475 skiers tend to have the

NOTE Confidence: 0.97060925

00:19:41.475 --> 00:19:43.095 the most excursions in physiology,

NOTE Confidence: 0.97060925

00:19:43.155 --> 00:19:44.934 both strength based and endurance

NOTE Confidence: 0.97060925

00:19:44.994 --> 00:19:45.734 based physiology.

NOTE Confidence: 0.96240234

00:19:47.980 --> 00:19:48.720 And so,

NOTE Confidence: 0.9995117

00:19:49.500 --> 00:19:50.240 that is

NOTE Confidence: 0.9975586

00:19:50.540 --> 00:19:51.660 a lens through which to

NOTE Confidence: 0.9975586

00:19:51.660 --> 00:19:53.359 view what we might expect

NOTE Confidence: 0.9975586

00:19:53.420 --> 00:19:54.800 to happen with the heart.

NOTE Confidence: 0.9958225

00:19:55.260 --> 00:19:56.460 There was some debate whether

NOTE Confidence: 0.9958225

00:19:56.460 --> 00:19:58.240 physical activity actually caused

NOTE Confidence: 0.9971191

00:19:58.700 --> 00:20:00.640 cardiac adaptations at the beginning.

NOTE Confidence: 0.9780242

00:20:01.265 --> 00:20:02.305 You know, we don't think

NOTE Confidence: 0.9780242

00:20:02.305 --> 00:20:04.305 that because NBA players are

NOTE Confidence: 0.9780242

00:20:04.305 --> 00:20:06.705 taller that playing basketball makes

NOTE Confidence: 0.9780242

00:20:06.705 --> 00:20:07.985 you taller. Right? It's just

NOTE Confidence: 0.9780242

00:20:07.985 --> 00:20:09.345 you're better at basketball if

NOTE Confidence: 0.9780242

00:20:09.345 --> 00:20:10.865 you are taller. Right? So

NOTE Confidence: 0.9780242

00:20:10.865 --> 00:20:11.745 at the beginning of this

NOTE Confidence: 0.9780242

00:20:11.745 --> 00:20:12.945 field, the idea was, well,

NOTE Confidence: 0.9780242

00:20:12.945 --> 00:20:14.545 does exercise actually make the

NOTE Confidence: 0.9780242

00:20:14.545 --> 00:20:15.905 heart bigger? Or if you're

NOTE Confidence: 0.9780242

00:20:15.905 --> 00:20:17.410 just genetically enriched to have,

NOTE Confidence: 0.9780242

00:20:17.410 --> 00:20:18.530 like, a bigger heart size

NOTE Confidence: 0.9780242

00:20:18.530 --> 00:20:19.730 compared to your body size,

NOTE Confidence: 0.9780242

00:20:19.730 --> 00:20:20.530 are you more likely to

NOTE Confidence: 0.9780242

00:20:20.530 --> 00:20:21.730 be good at sports, especially

NOTE Confidence: 0.9780242

00:20:21.730 --> 00:20:22.710 endurance sports?

NOTE Confidence: 0.93858755

00:20:23.810 --> 00:20:24.690 But I think we now

NOTE Confidence: 0.93858755

00:20:24.690 --> 00:20:26.690 have convincing longitudinal data including

NOTE Confidence: 0.93858755

00:20:26.690 --> 00:20:28.150 in not really athlete populations

NOTE Confidence: 0.93858755

00:20:28.210 --> 00:20:29.650 like couch to five k

NOTE Confidence: 0.93858755

00:20:29.650 --> 00:20:30.625 type training,

NOTE Confidence: 0.98741657

00:20:30.925 --> 00:20:31.725 where if you, you know,

NOTE Confidence: 0.98741657

00:20:31.725 --> 00:20:32.765 look at time point zero

NOTE Confidence: 0.98741657

00:20:32.765 --> 00:20:33.885 and, again, after a period

NOTE Confidence: 0.98741657

00:20:33.885 --> 00:20:35.085 of exercise training, you can

NOTE Confidence: 0.98741657

00:20:35.085 --> 00:20:36.925 see the cardiac enlargement develop

NOTE Confidence: 0.98741657

00:20:36.925 --> 00:20:38.045 in real time. Maybe not

NOTE Confidence: 0.98741657

00:20:38.045 --> 00:20:38.765 to the point where the

NOTE Confidence: 0.98741657

00:20:38.765 --> 00:20:40.445 heart's abnormally dilated, but you

NOTE Confidence: 0.98741657

00:20:40.445 --> 00:20:41.885 can see the changes track

NOTE Confidence: 0.98741657

00:20:41.885 --> 00:20:42.785 in that direction.

NOTE Confidence: 0.9768982

00:20:43.510 --> 00:20:44.710 There is no really one

NOTE Confidence: 0.9768982

00:20:44.710 --> 00:20:45.910 athlete's heart, though.

NOTE Confidence: 0.97871536

00:20:46.630 --> 00:20:47.990 As I diagrammed out, there's

NOTE Confidence: 0.97871536

00:20:47.990 --> 00:20:49.750 these different physiologies of different

NOTE Confidence: 0.97871536

00:20:49.750 --> 00:20:50.250 sport,

NOTE Confidence: 0.9927476

00:20:50.789 --> 00:20:52.710 different sports. Hearts will also

NOTE Confidence: 0.9927476

00:20:52.710 --> 00:20:53.990 track with body size, and

NOTE Confidence: 0.9927476

00:20:53.990 --> 00:20:55.510 then there's some important sex

NOTE Confidence: 0.9927476

00:20:55.510 --> 00:20:56.250 based differences.

NOTE Confidence: 0.9831836

00:20:56.710 --> 00:20:57.335 To To start with what

NOTE Confidence: 0.9831836

00:20:57.335 --> 00:20:58.535 we expect by sport, this

NOTE Confidence: 0.9831836

00:20:58.535 --> 00:20:59.335 was some of my early

NOTE Confidence: 0.9831836

00:20:59.335 --> 00:21:00.215 work when I first came

NOTE Confidence: 0.9831836

00:21:00.215 --> 00:21:01.675 out of fellowship onto staff.

NOTE Confidence: 0.97198576

00:21:02.615 --> 00:21:03.494 If you look at sort

NOTE Confidence: 0.97198576

00:21:03.494 --> 00:21:04.855 of runners' hearts, just people

NOTE Confidence: 0.97198576

00:21:04.855 --> 00:21:06.455 who are pure endurance sports,

NOTE Confidence: 0.97198576

00:21:06.615 --> 00:21:07.335 I think of it like

NOTE Confidence: 0.97198576

00:21:07.335 --> 00:21:08.215 taking a normal heart and

NOTE Confidence: 0.97198576

00:21:08.215 --> 00:21:09.650 just sort of putting it

NOTE Confidence: 0.97198576

00:21:09.650 --> 00:21:10.690 on a photocopier, at least

NOTE Confidence: 0.97198576

00:21:10.690 --> 00:21:11.890 a still image. Their hearts

NOTE Confidence: 0.97198576

00:21:11.890 --> 00:21:13.809 are symmetrically enlarged. The chambers

NOTE Confidence: 0.97198576

00:21:13.809 --> 00:21:14.470 are all larger

NOTE Confidence: 0.95618355

00:21:14.770 --> 00:21:15.970 because their EDV is bigger.

NOTE Confidence: 0.95618355

00:21:15.970 --> 00:21:17.970 Sometimes their EF can float

NOTE Confidence: 0.95618355

00:21:17.970 --> 00:21:19.330 towards fifty percent or maybe

NOTE Confidence: 0.95618355

00:21:19.330 --> 00:21:20.289 even a little bit lower

NOTE Confidence: 0.95618355

00:21:20.289 --> 00:21:21.744 because they have high end

NOTE Confidence: 0.95618355

00:21:21.744 --> 00:21:23.184 diastolic volumes to make the

NOTE Confidence: 0.95618355

00:21:23.184 --> 00:21:24.385 same stroke volume, the EF's

NOTE Confidence: 0.95618355

00:21:24.385 --> 00:21:24.885 lower.

NOTE Confidence: 0.95880353

00:21:25.345 --> 00:21:26.145 And it but you won't

NOTE Confidence: 0.95880353

00:21:26.145 --> 00:21:27.184 really see much change in

NOTE Confidence: 0.95880353

00:21:27.184 --> 00:21:28.945 the wall thickness. So the

NOTE Confidence: 0.95880353

00:21:29.025 --> 00:21:30.065 these sports, which are really

NOTE Confidence: 0.95880353

00:21:30.065 --> 00:21:31.345 just pure endurance sports, don't

NOTE Confidence: 0.95880353

00:21:31.345 --> 00:21:32.244 provoke that.

NOTE Confidence: 0.94257814

00:21:32.785 --> 00:21:34.020 We see the biggest heaviest,

NOTE Confidence: 0.96515566

00:21:34.480 --> 00:21:36.080 hearts in the athletes who

NOTE Confidence: 0.96515566

00:21:36.080 --> 00:21:36.800 are up in the upper

NOTE Confidence: 0.96515566

00:21:36.800 --> 00:21:38.160 right of that diagram. So

NOTE Confidence: 0.96515566

00:21:38.160 --> 00:21:39.200 these are things like Nordic

NOTE Confidence: 0.96515566

00:21:39.200 --> 00:21:40.580 skiing, cycling, and rowing.

NOTE Confidence: 0.9933106

00:21:41.280 --> 00:21:42.400 There's some thought that that's

NOTE Confidence: 0.9933106

00:21:42.400 --> 00:21:43.940 because there is some intrinsic

NOTE Confidence: 0.9772949

00:21:44.400 --> 00:21:45.680 isometric or stress

NOTE Confidence: 0.9626266

00:21:46.400 --> 00:21:47.840 strength based component to these

NOTE Confidence: 0.9626266

00:21:47.840 --> 00:21:49.385 sports, not because they're going

NOTE Confidence: 0.9626266

00:21:49.385 --> 00:21:50.825 and lifting heavy weights in

NOTE Confidence: 0.9626266

00:21:50.825 --> 00:21:52.345 a weight room, but because

NOTE Confidence: 0.9626266

00:21:52.345 --> 00:21:53.625 the cadence and the the

NOTE Confidence: 0.9626266

00:21:53.625 --> 00:21:54.825 form of movement is just

NOTE Confidence: 0.9626266

00:21:54.825 --> 00:21:56.284 different from running and swimming.

NOTE Confidence: 0.9626266

00:21:56.505 --> 00:21:57.385 This is a old study

NOTE Confidence: 0.9626266

00:21:57.385 --> 00:21:58.105 where you could put a

NOTE Confidence: 0.9626266

00:21:58.105 --> 00:21:59.325 lines in healthy people,

NOTE Confidence: 0.9189628

00:22:00.024 --> 00:22:01.465 and measure things. Because I

NOTE Confidence: 0.9189628

00:22:01.465 --> 00:22:02.184 don't think I could get

NOTE Confidence: 0.9189628

00:22:02.184 --> 00:22:03.220 this through an IRB

NOTE Confidence: 0.9559428

00:22:03.600 --> 00:22:04.320 now where they were asked

NOTE Confidence: 0.9559428

00:22:04.320 --> 00:22:05.520 to, you know, put force

NOTE Confidence: 0.9559428

00:22:05.520 --> 00:22:06.640 onto a rowing or I'm

NOTE Confidence: 0.9559428

00:22:06.640 --> 00:22:07.600 sure this was not actually

NOTE Confidence: 0.9559428

00:22:07.600 --> 00:22:08.640 in a in water.

NOTE Confidence: 0.98099524

00:22:09.200 --> 00:22:10.000 And you look and you

NOTE Confidence: 0.98099524

00:22:10.000 --> 00:22:10.800 see, okay. The the blood

NOTE Confidence: 0.98099524

00:22:10.800 --> 00:22:12.000 pressure both goes up when

NOTE Confidence: 0.98099524

00:22:12.000 --> 00:22:12.880 you when you, you know,

NOTE Confidence: 0.98099524

00:22:12.880 --> 00:22:14.080 start your exercise, but then

NOTE Confidence: 0.98099524

00:22:14.080 --> 00:22:15.300 if you're doing this cyclical

NOTE Confidence: 0.98099524

00:22:15.440 --> 00:22:17.060 rowing, there's these little microspikes

NOTE Confidence: 0.98099524

00:22:17.280 --> 00:22:18.095 to your blood pressure, and

NOTE Confidence: 0.98099524

00:22:18.095 --> 00:22:18.815 you don't get that when

NOTE Confidence: 0.98099524

00:22:18.815 --> 00:22:19.955 you're running or swimming.

NOTE Confidence: 0.95591825

00:22:20.415 --> 00:22:21.215 So it may be these

NOTE Confidence: 0.95591825

00:22:21.215 --> 00:22:22.494 these athletes have bigger heavier

NOTE Confidence: 0.95591825

00:22:22.494 --> 00:22:23.955 hearts because there's this isometric

NOTE Confidence: 0.95591825

00:22:24.175 --> 00:22:25.615 extra stress in addition to

NOTE Confidence: 0.95591825

00:22:25.615 --> 00:22:27.295 the cardiac output. It could

NOTE Confidence: 0.95591825

00:22:27.295 --> 00:22:28.415 also be that these athletes

NOTE Confidence: 0.95591825

00:22:28.415 --> 00:22:29.455 can spend more time,

NOTE Confidence: 0.9501953

00:22:30.119 --> 00:22:30.600 doing,

NOTE Confidence: 0.99125975

00:22:30.920 --> 00:22:32.200 their endurance sports because they're

NOTE Confidence: 0.99125975

00:22:32.200 --> 00:22:32.920 not on their own two

NOTE Confidence: 0.99125975

00:22:32.920 --> 00:22:33.720 feet. It's very hard to

NOTE Confidence: 0.99125975

00:22:33.720 --> 00:22:34.680 run for six hours a

NOTE Confidence: 0.99125975

00:22:34.680 --> 00:22:35.560 day, but you can cycle

NOTE Confidence: 0.99125975

00:22:35.560 --> 00:22:37.260 or row for those, times.

NOTE Confidence: 0.9503672

00:22:37.560 --> 00:22:38.840 Suffice to say those athletes

NOTE Confidence: 0.9503672

00:22:38.840 --> 00:22:39.800 in the upper right, for

NOTE Confidence: 0.9503672

00:22:39.800 --> 00:22:41.080 whatever reason, they have the

NOTE Confidence: 0.9503672

00:22:41.080 --> 00:22:42.280 biggest heaviest hearts, and that's

NOTE Confidence: 0.9503672

00:22:42.280 --> 00:22:43.000 where we can start to

NOTE Confidence: 0.9503672

00:22:43.000 --> 00:22:44.040 see wall thickness go up.

NOTE Confidence: 0.9503672

00:22:44.040 --> 00:22:44.840 But it should be in

NOTE Confidence: 0.9503672

00:22:44.840 --> 00:22:46.045 an eccentric pattern where the

NOTE Confidence: 0.9503672

00:22:46.045 --> 00:22:47.085 walls are thick, but the

NOTE Confidence: 0.9503672

00:22:47.085 --> 00:22:48.305 cavity is also big.

NOTE Confidence: 0.98088944

00:22:49.244 --> 00:22:50.045 So those are the most

NOTE Confidence: 0.98088944

00:22:50.045 --> 00:22:51.725 remodeled parts. And then do

NOTE Confidence: 0.98088944

00:22:51.805 --> 00:22:52.605 I do a fair bit

NOTE Confidence: 0.98088944

00:22:52.605 --> 00:22:53.885 of work with, we call

NOTE Confidence: 0.98088944

00:22:53.885 --> 00:22:55.645 it American style football. And

NOTE Confidence: 0.98088944

00:22:55.645 --> 00:22:56.845 with World Cup coming, we're

NOTE Confidence: 0.98088944

00:22:56.845 --> 00:22:58.525 probably better off distinguishing it.

NOTE Confidence: 0.98088944

00:22:58.525 --> 00:22:59.565 It's not it's not football

NOTE Confidence: 0.98088944

00:22:59.565 --> 00:23:00.525 in the vast majority of

NOTE Confidence: 0.98088944

00:23:00.525 --> 00:23:01.730 other places in the world.

NOTE Confidence: 0.98088944

00:23:01.950 --> 00:23:03.310 So American style football players,

NOTE Confidence: 0.98088944

00:23:03.310 --> 00:23:04.590 particularly those playing at the

NOTE Confidence: 0.98088944

00:23:04.590 --> 00:23:06.210 lineman position, the bigger guys,

NOTE Confidence: 0.99053085

00:23:06.590 --> 00:23:07.550 can develop a heart that

NOTE Confidence: 0.99053085

00:23:07.550 --> 00:23:09.230 actually looks like hypertensive heart

NOTE Confidence: 0.99053085

00:23:09.230 --> 00:23:10.850 disease with concentric hypertrophy,

NOTE Confidence: 0.919222

00:23:11.550 --> 00:23:12.670 part of the football players

NOTE Confidence: 0.919222

00:23:12.670 --> 00:23:13.790 health study at Harvard, and

NOTE Confidence: 0.919222

00:23:13.790 --> 00:23:15.869 we studied former players. And,

NOTE Confidence: 0.9637488

00:23:16.765 --> 00:23:17.965 it's important to note in

NOTE Confidence: 0.9637488

00:23:17.965 --> 00:23:19.484 this instance, there's some thought

NOTE Confidence: 0.9637488

00:23:19.484 --> 00:23:20.765 that this was actually the

NOTE Confidence: 0.9637488

00:23:20.765 --> 00:23:21.965 result of the heavy lifting

NOTE Confidence: 0.9637488

00:23:21.965 --> 00:23:23.804 that these athletes do. But,

NOTE Confidence: 0.9637488

00:23:24.125 --> 00:23:25.325 increasingly, we think it's the

NOTE Confidence: 0.9637488

00:23:25.325 --> 00:23:26.285 stuff that goes around with

NOTE Confidence: 0.9637488

00:23:26.285 --> 00:23:27.325 all the weight gain and,

NOTE Confidence: 0.9637488

00:23:27.645 --> 00:23:28.765 the the playing of the

NOTE Confidence: 0.9637488

00:23:28.765 --> 00:23:30.385 sport at that position, hypertension,

NOTE Confidence: 0.9637488

00:23:30.525 --> 00:23:32.140 sleep apnea, and such. Because

NOTE Confidence: 0.9637488

00:23:32.140 --> 00:23:32.940 it turns out if you

NOTE Confidence: 0.9637488

00:23:32.940 --> 00:23:34.780 study, like, other heavy lifters

NOTE Confidence: 0.9637488

00:23:34.780 --> 00:23:36.299 like, bodybuilders and stuff, they

NOTE Confidence: 0.9637488

00:23:36.299 --> 00:23:37.580 don't develop parts that look

NOTE Confidence: 0.9637488

00:23:37.580 --> 00:23:38.460 like this at all. So

NOTE Confidence: 0.9637488

00:23:38.460 --> 00:23:40.140 this is really not exercise

NOTE Confidence: 0.9637488

00:23:40.140 --> 00:23:41.500 induced remodeling in my view.

NOTE Confidence: 0.9637488

00:23:41.500 --> 00:23:43.179 It's a pathologic state even

NOTE Confidence: 0.9637488

00:23:43.179 --> 00:23:44.240 if it's not HCM.

NOTE Confidence: 0.98830837

00:23:45.244 --> 00:23:46.045 So that's what we can

NOTE Confidence: 0.98830837

00:23:46.045 --> 00:23:47.484 expect by sport type, and

NOTE Confidence: 0.98830837

00:23:47.484 --> 00:23:48.445 then we also can see

NOTE Confidence: 0.98830837

00:23:48.445 --> 00:23:49.505 some important differences,

NOTE Confidence: 0.95214844

00:23:50.125 --> 00:23:51.345 by sex and gender,

NOTE Confidence: 0.9706468

00:23:51.885 --> 00:23:53.805 with the exercise induced remodeling

NOTE Confidence: 0.9706468

00:23:53.805 --> 00:23:55.085 in general for any given

NOTE Confidence: 0.9706468

00:23:55.085 --> 00:23:56.765 combinatorial body size and sport

NOTE Confidence: 0.9706468

00:23:56.765 --> 00:23:58.125 type, females will be even

NOTE Confidence: 0.9706468

00:23:58.125 --> 00:23:59.645 less likely to develop increased

NOTE Confidence: 0.9706468

00:23:59.645 --> 00:24:00.000 wall

NOTE Confidence: 0.9856294

00:24:00.480 --> 00:24:01.680 thickness. They also have some

NOTE Confidence: 0.9856294

00:24:01.680 --> 00:24:03.300 interesting differences in their EKG

NOTE Confidence: 0.9856294

00:24:03.600 --> 00:24:04.720 and are at lower risk

NOTE Confidence: 0.9856294

00:24:04.720 --> 00:24:05.840 of sudden cardiac arrest and

NOTE Confidence: 0.9856294

00:24:05.840 --> 00:24:07.040 death in male athletes even

NOTE Confidence: 0.9856294

00:24:07.040 --> 00:24:08.020 in the same sports.

NOTE Confidence: 0.9423116

00:24:08.480 --> 00:24:09.280 And then we'll get into

NOTE Confidence: 0.9423116

00:24:09.280 --> 00:24:10.160 the some of the differences

NOTE Confidence: 0.9423116

00:24:10.160 --> 00:24:11.600 we see in ACVD and

NOTE Confidence: 0.9423116

00:24:11.600 --> 00:24:13.280 masters female athletes when we

NOTE Confidence: 0.9423116

00:24:13.280 --> 00:24:14.260 get to that section.

NOTE Confidence: 0.9587728

00:24:15.119 --> 00:24:15.674 So if you put it

NOTE Confidence: 0.9587728

00:24:15.674 --> 00:24:16.595 all together, you can sort

NOTE Confidence: 0.9587728

00:24:16.595 --> 00:24:17.514 of overlay what you might

NOTE Confidence: 0.9587728

00:24:17.514 --> 00:24:18.634 expect as far as heart

NOTE Confidence: 0.9587728

00:24:18.634 --> 00:24:20.234 size on this diagram with

NOTE Confidence: 0.9587728

00:24:20.234 --> 00:24:21.674 the lifting part being like

NOTE Confidence: 0.9587728

00:24:21.674 --> 00:24:22.634 most most people up in

NOTE Confidence: 0.9587728

00:24:22.634 --> 00:24:23.755 this quadrant just have normal

NOTE Confidence: 0.9587728

00:24:23.755 --> 00:24:25.294 hearts except for football alignment.

NOTE Confidence: 0.98583984

00:24:26.234 --> 00:24:27.195 Again, sorry for all the

NOTE Confidence: 0.98583984

00:24:27.195 --> 00:24:28.095 Harvard athletes.

NOTE Confidence: 0.97521156

00:24:29.274 --> 00:24:31.049 My research interest then evolved

NOTE Confidence: 0.97521156

00:24:31.049 --> 00:24:32.090 from there to try to

NOTE Confidence: 0.97521156

00:24:32.090 --> 00:24:33.769 understand better, well, what if,

NOTE Confidence: 0.8915729

00:24:34.409 --> 00:24:35.609 a football player's help heart

NOTE Confidence: 0.8915729

00:24:35.850 --> 00:24:36.730 what if a golfer's heart

NOTE Confidence: 0.8915729

00:24:36.730 --> 00:24:37.529 looks too much like a

NOTE Confidence: 0.8915729

00:24:37.529 --> 00:24:38.350 football player's?

NOTE Confidence: 0.9789047

00:24:39.369 --> 00:24:40.809 In particular, HCM is the

NOTE Confidence: 0.9789047

00:24:40.809 --> 00:24:41.929 thing we most commonly are

NOTE Confidence: 0.9789047

00:24:41.929 --> 00:24:43.244 ruling in or out. And

NOTE Confidence: 0.9789047

00:24:43.325 --> 00:24:44.045 And the lens I wanna

NOTE Confidence: 0.9789047

00:24:44.045 --> 00:24:44.765 give you here is that

NOTE Confidence: 0.9789047

00:24:44.765 --> 00:24:45.725 if you have an athlete

NOTE Confidence: 0.9789047

00:24:45.725 --> 00:24:46.465 with HCM

NOTE Confidence: 0.9647099

00:24:46.845 --> 00:24:48.285 walking into your office and

NOTE Confidence: 0.9647099

00:24:48.285 --> 00:24:49.405 instead of as compared to

NOTE Confidence: 0.9647099

00:24:49.405 --> 00:24:51.484 a sedentary HCM patient, their

NOTE Confidence: 0.9647099

00:24:51.484 --> 00:24:52.684 hearts are gonna look sort

NOTE Confidence: 0.9647099

00:24:52.684 --> 00:24:53.965 of less less bad. They're,

NOTE Confidence: 0.9647099

00:24:53.965 --> 00:24:55.005 in general, gonna have less

NOTE Confidence: 0.9647099

00:24:55.005 --> 00:24:55.505 hypertrophy,

NOTE Confidence: 0.99727064

00:24:55.950 --> 00:24:57.789 bigger LV cavities, better diastolic

NOTE Confidence: 0.99727064

00:24:57.789 --> 00:24:59.549 function, better fitness by virtue

NOTE Confidence: 0.99727064

00:24:59.549 --> 00:25:00.529 of being athletes.

NOTE Confidence: 0.96569824

00:25:01.710 --> 00:25:02.510 And so then if you

NOTE Confidence: 0.96569824

00:25:02.510 --> 00:25:04.109 do the right comparison instead

NOTE Confidence: 0.96569824

00:25:04.109 --> 00:25:06.369 of comparing sedentary HCM patients

NOTE Confidence: 0.96569824

00:25:06.510 --> 00:25:07.869 to athlete's heart, if you

NOTE Confidence: 0.96569824

00:25:07.869 --> 00:25:09.230 do the right comparison, they're

NOTE Confidence: 0.96569824

00:25:09.230 --> 00:25:10.850 both still athletic and active,

NOTE Confidence: 0.993457

00:25:11.505 --> 00:25:12.785 and you compare people with

NOTE Confidence: 0.993457

00:25:12.785 --> 00:25:14.385 known disease versus people that

NOTE Confidence: 0.993457

00:25:14.385 --> 00:25:15.605 we know don't have disease.

NOTE Confidence: 0.96812606

00:25:15.905 --> 00:25:17.125 You know, in any individual

NOTE Confidence: 0.96812606

00:25:17.185 --> 00:25:18.225 parameter, this is an echo

NOTE Confidence: 0.96812606

00:25:18.225 --> 00:25:19.105 based study, but you could

NOTE Confidence: 0.96812606

00:25:19.105 --> 00:25:19.905 say the same thing for

NOTE Confidence: 0.96812606

00:25:19.905 --> 00:25:21.425 MRI. Like, wall thickness or

NOTE Confidence: 0.96812606

00:25:21.425 --> 00:25:22.785 cavity size that we used

NOTE Confidence: 0.96812606

00:25:22.785 --> 00:25:23.505 to try to use to

NOTE Confidence: 0.96812606

00:25:23.505 --> 00:25:24.005 disambiguate

NOTE Confidence: 0.97766864

00:25:24.559 --> 00:25:25.760 just will be quite imperfect

NOTE Confidence: 0.97766864

00:25:25.760 --> 00:25:26.559 when you do the right

NOTE Confidence: 0.97766864

00:25:26.559 --> 00:25:28.740 comparison of athlete to athlete.

NOTE Confidence: 0.97766864

00:25:28.799 --> 00:25:30.640 The the the visual is

NOTE Confidence: 0.97766864

00:25:30.640 --> 00:25:32.000 like, there's plenty of things

NOTE Confidence: 0.97766864

00:25:32.000 --> 00:25:33.600 like diastolic function and cavity

NOTE Confidence: 0.97766864

00:25:33.600 --> 00:25:35.200 size, which have zero overlap

NOTE Confidence: 0.97766864

00:25:35.200 --> 00:25:36.820 between healthy athletes and sedentary

NOTE Confidence: 0.97766864

00:25:36.880 --> 00:25:37.919 HTM. But when you look

NOTE Confidence: 0.97766864

00:25:37.919 --> 00:25:39.515 at athletes with HGM and

NOTE Confidence: 0.97766864

00:25:39.515 --> 00:25:40.915 healthy athletes, they overlap quite

NOTE Confidence: 0.97766864

00:25:40.915 --> 00:25:41.755 a bit more. So you

NOTE Confidence: 0.97766864

00:25:41.755 --> 00:25:42.715 can't use them as sort

NOTE Confidence: 0.97766864

00:25:42.715 --> 00:25:43.934 of lines in the sand.

NOTE Confidence: 0.96551764

00:25:44.475 --> 00:25:45.595 When I came on to

NOTE Confidence: 0.96551764

00:25:45.595 --> 00:25:46.715 staff and was on my

NOTE Confidence: 0.96551764

00:25:46.715 --> 00:25:47.835 k, I sort of thought

NOTE Confidence: 0.96551764

00:25:47.835 --> 00:25:48.794 to myself, we should be

NOTE Confidence: 0.96551764

00:25:48.794 --> 00:25:49.674 better able to tell. Is

NOTE Confidence: 0.96551764

00:25:49.674 --> 00:25:50.715 this a healthy heart muscle

NOTE Confidence: 0.96551764

00:25:50.715 --> 00:25:52.200 or an unhealthy one? Isn't

NOTE Confidence: 0.96551764

00:25:52.200 --> 00:25:53.000 there a way we could

NOTE Confidence: 0.96551764

00:25:53.000 --> 00:25:53.880 sort of just see it

NOTE Confidence: 0.96551764

00:25:53.880 --> 00:25:55.480 without even if cavity size

NOTE Confidence: 0.96551764

00:25:55.480 --> 00:25:57.639 and the diastolic function were

NOTE Confidence: 0.96551764

00:25:57.639 --> 00:25:58.299 were similar?

NOTE Confidence: 0.97273296

00:25:59.000 --> 00:26:00.299 I had had some collaborations

NOTE Confidence: 0.97273296

00:26:00.359 --> 00:26:01.559 with the Brigham Pet Lab

NOTE Confidence: 0.97273296

00:26:01.559 --> 00:26:02.760 dating back to my fellowship,

NOTE Confidence: 0.97273296

00:26:02.760 --> 00:26:04.575 and we endeavor to get

NOTE Confidence: 0.97273296

00:26:04.575 --> 00:26:06.255 at, whether metabolism of the

NOTE Confidence: 0.97273296

00:26:06.255 --> 00:26:07.375 heart muscle could tell us

NOTE Confidence: 0.97273296

00:26:07.375 --> 00:26:08.755 the answer in these situations.

NOTE Confidence: 0.9821769

00:26:09.294 --> 00:26:10.654 This was based upon others'

NOTE Confidence: 0.9821769

00:26:10.654 --> 00:26:12.015 work that shows if you

NOTE Confidence: 0.9821769

00:26:12.015 --> 00:26:13.455 have hypertrophy from a whole

NOTE Confidence: 0.9821769

00:26:13.455 --> 00:26:15.315 panoply of, or or cardiomyopathy,

NOTE Confidence: 0.99625653

00:26:16.575 --> 00:26:18.335 that the efficiency of your

NOTE Confidence: 0.99625653

00:26:18.335 --> 00:26:19.774 heart muscle doing work, meaning

NOTE Confidence: 0.99625653

00:26:19.774 --> 00:26:20.310 how much

NOTE Confidence: 0.9430176

00:26:20.870 --> 00:26:22.550 oxygen it burns to do

NOTE Confidence: 0.9430176

00:26:22.550 --> 00:26:23.850 a given amount of work

NOTE Confidence: 0.9430176

00:26:23.910 --> 00:26:25.850 is impaired, this metabolic efficiency.

NOTE Confidence: 0.99852353

00:26:26.470 --> 00:26:27.830 This energy wasting state is

NOTE Confidence: 0.99852353

00:26:27.830 --> 00:26:29.030 actually super important as we

NOTE Confidence: 0.99852353

00:26:29.030 --> 00:26:29.910 think about drugs that we

NOTE Confidence: 0.99852353

00:26:29.910 --> 00:26:31.110 can use to help, help

NOTE Confidence: 0.99852353

00:26:31.110 --> 00:26:31.610 cardiomyopathy

NOTE Confidence: 0.9385947

00:26:31.990 --> 00:26:32.965 as well. I was looking

NOTE Confidence: 0.9385947

00:26:32.965 --> 00:26:33.764 at it as can we

NOTE Confidence: 0.9385947

00:26:33.764 --> 00:26:34.804 tell the difference between a

NOTE Confidence: 0.9385947

00:26:34.804 --> 00:26:36.004 healthy and an unhealthy thick

NOTE Confidence: 0.9385947

00:26:36.004 --> 00:26:37.205 and tart muscle in athletes,

NOTE Confidence: 0.9385947

00:26:37.205 --> 00:26:38.825 so my narrow sports cardiology

NOTE Confidence: 0.9385947

00:26:38.884 --> 00:26:39.384 lens.

NOTE Confidence: 0.9055927

00:26:39.924 --> 00:26:41.205 So that's it's it suggests

NOTE Confidence: 0.9055927

00:26:41.205 --> 00:26:42.725 that in pathologic states, this

NOTE Confidence: 0.9055927

00:26:42.725 --> 00:26:43.705 is always impaired.

NOTE Confidence: 0.967756

00:26:44.244 --> 00:26:45.205 We then, as a pilot

NOTE Confidence: 0.967756

00:26:45.205 --> 00:26:46.859 study, just looked in athletes.

NOTE Confidence: 0.967756

00:26:46.859 --> 00:26:47.820 If you look at them,

NOTE Confidence: 0.967756

00:26:47.820 --> 00:26:49.260 get some LVH over a

NOTE Confidence: 0.967756

00:26:49.260 --> 00:26:51.180 training cycle, does the metabolic

NOTE Confidence: 0.967756

00:26:51.180 --> 00:26:52.700 efficiency get worse, get better,

NOTE Confidence: 0.967756

00:26:52.700 --> 00:26:54.220 stay the same? And we

NOTE Confidence: 0.967756

00:26:54.220 --> 00:26:55.740 uniquely showed that this form

NOTE Confidence: 0.967756

00:26:55.740 --> 00:26:56.400 of hypertrophy,

NOTE Confidence: 0.98983604

00:26:56.700 --> 00:26:58.140 the efficiency just stays the

NOTE Confidence: 0.98983604

00:26:58.140 --> 00:26:59.180 same and is similar to

NOTE Confidence: 0.98983604

00:26:59.180 --> 00:27:01.075 controls. So it's already unique

NOTE Confidence: 0.98983604

00:27:01.075 --> 00:27:03.174 from pathologic hypertrophy there.

NOTE Confidence: 0.9775757

00:27:03.554 --> 00:27:04.274 And then we did a

NOTE Confidence: 0.9775757

00:27:04.274 --> 00:27:05.794 fancy study where we looked

NOTE Confidence: 0.9775757

00:27:05.794 --> 00:27:07.315 at these were known known

NOTE Confidence: 0.9775757

00:27:07.315 --> 00:27:08.274 entities. We knew they had

NOTE Confidence: 0.9775757

00:27:08.274 --> 00:27:09.394 HCM, but it was really

NOTE Confidence: 0.9775757

00:27:09.394 --> 00:27:10.434 mild, and they were highly

NOTE Confidence: 0.9775757

00:27:10.434 --> 00:27:12.034 active still. These were trained

NOTE Confidence: 0.9775757

00:27:12.034 --> 00:27:12.835 athletes where they had a

NOTE Confidence: 0.9775757

00:27:12.835 --> 00:27:13.890 little bit of LVH, but

NOTE Confidence: 0.9775757

00:27:13.890 --> 00:27:15.090 based upon all metrics, we

NOTE Confidence: 0.9775757

00:27:15.090 --> 00:27:16.130 were very certain it was

NOTE Confidence: 0.9775757

00:27:16.130 --> 00:27:17.750 healthy and not not HCM.

NOTE Confidence: 0.9564714

00:27:18.290 --> 00:27:18.930 And then we did the

NOTE Confidence: 0.9564714

00:27:18.930 --> 00:27:20.450 same sort of metabolic pets

NOTE Confidence: 0.9564714

00:27:20.450 --> 00:27:21.650 at rest, but then also

NOTE Confidence: 0.9564714

00:27:21.650 --> 00:27:23.490 did a very complicated way

NOTE Confidence: 0.9564714

00:27:23.490 --> 00:27:25.490 of doing exercise pet. Three

NOTE Confidence: 0.9564714

00:27:25.490 --> 00:27:26.530 ring circus is the best

NOTE Confidence: 0.9564714

00:27:26.530 --> 00:27:28.425 description of of that and

NOTE Confidence: 0.9564714

00:27:28.425 --> 00:27:29.465 look to see both at

NOTE Confidence: 0.9564714

00:27:29.465 --> 00:27:30.665 rest and and then with

NOTE Confidence: 0.9564714

00:27:30.665 --> 00:27:32.265 exercise, what did the efficiency

NOTE Confidence: 0.9564714

00:27:32.265 --> 00:27:33.145 of the heart muscle look

NOTE Confidence: 0.9564714

00:27:33.145 --> 00:27:34.505 like? We got them to

NOTE Confidence: 0.9564714

00:27:34.505 --> 00:27:36.185 do similar exercise workloads, which

NOTE Confidence: 0.9564714

00:27:36.185 --> 00:27:37.545 was difficult because they didn't

NOTE Confidence: 0.9564714

00:27:37.545 --> 00:27:38.925 have exactly the same fitness.

NOTE Confidence: 0.9849176

00:27:39.305 --> 00:27:40.105 And then we saw the

NOTE Confidence: 0.9849176

00:27:40.105 --> 00:27:42.059 metabolic efficiency at rest was

NOTE Confidence: 0.9849176

00:27:42.059 --> 00:27:43.419 not quite not very different

NOTE Confidence: 0.9849176

00:27:43.419 --> 00:27:45.100 between these mild HCM and

NOTE Confidence: 0.9849176

00:27:45.100 --> 00:27:46.399 athletes with mild LVH,

NOTE Confidence: 0.9801758

00:27:46.700 --> 00:27:48.480 but did differentiate with exercise.

NOTE Confidence: 0.97198755

00:27:48.940 --> 00:27:50.220 Disappointingly, it it's not a

NOTE Confidence: 0.97198755

00:27:50.220 --> 00:27:51.019 test that we can use

NOTE Confidence: 0.97198755

00:27:51.019 --> 00:27:52.059 clinically. As you can see,

NOTE Confidence: 0.97198755

00:27:52.059 --> 00:27:53.019 there's a lot of overlap.

NOTE Confidence: 0.97198755

00:27:53.019 --> 00:27:53.500 So that was,

NOTE Confidence: 0.9764404

00:27:54.140 --> 00:27:55.419 disappointing. We hope these might

NOTE Confidence: 0.9764404

00:27:55.419 --> 00:27:56.299 spread out a little bit

NOTE Confidence: 0.9764404

00:27:56.299 --> 00:27:57.345 more than they did. But

NOTE Confidence: 0.9764404

00:27:57.424 --> 00:27:58.225 I do think it still

NOTE Confidence: 0.9764404

00:27:58.225 --> 00:27:59.105 informs, like, you know, when

NOTE Confidence: 0.9764404

00:27:59.105 --> 00:28:00.065 we have HCM and we

NOTE Confidence: 0.9764404

00:28:00.065 --> 00:28:00.885 have exercise,

NOTE Confidence: 0.98598635

00:28:01.585 --> 00:28:03.184 symptoms or problems that this

NOTE Confidence: 0.98598635

00:28:03.184 --> 00:28:04.565 could relate to the efficiency

NOTE Confidence: 0.98402756

00:28:05.105 --> 00:28:06.865 of metabolism during exercise and

NOTE Confidence: 0.98402756

00:28:06.865 --> 00:28:08.145 might prove helpful even if

NOTE Confidence: 0.98402756

00:28:08.145 --> 00:28:09.505 not in sports cardiology to

NOTE Confidence: 0.98402756

00:28:09.505 --> 00:28:10.705 others who think about how

NOTE Confidence: 0.98402756

00:28:10.705 --> 00:28:12.145 to help HCM patients feel

NOTE Confidence: 0.98402756

00:28:12.145 --> 00:28:12.645 better.

NOTE Confidence: 0.9906006

00:28:14.639 --> 00:28:15.679 And so as we think

NOTE Confidence: 0.9906006

00:28:15.679 --> 00:28:16.799 about wrapping up this section,

NOTE Confidence: 0.9906006

00:28:16.799 --> 00:28:17.600 when we think about the

NOTE Confidence: 0.9906006

00:28:17.600 --> 00:28:18.960 athlete's heart, there's really no

NOTE Confidence: 0.9906006

00:28:18.960 --> 00:28:20.399 one athlete's heart. We see

NOTE Confidence: 0.9906006

00:28:20.399 --> 00:28:22.480 impact of sex, body size,

NOTE Confidence: 0.9906006

00:28:22.480 --> 00:28:23.279 sport type,

NOTE Confidence: 0.9394788

00:28:24.000 --> 00:28:25.200 and there won't ever be

NOTE Confidence: 0.9394788

00:28:25.200 --> 00:28:26.000 like a if it if

NOTE Confidence: 0.9394788

00:28:26.000 --> 00:28:27.119 the cavity is above x

NOTE Confidence: 0.9394788

00:28:27.119 --> 00:28:28.855 or the walls are, you

NOTE Confidence: 0.9394788

00:28:29.075 --> 00:28:30.195 know, above x that we're

NOTE Confidence: 0.9394788

00:28:30.195 --> 00:28:31.635 ever certain in absence of

NOTE Confidence: 0.9394788

00:28:31.635 --> 00:28:32.994 walls that are obviously overtly

NOTE Confidence: 0.9394788

00:28:32.994 --> 00:28:33.895 very, very thick.

NOTE Confidence: 0.9555496

00:28:35.075 --> 00:28:35.955 So we're in this gray

NOTE Confidence: 0.9555496

00:28:35.955 --> 00:28:37.155 zone, and we're not certain.

NOTE Confidence: 0.9555496

00:28:37.155 --> 00:28:37.955 Of course, you use the

NOTE Confidence: 0.9555496

00:28:37.955 --> 00:28:39.315 non imaging features. I skipped

NOTE Confidence: 0.9555496

00:28:39.315 --> 00:28:40.435 over this, like the ECG

NOTE Confidence: 0.9555496

00:28:40.435 --> 00:28:41.735 and the exercise test.

NOTE Confidence: 0.98723686

00:28:42.160 --> 00:28:43.280 You're looking at all the

NOTE Confidence: 0.98723686

00:28:43.280 --> 00:28:44.640 features of structure and function

NOTE Confidence: 0.98723686

00:28:44.640 --> 00:28:45.680 both on echo, and I

NOTE Confidence: 0.98723686

00:28:45.680 --> 00:28:46.560 do do a lot of,

NOTE Confidence: 0.98723686

00:28:46.800 --> 00:28:47.520 ask for a lot of

NOTE Confidence: 0.98723686

00:28:47.520 --> 00:28:48.800 help from my MRI images.

NOTE Confidence: 0.98723686

00:28:48.800 --> 00:28:49.600 I don't read those out

NOTE Confidence: 0.98723686

00:28:49.600 --> 00:28:50.100 myself.

NOTE Confidence: 0.9602729

00:28:50.480 --> 00:28:51.280 And the take home I'd

NOTE Confidence: 0.9602729

00:28:51.280 --> 00:28:52.080 have you take is that

NOTE Confidence: 0.9602729

00:28:52.080 --> 00:28:53.700 when something is overtly abnormal,

NOTE Confidence: 0.9602729

00:28:53.760 --> 00:28:54.720 like walls of,

NOTE Confidence: 0.9067195

00:28:55.120 --> 00:28:56.625 really even anything above twelve

NOTE Confidence: 0.9067195

00:28:56.625 --> 00:28:58.305 or anything even into twelve

NOTE Confidence: 0.9067195

00:28:58.305 --> 00:28:59.365 or thirteen millimeters

NOTE Confidence: 0.97639173

00:28:59.825 --> 00:29:00.865 is really not seen in

NOTE Confidence: 0.97639173

00:29:00.865 --> 00:29:02.065 female athletes. Right? And then

NOTE Confidence: 0.97639173

00:29:02.065 --> 00:29:02.945 in males, if you're seeing

NOTE Confidence: 0.97639173

00:29:02.945 --> 00:29:04.545 walls of fourteen, fifteen, sixteen,

NOTE Confidence: 0.97639173

00:29:04.545 --> 00:29:06.005 that's never gonna be normal.

NOTE Confidence: 0.97639173

00:29:06.145 --> 00:29:06.945 But if you're in this

NOTE Confidence: 0.97639173

00:29:06.945 --> 00:29:08.065 range where the walls are

NOTE Confidence: 0.97639173

00:29:08.065 --> 00:29:09.105 not that crazy thick or

NOTE Confidence: 0.97639173

00:29:09.105 --> 00:29:10.065 the cavity is not that

NOTE Confidence: 0.97639173

00:29:10.065 --> 00:29:11.890 crazy dilated, The function's right

NOTE Confidence: 0.97639173

00:29:11.890 --> 00:29:12.390 borderline.

NOTE Confidence: 0.7282715

00:29:14.690 --> 00:29:15.190 The,

NOTE Confidence: 0.9356614

00:29:16.130 --> 00:29:17.650 in general, normal features do

NOTE Confidence: 0.9356614

00:29:17.650 --> 00:29:18.930 not necessarily reassure. And I'll

NOTE Confidence: 0.9356614

00:29:18.930 --> 00:29:19.970 tell an anecdote which I

NOTE Confidence: 0.9356614

00:29:19.970 --> 00:29:20.770 was once referred to a

NOTE Confidence: 0.9356614

00:29:20.770 --> 00:29:22.290 patient for question athlete's heart

NOTE Confidence: 0.9356614

00:29:22.290 --> 00:29:23.190 versus HCM,

NOTE Confidence: 0.98204386

00:29:23.535 --> 00:29:24.575 and his walls had thickened

NOTE Confidence: 0.98204386

00:29:24.575 --> 00:29:25.295 up quite a bit from

NOTE Confidence: 0.98204386

00:29:25.295 --> 00:29:26.255 the prior echo, and he

NOTE Confidence: 0.98204386

00:29:26.255 --> 00:29:27.375 had a septum of thirty

NOTE Confidence: 0.98204386

00:29:27.375 --> 00:29:28.655 three millimeters. Right? So this

NOTE Confidence: 0.98204386

00:29:28.655 --> 00:29:30.175 is HCM. But his e

NOTE Confidence: 0.98204386

00:29:30.175 --> 00:29:30.675 primes,

NOTE Confidence: 0.8863056

00:29:31.135 --> 00:29:32.575 were still negative fifteen, which

NOTE Confidence: 0.8863056

00:29:32.575 --> 00:29:33.375 I don't even know how

NOTE Confidence: 0.8863056

00:29:33.375 --> 00:29:34.495 that happens. I mean, this

NOTE Confidence: 0.8863056

00:29:34.495 --> 00:29:35.295 is I saw a bunch

NOTE Confidence: 0.8863056

00:29:35.295 --> 00:29:36.595 of it still completely normal.

NOTE Confidence: 0.8863056

00:29:36.895 --> 00:29:37.295 So,

NOTE Confidence: 0.9968706

00:29:37.695 --> 00:29:38.815 don't be reassured if you

NOTE Confidence: 0.9968706

00:29:38.815 --> 00:29:39.830 see normal features. In that

NOTE Confidence: 0.9968706

00:29:39.830 --> 00:29:40.710 case, it was not in

NOTE Confidence: 0.9968706

00:29:40.710 --> 00:29:42.070 the gray zone. And then

NOTE Confidence: 0.9968706

00:29:42.070 --> 00:29:43.270 what motivated this was this

NOTE Confidence: 0.9968706

00:29:43.270 --> 00:29:44.310 idea that if we labeled

NOTE Confidence: 0.9968706

00:29:44.310 --> 00:29:45.130 it as cardiomyopathy

NOTE Confidence: 0.9842788

00:29:45.510 --> 00:29:46.790 that we were putting an

NOTE Confidence: 0.9842788

00:29:46.790 --> 00:29:48.550 athlete into the risky position

NOTE Confidence: 0.9842788

00:29:48.550 --> 00:29:49.990 of possibly not being able

NOTE Confidence: 0.9842788

00:29:49.990 --> 00:29:51.030 to continue in the sport

NOTE Confidence: 0.9842788

00:29:51.030 --> 00:29:52.310 that they love. Right? So

NOTE Confidence: 0.9842788

00:29:52.310 --> 00:29:53.625 when I was on this

NOTE Confidence: 0.9842788

00:29:53.625 --> 00:29:55.005 path of research,

NOTE Confidence: 0.9296761

00:29:55.705 --> 00:29:57.145 the the motivating factor was

NOTE Confidence: 0.9296761

00:29:57.145 --> 00:29:58.105 this is what the guidelines

NOTE Confidence: 0.9296761

00:29:58.105 --> 00:29:58.905 said, that if we even

NOTE Confidence: 0.9296761

00:29:58.905 --> 00:30:00.665 said probable HCM, like, the

NOTE Confidence: 0.9296761

00:30:00.665 --> 00:30:01.705 t waves are all inverted

NOTE Confidence: 0.9296761

00:30:01.705 --> 00:30:02.265 and the walls are a

NOTE Confidence: 0.9296761

00:30:02.265 --> 00:30:03.785 little thick, it's probably HCM,

NOTE Confidence: 0.9296761

00:30:03.785 --> 00:30:04.665 right, even if it doesn't

NOTE Confidence: 0.9296761

00:30:04.665 --> 00:30:05.725 meet HCM criteria.

NOTE Confidence: 0.96954346

00:30:06.460 --> 00:30:07.180 And then, of course, if

NOTE Confidence: 0.96954346

00:30:07.180 --> 00:30:08.940 it was unequivocal HCM, this

NOTE Confidence: 0.96954346

00:30:08.940 --> 00:30:10.140 was what was codified in

NOTE Confidence: 0.96954346

00:30:10.140 --> 00:30:10.640 guidelines.

NOTE Confidence: 0.9243885

00:30:11.820 --> 00:30:13.180 Peep people like Rachel and

NOTE Confidence: 0.9243885

00:30:13.180 --> 00:30:14.060 really Rachel, you were a

NOTE Confidence: 0.9243885

00:30:14.060 --> 00:30:15.740 formative person pushed this forward

NOTE Confidence: 0.9243885

00:30:15.740 --> 00:30:16.700 and really questioned, is this

NOTE Confidence: 0.9243885

00:30:16.700 --> 00:30:17.420 the way we should be

NOTE Confidence: 0.9243885

00:30:17.420 --> 00:30:19.340 managing all cardiomyopathy patients such

NOTE Confidence: 0.9243885

00:30:19.340 --> 00:30:20.700 that our updated guidelines in

NOTE Confidence: 0.9243885

00:30:20.700 --> 00:30:22.365 two thousand twenty five use

NOTE Confidence: 0.9243885

00:30:22.365 --> 00:30:23.745 shared decision making, understanding

NOTE Confidence: 0.9303928

00:30:24.125 --> 00:30:25.645 that that overt restriction of

NOTE Confidence: 0.9303928

00:30:25.645 --> 00:30:26.945 all individuals with cardiomyopathy

NOTE Confidence: 0.9609493

00:30:27.245 --> 00:30:28.285 in the face of really

NOTE Confidence: 0.9609493

00:30:28.285 --> 00:30:29.725 uncertain risk. We don't actually

NOTE Confidence: 0.9609493

00:30:29.725 --> 00:30:30.685 know if you take a

NOTE Confidence: 0.9609493

00:30:30.685 --> 00:30:31.805 athlete out of sport, does

NOTE Confidence: 0.9609493

00:30:31.805 --> 00:30:33.085 that improve their outcomes or

NOTE Confidence: 0.9609493

00:30:33.085 --> 00:30:34.590 their risk. Right? In the

NOTE Confidence: 0.9609493

00:30:34.590 --> 00:30:36.530 old days, with uncertain uncertainty,

NOTE Confidence: 0.9609493

00:30:36.590 --> 00:30:38.190 we were restrictive. In the

NOTE Confidence: 0.9609493

00:30:38.190 --> 00:30:39.150 in the new era with

NOTE Confidence: 0.9609493

00:30:39.150 --> 00:30:40.669 uncertainty, we use shared decision

NOTE Confidence: 0.9609493

00:30:40.669 --> 00:30:41.710 making as we do a

NOTE Confidence: 0.9609493

00:30:41.710 --> 00:30:42.669 lot across a lot of

NOTE Confidence: 0.9609493

00:30:42.669 --> 00:30:43.809 cardiovascular medicine.

NOTE Confidence: 0.9760742

00:30:45.230 --> 00:30:45.950 And so,

NOTE Confidence: 0.98046875

00:30:46.270 --> 00:30:47.150 this actually, I think, has

NOTE Confidence: 0.98046875

00:30:47.150 --> 00:30:48.110 taken the heat off of

NOTE Confidence: 0.98046875

00:30:48.110 --> 00:30:49.150 these cases a little bit

NOTE Confidence: 0.98046875

00:30:49.150 --> 00:30:50.049 for me personally

NOTE Confidence: 0.9995117

00:30:50.355 --> 00:30:50.755 because,

NOTE Confidence: 0.97987586

00:30:51.235 --> 00:30:52.535 you know, you're putting them

NOTE Confidence: 0.97987586

00:30:52.675 --> 00:30:54.275 into the maybe abnormal gray

NOTE Confidence: 0.97987586

00:30:54.275 --> 00:30:55.495 zone or the abnormal,

NOTE Confidence: 0.98679835

00:30:56.434 --> 00:30:58.275 was a big distinction back

NOTE Confidence: 0.98679835

00:30:58.275 --> 00:30:59.315 in the day because it

NOTE Confidence: 0.98679835

00:30:59.315 --> 00:31:00.515 really which bin you put

NOTE Confidence: 0.98679835

00:31:00.515 --> 00:31:02.115 them into really defines a

NOTE Confidence: 0.98679835

00:31:02.115 --> 00:31:03.075 black and white sport or

NOTE Confidence: 0.98679835

00:31:03.075 --> 00:31:03.815 no sport.

NOTE Confidence: 0.97844905

00:31:05.120 --> 00:31:06.160 But now now we can

NOTE Confidence: 0.97844905

00:31:06.160 --> 00:31:07.680 be more flexible in our

NOTE Confidence: 0.97844905

00:31:07.680 --> 00:31:08.180 thinking,

NOTE Confidence: 0.9817734

00:31:09.040 --> 00:31:10.260 and in our our counseling

NOTE Confidence: 0.9817734

00:31:10.320 --> 00:31:11.600 is that, of course, risk

NOTE Confidence: 0.9817734

00:31:11.600 --> 00:31:12.960 exists on a spectrum, not

NOTE Confidence: 0.9817734

00:31:12.960 --> 00:31:13.840 as a you're in one

NOTE Confidence: 0.9817734

00:31:13.840 --> 00:31:15.200 bin or the other. I

NOTE Confidence: 0.9817734

00:31:15.200 --> 00:31:16.240 do think we can define

NOTE Confidence: 0.9817734

00:31:16.240 --> 00:31:16.980 better tools,

NOTE Confidence: 0.96758014

00:31:17.885 --> 00:31:18.765 including I don't do a

NOTE Confidence: 0.96758014

00:31:18.765 --> 00:31:20.065 lot of research in AI,

NOTE Confidence: 0.96758014

00:31:20.125 --> 00:31:21.325 but combining all the things

NOTE Confidence: 0.96758014

00:31:21.325 --> 00:31:22.285 we measure and trying to

NOTE Confidence: 0.96758014

00:31:22.285 --> 00:31:23.005 figure out is there a

NOTE Confidence: 0.96758014

00:31:23.005 --> 00:31:23.885 way that we can sum

NOTE Confidence: 0.96758014

00:31:23.885 --> 00:31:25.085 them all up and figure

NOTE Confidence: 0.96758014

00:31:25.085 --> 00:31:25.965 out is this a healthy

NOTE Confidence: 0.96758014

00:31:25.965 --> 00:31:27.005 heart or the beginnings of

NOTE Confidence: 0.96758014

00:31:27.005 --> 00:31:28.305 a pathologic state.

NOTE Confidence: 0.93928224

00:31:28.685 --> 00:31:29.940 We always follow these athletes

NOTE Confidence: 0.93928224

00:31:30.100 --> 00:31:31.539 athletes longitudinally, the Harvard ones

NOTE Confidence: 0.93928224

00:31:31.539 --> 00:31:32.259 that start out in a

NOTE Confidence: 0.93928224

00:31:32.259 --> 00:31:33.059 gray zone. I have a

NOTE Confidence: 0.93928224

00:31:33.059 --> 00:31:34.419 spreadsheet, and they have them

NOTE Confidence: 0.93928224

00:31:34.419 --> 00:31:35.720 come back every year because,

NOTE Confidence: 0.9598718

00:31:36.100 --> 00:31:37.059 especially in your teens and

NOTE Confidence: 0.9598718

00:31:37.059 --> 00:31:38.659 twenties, you, you can see

NOTE Confidence: 0.9598718

00:31:38.659 --> 00:31:40.419 a phenotype in transition. And

NOTE Confidence: 0.9598718

00:31:40.419 --> 00:31:41.220 then like I said, the

NOTE Confidence: 0.9598718

00:31:41.220 --> 00:31:41.720 formative,

NOTE Confidence: 0.9951459

00:31:42.605 --> 00:31:44.365 evolution into shared decision making

NOTE Confidence: 0.9951459

00:31:44.365 --> 00:31:45.405 means that many of these

NOTE Confidence: 0.9951459

00:31:45.405 --> 00:31:47.025 athletes, even if we diagnose

NOTE Confidence: 0.9951459

00:31:47.085 --> 00:31:47.665 a cardiomyopathy,

NOTE Confidence: 0.94506836

00:31:48.365 --> 00:31:49.345 remain in sport.

NOTE Confidence: 0.98965734

00:31:50.765 --> 00:31:52.205 Alright. Halfway through. So that's

NOTE Confidence: 0.98965734

00:31:52.205 --> 00:31:53.405 perfect. We're gonna shift our

NOTE Confidence: 0.98965734

00:31:53.405 --> 00:31:53.885 lens,

NOTE Confidence: 0.9453613

00:31:54.205 --> 00:31:56.045 to the master's athlete. And,

NOTE Confidence: 0.93877494

00:31:56.845 --> 00:31:58.960 really because that distribution of

NOTE Confidence: 0.93877494

00:31:58.960 --> 00:32:00.240 causes of scary sudden,

NOTE Confidence: 0.98529345

00:32:00.640 --> 00:32:02.480 sudden events during sport shows

NOTE Confidence: 0.98529345

00:32:02.480 --> 00:32:03.279 us that most of these

NOTE Confidence: 0.98529345

00:32:03.279 --> 00:32:04.419 are due to ASCVD,

NOTE Confidence: 0.9998372

00:32:04.720 --> 00:32:05.840 we will focus on that

NOTE Confidence: 0.9998372

00:32:05.840 --> 00:32:06.340 diagnosis.

NOTE Confidence: 0.97578126

00:32:07.120 --> 00:32:07.679 If you think of the

NOTE Confidence: 0.97578126

00:32:07.679 --> 00:32:08.640 way we started with young

NOTE Confidence: 0.97578126

00:32:08.640 --> 00:32:10.080 athletes, we talked about screening.

NOTE Confidence: 0.9599132

00:32:10.605 --> 00:32:11.645 So the natural question you

NOTE Confidence: 0.9599132

00:32:11.645 --> 00:32:12.365 might have is, is there

NOTE Confidence: 0.9599132

00:32:12.365 --> 00:32:13.405 a way to screen masters

NOTE Confidence: 0.9599132

00:32:13.405 --> 00:32:14.785 athletes for the risk producing

NOTE Confidence: 0.9599132

00:32:14.845 --> 00:32:16.445 condition, really the main condition

NOTE Confidence: 0.9599132

00:32:16.445 --> 00:32:17.825 they have that produces risk

NOTE Confidence: 0.9599132

00:32:17.965 --> 00:32:19.725 coronary disease? And I'd say

NOTE Confidence: 0.9599132

00:32:19.725 --> 00:32:20.925 the short answer is is

NOTE Confidence: 0.9599132

00:32:20.925 --> 00:32:22.125 no. If you're thinking about

NOTE Confidence: 0.9599132

00:32:22.125 --> 00:32:22.625 testing,

NOTE Confidence: 0.92733157

00:32:23.603 --> 00:32:24.590 a a a twelve lead

NOTE Confidence: 0.92733157

00:32:24.590 --> 00:32:26.669 ECG is not gonna diagnose

NOTE Confidence: 0.92733157

00:32:26.669 --> 00:32:28.350 your coronary artery disease unless

NOTE Confidence: 0.92733157

00:32:28.350 --> 00:32:29.649 you've already had an MI.

NOTE Confidence: 0.94981956

00:32:30.590 --> 00:32:31.630 There's a great group up

NOTE Confidence: 0.94981956

00:32:31.630 --> 00:32:32.909 in Canada that's tried to

NOTE Confidence: 0.94981956

00:32:32.909 --> 00:32:33.950 address like, if you take

NOTE Confidence: 0.94981956

00:32:33.950 --> 00:32:35.230 a layered approach, it's not

NOTE Confidence: 0.94981956

00:32:35.230 --> 00:32:36.190 a one size fits all.

NOTE Confidence: 0.94981956

00:32:36.190 --> 00:32:37.070 What they use as you

NOTE Confidence: 0.94981956

00:32:37.070 --> 00:32:38.125 can tell, this study is

NOTE Confidence: 0.94981956

00:32:38.125 --> 00:32:38.765 a little bit old and

NOTE Confidence: 0.94981956

00:32:38.765 --> 00:32:39.804 that they used framing ham

NOTE Confidence: 0.94981956

00:32:39.804 --> 00:32:40.765 risk as well as the

NOTE Confidence: 0.94981956

00:32:40.765 --> 00:32:42.205 history and physical and sort

NOTE Confidence: 0.94981956

00:32:42.205 --> 00:32:43.725 of decided, okay. You're fine.

NOTE Confidence: 0.94981956

00:32:43.725 --> 00:32:44.924 You don't need testing versus

NOTE Confidence: 0.94981956

00:32:44.924 --> 00:32:46.065 we should do some testing

NOTE Confidence: 0.94981956

00:32:46.125 --> 00:32:47.565 consisting first of an exercise

NOTE Confidence: 0.94981956

00:32:47.565 --> 00:32:48.385 stress test.

NOTE Confidence: 0.99327254

00:32:48.765 --> 00:32:49.804 And then, you know, follow

NOTE Confidence: 0.99327254

00:32:49.804 --> 00:32:51.025 down the garden path

NOTE Confidence: 0.9840766

00:32:51.390 --> 00:32:53.070 and identify, you know, what

NOTE Confidence: 0.9840766

00:32:53.070 --> 00:32:53.970 what do you find.

NOTE Confidence: 0.94712466

00:32:54.510 --> 00:32:55.870 It shouldn't be surprising. These

NOTE Confidence: 0.94712466

00:32:55.870 --> 00:32:57.230 were, on average, far older

NOTE Confidence: 0.94712466

00:32:57.230 --> 00:32:58.270 than thirty five years old,

NOTE Confidence: 0.94712466

00:32:58.270 --> 00:32:59.230 more like in their fifties

NOTE Confidence: 0.94712466

00:32:59.230 --> 00:33:00.510 and sixties. You know, you'll

NOTE Confidence: 0.94712466

00:33:00.510 --> 00:33:02.030 find things. You'll not all

NOTE Confidence: 0.94712466

00:33:02.030 --> 00:33:03.710 atherosclerotic disease, but in eleven

NOTE Confidence: 0.94712466

00:33:03.710 --> 00:33:05.490 percent, you'll find something, PVCs

NOTE Confidence: 0.94712466

00:33:05.630 --> 00:33:06.030 or,

NOTE Confidence: 0.99786377

00:33:06.455 --> 00:33:07.355 some atherosclerosis.

NOTE Confidence: 0.9966146

00:33:08.455 --> 00:33:09.415 But we don't have we

NOTE Confidence: 0.9966146

00:33:09.415 --> 00:33:11.575 don't recommend people go down

NOTE Confidence: 0.9966146

00:33:11.575 --> 00:33:13.355 this path in asymptomatic patients,

NOTE Confidence: 0.989088

00:33:13.655 --> 00:33:14.615 because we don't have any

NOTE Confidence: 0.989088

00:33:14.615 --> 00:33:15.975 data about whether this changes

NOTE Confidence: 0.989088

00:33:15.975 --> 00:33:16.935 our outcomes. And I think

NOTE Confidence: 0.989088

00:33:16.935 --> 00:33:17.975 there's a lot of downsides

NOTE Confidence: 0.989088

00:33:17.975 --> 00:33:18.795 to that path.

NOTE Confidence: 0.99975586

00:33:19.180 --> 00:33:20.160 So I'm not enthusiastic

NOTE Confidence: 0.92073566

00:33:20.540 --> 00:33:22.140 about, like, an algorithmic, let's

NOTE Confidence: 0.92073566

00:33:22.140 --> 00:33:24.140 exercise test certain athletes versus

NOTE Confidence: 0.92073566

00:33:24.140 --> 00:33:25.680 others in the masters population,

NOTE Confidence: 0.9620028

00:33:26.140 --> 00:33:27.420 but you cannot meet someone

NOTE Confidence: 0.9620028

00:33:27.420 --> 00:33:29.600 who's more enthusiastic and scrutinous

NOTE Confidence: 0.9620028

00:33:29.820 --> 00:33:30.320 of

NOTE Confidence: 0.9611328

00:33:31.235 --> 00:33:32.835 ASCVD risk factors and masters

NOTE Confidence: 0.9611328

00:33:32.835 --> 00:33:34.195 athletes. And they're a really

NOTE Confidence: 0.9611328

00:33:34.195 --> 00:33:35.635 unique population because they they

NOTE Confidence: 0.9611328

00:33:35.715 --> 00:33:36.835 to the extent they're presenting

NOTE Confidence: 0.9611328

00:33:36.835 --> 00:33:38.435 in cardiology clinic, they are

NOTE Confidence: 0.9611328

00:33:38.435 --> 00:33:39.795 highly active. They oftentimes are

NOTE Confidence: 0.9611328

00:33:39.795 --> 00:33:41.075 paying really good attention to

NOTE Confidence: 0.9611328

00:33:41.075 --> 00:33:42.535 all their other lifestyle factors.

NOTE Confidence: 0.9659424

00:33:42.915 --> 00:33:43.975 And it it is,

NOTE Confidence: 0.9448242

00:33:44.467 --> 00:33:44.580 I

NOTE Confidence: 0.95236856

00:33:46.980 --> 00:33:48.020 give them the bad news

NOTE Confidence: 0.95236856

00:33:48.020 --> 00:33:49.299 that something doesn't look quite

NOTE Confidence: 0.95236856

00:33:49.299 --> 00:33:50.820 right, despite all their good

NOTE Confidence: 0.95236856

00:33:50.820 --> 00:33:53.220 lifestyle habits. Because high physical

NOTE Confidence: 0.95236856

00:33:53.220 --> 00:33:54.740 activity levels and fitness are

NOTE Confidence: 0.95236856

00:33:54.740 --> 00:33:56.100 not universally protective, and you

NOTE Confidence: 0.95236856

00:33:56.100 --> 00:33:56.980 all know this. We have

NOTE Confidence: 0.95236856

00:33:57.140 --> 00:33:58.100 you can certainly still have

NOTE Confidence: 0.95236856

00:33:58.100 --> 00:33:59.640 a very high LDL, lipoprotein

NOTE Confidence: 0.95236856

00:33:59.779 --> 00:34:01.615 a, newer, maybe not new

NOTE Confidence: 0.95236856

00:34:01.615 --> 00:34:02.575 kid on the block anymore.

NOTE Confidence: 0.95236856

00:34:02.575 --> 00:34:03.615 We're supposed to check-in on

NOTE Confidence: 0.95236856

00:34:03.615 --> 00:34:04.115 everyone.

NOTE Confidence: 0.9969308

00:34:04.815 --> 00:34:05.855 So all these things are

NOTE Confidence: 0.9969308

00:34:05.855 --> 00:34:06.755 driven by

NOTE Confidence: 0.9838596

00:34:07.375 --> 00:34:08.655 features that are outside of

NOTE Confidence: 0.9838596

00:34:08.655 --> 00:34:09.695 the control of even a

NOTE Confidence: 0.9838596

00:34:09.695 --> 00:34:10.975 very highly active person with

NOTE Confidence: 0.9838596

00:34:10.975 --> 00:34:11.795 a great lifestyle.

NOTE Confidence: 0.96870834

00:34:12.175 --> 00:34:13.520 And, importantly, like, the usual

NOTE Confidence: 0.96870834

00:34:13.520 --> 00:34:14.480 way we would treat blood

NOTE Confidence: 0.96870834

00:34:14.480 --> 00:34:15.520 pressure and lipids are not

NOTE Confidence: 0.96870834

00:34:15.520 --> 00:34:16.400 off the table just because

NOTE Confidence: 0.96870834

00:34:16.400 --> 00:34:17.600 someone is an athlete, though

NOTE Confidence: 0.96870834

00:34:17.600 --> 00:34:18.960 sometimes you might deal with

NOTE Confidence: 0.96870834

00:34:18.960 --> 00:34:20.239 a lot more questions and

NOTE Confidence: 0.96870834

00:34:20.239 --> 00:34:21.760 nuances about side effects and

NOTE Confidence: 0.96870834

00:34:21.760 --> 00:34:22.260 such.

NOTE Confidence: 0.98884135

00:34:23.680 --> 00:34:24.820 So that's just the traditional

NOTE Confidence: 0.98884135

00:34:24.880 --> 00:34:25.920 risk factors. And then I

NOTE Confidence: 0.98884135

00:34:25.920 --> 00:34:26.800 think a lot about what

NOTE Confidence: 0.98884135

00:34:26.800 --> 00:34:27.540 could actually

NOTE Confidence: 0.9797058

00:34:28.005 --> 00:34:29.525 uniquely provoke risk in a

NOTE Confidence: 0.9797058

00:34:29.525 --> 00:34:30.825 master's athlete population.

NOTE Confidence: 0.97113436

00:34:31.605 --> 00:34:33.045 Sometimes people turn to marathons

NOTE Confidence: 0.97113436

00:34:33.045 --> 00:34:34.325 because they smoked through their

NOTE Confidence: 0.97113436

00:34:34.325 --> 00:34:35.525 whole twenties and sort of

NOTE Confidence: 0.97113436

00:34:35.525 --> 00:34:36.724 they've accrued some risk and

NOTE Confidence: 0.97113436

00:34:36.724 --> 00:34:38.325 probably some plaque earlier on

NOTE Confidence: 0.97113436

00:34:38.325 --> 00:34:39.285 in life, and then they're

NOTE Confidence: 0.97113436

00:34:39.285 --> 00:34:41.285 adding marathon marathoning on top

NOTE Confidence: 0.97113436

00:34:41.285 --> 00:34:42.344 of it in later life.

NOTE Confidence: 0.94108075

00:34:42.900 --> 00:34:43.780 Or they have this sense,

NOTE Confidence: 0.94108075

00:34:43.780 --> 00:34:44.739 I have a terrible family

NOTE Confidence: 0.94108075

00:34:44.739 --> 00:34:45.700 history, so I'm gonna take

NOTE Confidence: 0.94108075

00:34:45.700 --> 00:34:47.140 this highly active lifestyle because

NOTE Confidence: 0.94108075

00:34:47.140 --> 00:34:48.280 of that family history.

NOTE Confidence: 0.92973083

00:34:49.539 --> 00:34:50.739 Dietary history, just because you're

NOTE Confidence: 0.92973083

00:34:50.739 --> 00:34:52.420 incinerating many thousands of calories

NOTE Confidence: 0.92973083

00:34:52.420 --> 00:34:53.539 per day. There there's sort

NOTE Confidence: 0.92973083

00:34:53.539 --> 00:34:54.980 of two populations. There's, like,

NOTE Confidence: 0.92973083

00:34:54.980 --> 00:34:56.180 the green juice, very, very

NOTE Confidence: 0.92973083

00:34:56.180 --> 00:34:57.700 healthy plant whole food plant

NOTE Confidence: 0.92973083

00:34:57.700 --> 00:34:59.175 based. But then there are

NOTE Confidence: 0.92973083

00:34:59.175 --> 00:35:00.455 masters athletes who definitely the

NOTE Confidence: 0.92973083

00:35:00.455 --> 00:35:01.575 food pyramid looks like this.

NOTE Confidence: 0.92973083

00:35:01.815 --> 00:35:02.695 And they are they're trimmed,

NOTE Confidence: 0.92973083

00:35:02.695 --> 00:35:03.975 so you won't necessarily guess

NOTE Confidence: 0.92973083

00:35:03.975 --> 00:35:05.435 at it without a history.

NOTE Confidence: 0.97654676

00:35:06.295 --> 00:35:08.215 You're using exercise oftentimes to

NOTE Confidence: 0.97654676

00:35:08.215 --> 00:35:09.815 manage psychological stress, but there's

NOTE Confidence: 0.97654676

00:35:09.815 --> 00:35:11.015 great studies out of MGH

NOTE Confidence: 0.97654676

00:35:11.015 --> 00:35:12.795 showing how activated your amygdala

NOTE Confidence: 0.97654676

00:35:12.855 --> 00:35:13.930 is, helps predict how how

NOTE Confidence: 0.97654676

00:35:13.930 --> 00:35:15.290 inflamed your arteries are. Right?

NOTE Confidence: 0.97654676

00:35:15.290 --> 00:35:15.790 So,

NOTE Confidence: 0.9864946

00:35:16.570 --> 00:35:18.010 is that stress still there

NOTE Confidence: 0.9864946

00:35:18.010 --> 00:35:19.310 and a driver of risk?

NOTE Confidence: 0.9864946

00:35:19.450 --> 00:35:20.170 And then some of my

NOTE Confidence: 0.9864946

00:35:20.170 --> 00:35:21.290 research has started to look

NOTE Confidence: 0.9864946

00:35:21.290 --> 00:35:22.270 at, inflammation.

NOTE Confidence: 0.9630262

00:35:22.570 --> 00:35:23.930 We know that anyone who's

NOTE Confidence: 0.9630262

00:35:23.930 --> 00:35:25.130 active knows the day after

NOTE Confidence: 0.9630262

00:35:25.130 --> 00:35:26.410 a hard effort or sometimes

NOTE Confidence: 0.9630262

00:35:26.410 --> 00:35:27.610 two days after you're sore,

NOTE Confidence: 0.9630262

00:35:27.610 --> 00:35:28.765 you're tired, you can't walk

NOTE Confidence: 0.9630262

00:35:28.765 --> 00:35:30.045 down the stairs. If you

NOTE Confidence: 0.9630262

00:35:30.045 --> 00:35:31.325 did an HSCRP in that

NOTE Confidence: 0.9630262

00:35:31.325 --> 00:35:32.465 moment, it would be elevated.

NOTE Confidence: 0.9630262

00:35:32.685 --> 00:35:33.485 And is there a way

NOTE Confidence: 0.9630262

00:35:33.485 --> 00:35:35.405 that cumulative exercise without enough

NOTE Confidence: 0.9630262

00:35:35.405 --> 00:35:36.844 time for recovery could actually

NOTE Confidence: 0.9630262

00:35:36.844 --> 00:35:38.225 serve as a pro inflammatory

NOTE Confidence: 0.9630262

00:35:38.364 --> 00:35:39.725 risk factor? Of course, these

NOTE Confidence: 0.9630262

00:35:39.725 --> 00:35:41.085 individuals who have lower visceral

NOTE Confidence: 0.9630262

00:35:41.085 --> 00:35:42.469 fat, and if they're modestly

NOTE Confidence: 0.9630262

00:35:42.469 --> 00:35:43.750 active people overall have less

NOTE Confidence: 0.9630262

00:35:43.750 --> 00:35:44.869 inflammation, but is there an

NOTE Confidence: 0.9630262

00:35:44.869 --> 00:35:46.230 extreme dose of exercise that

NOTE Confidence: 0.9630262

00:35:46.230 --> 00:35:47.030 can go back the other

NOTE Confidence: 0.9630262

00:35:47.030 --> 00:35:47.530 way?

NOTE Confidence: 0.9733564

00:35:47.910 --> 00:35:48.790 So those are the things

NOTE Confidence: 0.9733564

00:35:48.790 --> 00:35:49.670 I think about in clinic.

NOTE Confidence: 0.9733564

00:35:49.670 --> 00:35:50.549 And I think about it,

NOTE Confidence: 0.9733564

00:35:50.790 --> 00:35:52.710 both because the atherosclerosis is

NOTE Confidence: 0.9733564

00:35:52.710 --> 00:35:53.829 the most common cause of

NOTE Confidence: 0.9733564

00:35:53.829 --> 00:35:55.515 events in masters athletes, but

NOTE Confidence: 0.9733564

00:35:55.515 --> 00:35:57.355 also because there's this concept,

NOTE Confidence: 0.9733564

00:35:57.355 --> 00:35:58.154 and I call it the

NOTE Confidence: 0.9733564

00:35:58.154 --> 00:35:59.835 CAC paradox that we see

NOTE Confidence: 0.9733564

00:35:59.835 --> 00:36:02.154 in large cohorts of, research

NOTE Confidence: 0.9733564

00:36:02.154 --> 00:36:04.255 cohorts of masters athletes, particularly

NOTE Confidence: 0.9733564

00:36:04.474 --> 00:36:05.694 male masters athletes.

NOTE Confidence: 0.9493408

00:36:05.994 --> 00:36:07.194 This started at this point

NOTE Confidence: 0.9493408

00:36:07.194 --> 00:36:08.474 fifteen or maybe closer to

NOTE Confidence: 0.9493408

00:36:08.474 --> 00:36:09.835 twenty years ago when calcium

NOTE Confidence: 0.9493408

00:36:09.835 --> 00:36:10.895 scoring came out.

NOTE Confidence: 0.96850586

00:36:11.340 --> 00:36:13.260 Europeans demonstrated that male masters

NOTE Confidence: 0.96850586

00:36:13.260 --> 00:36:14.480 athletes as compared

NOTE Confidence: 0.99275714

00:36:14.940 --> 00:36:15.840 to well matched,

NOTE Confidence: 0.96535236

00:36:16.700 --> 00:36:18.620 modestly active or sedentary controls

NOTE Confidence: 0.96535236

00:36:18.620 --> 00:36:19.600 had more CAC.

NOTE Confidence: 0.94451034

00:36:20.860 --> 00:36:22.380 Initially, I think the the

NOTE Confidence: 0.94451034

00:36:22.460 --> 00:36:23.120 our field

NOTE Confidence: 0.9598555

00:36:24.444 --> 00:36:25.325 reacted to this in such

NOTE Confidence: 0.9598555

00:36:25.325 --> 00:36:26.125 a way, like, how could

NOTE Confidence: 0.9598555

00:36:26.125 --> 00:36:27.885 exercise possibly be doing anything

NOTE Confidence: 0.9598555

00:36:27.885 --> 00:36:29.565 bad? The matching was wrong.

NOTE Confidence: 0.9598555

00:36:29.565 --> 00:36:31.085 The cohorts aren't matched. Maybe

NOTE Confidence: 0.9598555

00:36:31.085 --> 00:36:32.204 it's not plaque. Maybe it's

NOTE Confidence: 0.9598555

00:36:32.204 --> 00:36:33.484 just calcification of the vessel

NOTE Confidence: 0.9598555

00:36:33.484 --> 00:36:34.285 wall. There was sort of

NOTE Confidence: 0.9598555

00:36:34.285 --> 00:36:35.984 like a anti reaction

NOTE Confidence: 0.9891674

00:36:36.605 --> 00:36:37.964 to that. But, subsequently, over

NOTE Confidence: 0.9891674

00:36:37.964 --> 00:36:39.164 the past fifteen years, we've

NOTE Confidence: 0.9891674

00:36:39.164 --> 00:36:40.580 shown it's not just more

NOTE Confidence: 0.9891674

00:36:40.580 --> 00:36:42.120 calcium, but it's more plaque.

NOTE Confidence: 0.9891674

00:36:42.340 --> 00:36:43.540 And it's actually not just

NOTE Confidence: 0.9891674

00:36:43.540 --> 00:36:44.600 calcified plaque.

NOTE Confidence: 0.9956665

00:36:45.700 --> 00:36:46.420 This is a study that

NOTE Confidence: 0.9956665

00:36:46.420 --> 00:36:47.320 looked at controls,

NOTE Confidence: 0.948155

00:36:48.020 --> 00:36:49.219 who are still active. So

NOTE Confidence: 0.948155

00:36:49.219 --> 00:36:51.060 these aren't sedentary controls. People

NOTE Confidence: 0.948155

00:36:51.060 --> 00:36:52.340 who started exercise later in

NOTE Confidence: 0.948155

00:36:52.340 --> 00:36:53.380 life and people who have

NOTE Confidence: 0.948155

00:36:53.380 --> 00:36:55.015 been highly active, men. These

NOTE Confidence: 0.948155

00:36:55.015 --> 00:36:55.675 are all men,

NOTE Confidence: 0.9951172

00:36:56.455 --> 00:36:56.955 lifelong

NOTE Confidence: 0.93999916

00:36:57.495 --> 00:36:58.695 and showed they have more

NOTE Confidence: 0.93999916

00:36:58.695 --> 00:36:59.895 plaques of all sorts and

NOTE Confidence: 0.93999916

00:36:59.895 --> 00:37:01.575 that the plaque distribution actually

NOTE Confidence: 0.93999916

00:37:01.575 --> 00:37:03.735 really it's calcified, noncalcified, and

NOTE Confidence: 0.93999916

00:37:03.735 --> 00:37:04.475 mixed plaques.

NOTE Confidence: 0.9793837

00:37:04.855 --> 00:37:06.390 Because this cohort is all

NOTE Confidence: 0.9793837

00:37:06.390 --> 00:37:07.349 had this is not an

NOTE Confidence: 0.9793837

00:37:07.349 --> 00:37:08.630 inactive control. You can see

NOTE Confidence: 0.9793837

00:37:08.630 --> 00:37:09.670 the the vast majority of

NOTE Confidence: 0.9793837

00:37:09.670 --> 00:37:10.809 plaques are still calcified.

NOTE Confidence: 0.9637639

00:37:12.309 --> 00:37:13.750 Sex based differences are interesting

NOTE Confidence: 0.9637639

00:37:13.750 --> 00:37:14.630 here in that this has

NOTE Confidence: 0.9637639

00:37:14.630 --> 00:37:16.230 not been demonstrated in female

NOTE Confidence: 0.9637639

00:37:16.230 --> 00:37:18.069 masters athletes. There's they they

NOTE Confidence: 0.9637639

00:37:18.069 --> 00:37:19.190 have less plaques and less

NOTE Confidence: 0.9637639

00:37:19.190 --> 00:37:19.690 atherosclerosis

NOTE Confidence: 0.9783971

00:37:20.069 --> 00:37:21.750 than matched control groups through

NOTE Confidence: 0.9783971

00:37:21.750 --> 00:37:22.844 on age sixty five when

NOTE Confidence: 0.9783971

00:37:22.844 --> 00:37:23.725 they catch up. And one

NOTE Confidence: 0.9783971

00:37:23.725 --> 00:37:24.685 could imagine if we still

NOTE Confidence: 0.9783971

00:37:24.685 --> 00:37:25.725 had seventy or eighty year

NOTE Confidence: 0.9783971

00:37:25.725 --> 00:37:27.565 old women doing marathons that

NOTE Confidence: 0.9783971

00:37:27.565 --> 00:37:29.244 maybe the same question is

NOTE Confidence: 0.9783971

00:37:29.244 --> 00:37:30.364 at play, but just that,

NOTE Confidence: 0.9783971

00:37:30.525 --> 00:37:31.725 we have some protection through

NOTE Confidence: 0.9783971

00:37:31.725 --> 00:37:33.565 menopause for atherosclerosis for all

NOTE Confidence: 0.9783971

00:37:33.565 --> 00:37:35.085 women that creates a different

NOTE Confidence: 0.9783971

00:37:35.085 --> 00:37:36.145 look to the data.

NOTE Confidence: 0.9800806

00:37:37.180 --> 00:37:38.620 And then recently enough in

NOTE Confidence: 0.9800806

00:37:38.620 --> 00:37:39.260 the last year or two,

NOTE Confidence: 0.9800806

00:37:39.260 --> 00:37:40.140 you can show that short

NOTE Confidence: 0.9800806

00:37:40.140 --> 00:37:41.500 term progression of, like, something

NOTE Confidence: 0.9800806

00:37:41.500 --> 00:37:43.020 like total plaque volume is

NOTE Confidence: 0.9800806

00:37:43.020 --> 00:37:44.860 actually associated with the exercise

NOTE Confidence: 0.9800806

00:37:44.860 --> 00:37:46.380 volume and intensity over a

NOTE Confidence: 0.9800806

00:37:46.380 --> 00:37:47.600 short period of time.

NOTE Confidence: 0.90771484

00:37:48.060 --> 00:37:48.460 So,

NOTE Confidence: 0.97713995

00:37:49.405 --> 00:37:50.605 this this to me I

NOTE Confidence: 0.97713995

00:37:50.685 --> 00:37:51.805 I'm not saying that high

NOTE Confidence: 0.97713995

00:37:51.805 --> 00:37:53.165 doses of physical activity are

NOTE Confidence: 0.97713995

00:37:53.165 --> 00:37:54.305 a risk factor for atherosclerosis,

NOTE Confidence: 0.97713995

00:37:54.365 --> 00:37:55.725 but it certainly gives us

NOTE Confidence: 0.97713995

00:37:55.725 --> 00:37:56.845 a lens through which we

NOTE Confidence: 0.97713995

00:37:56.845 --> 00:37:57.885 need to sort of understand

NOTE Confidence: 0.97713995

00:37:57.885 --> 00:37:59.165 better what's driving this. And

NOTE Confidence: 0.97713995

00:37:59.165 --> 00:38:00.125 these are all these are

NOTE Confidence: 0.97713995

00:38:00.125 --> 00:38:01.680 matched for everything you care

NOTE Confidence: 0.97713995

00:38:01.680 --> 00:38:03.760 about. Lipoid, lipids, blood pressure,

NOTE Confidence: 0.97713995

00:38:03.760 --> 00:38:05.359 family history. And so there's

NOTE Confidence: 0.97713995

00:38:05.359 --> 00:38:06.560 nothing else that at least

NOTE Confidence: 0.97713995

00:38:06.560 --> 00:38:07.700 is straightforward that

NOTE Confidence: 0.99039716

00:38:08.160 --> 00:38:09.440 that we know about that

NOTE Confidence: 0.99039716

00:38:09.440 --> 00:38:10.640 seems like it's driving this

NOTE Confidence: 0.99039716

00:38:10.640 --> 00:38:12.420 other than the exercise itself

NOTE Confidence: 0.8988851

00:38:13.119 --> 00:38:14.800 and this exercise in excess,

NOTE Confidence: 0.8988851

00:38:14.800 --> 00:38:15.300 perhaps.

NOTE Confidence: 0.9782085

00:38:16.575 --> 00:38:17.295 To get at this. And

NOTE Confidence: 0.9782085

00:38:17.295 --> 00:38:18.015 I have it's not the

NOTE Confidence: 0.9782085

00:38:18.015 --> 00:38:18.815 grant I just got, though.

NOTE Confidence: 0.9782085

00:38:18.815 --> 00:38:19.614 I wish it was. It's

NOTE Confidence: 0.9782085

00:38:19.614 --> 00:38:20.734 the grant that'll be reviewed

NOTE Confidence: 0.9782085

00:38:20.734 --> 00:38:22.255 this month. As a pilot

NOTE Confidence: 0.9782085

00:38:22.255 --> 00:38:22.755 study,

NOTE Confidence: 0.78222656

00:38:23.055 --> 00:38:23.535 we'd,

NOTE Confidence: 0.9635512

00:38:24.175 --> 00:38:24.815 this is one of the

NOTE Confidence: 0.9635512

00:38:24.815 --> 00:38:25.935 favorite studies I've done even

NOTE Confidence: 0.9635512

00:38:25.935 --> 00:38:26.734 though it was an end

NOTE Confidence: 0.9635512

00:38:26.734 --> 00:38:27.395 of eleven.

NOTE Confidence: 0.9519709

00:38:28.015 --> 00:38:28.739 I am one of the

NOTE Confidence: 0.9519709

00:38:28.739 --> 00:38:30.020 co medical directors for the

NOTE Confidence: 0.9519709

00:38:30.020 --> 00:38:30.520 marathon.

NOTE Confidence: 0.92743325

00:38:30.820 --> 00:38:32.260 We recruited eleven. It was

NOTE Confidence: 0.92743325

00:38:32.260 --> 00:38:33.300 really twelve, but we had

NOTE Confidence: 0.92743325

00:38:33.300 --> 00:38:34.600 one one lost to follow-up,

NOTE Confidence: 0.9742538

00:38:35.540 --> 00:38:36.580 because she actually just run

NOTE Confidence: 0.9742538

00:38:36.580 --> 00:38:37.780 her marathon with, like, a

NOTE Confidence: 0.9742538

00:38:37.780 --> 00:38:39.300 eighty percent proximal LED that

NOTE Confidence: 0.9742538

00:38:39.300 --> 00:38:40.260 we found on the first

NOTE Confidence: 0.9742538

00:38:40.260 --> 00:38:41.625 CT scan. But, But, so

NOTE Confidence: 0.9742538

00:38:41.625 --> 00:38:43.165 she didn't undergo the follow-up.

NOTE Confidence: 0.9742538

00:38:43.225 --> 00:38:44.825 Sorry for another day. We

NOTE Confidence: 0.9742538

00:38:44.825 --> 00:38:45.864 scan them, and you can

NOTE Confidence: 0.9742538

00:38:45.864 --> 00:38:46.825 do this using you can

NOTE Confidence: 0.9742538

00:38:46.825 --> 00:38:48.185 do these measurements using just

NOTE Confidence: 0.9742538

00:38:48.185 --> 00:38:50.025 regular coronary CTN geography. It

NOTE Confidence: 0.9742538

00:38:50.025 --> 00:38:51.065 doesn't it's not a special

NOTE Confidence: 0.9742538

00:38:51.065 --> 00:38:52.585 protocol or a special scanner,

NOTE Confidence: 0.9742538

00:38:52.585 --> 00:38:53.965 but it's special software,

NOTE Confidence: 0.9706076

00:38:54.940 --> 00:38:55.660 where you can look at

NOTE Confidence: 0.9706076

00:38:55.660 --> 00:38:57.340 the inflammation around the fat

NOTE Confidence: 0.9706076

00:38:57.340 --> 00:38:58.700 that surrounds the coronary. It's

NOTE Confidence: 0.9706076

00:38:58.700 --> 00:38:59.580 called the phi or the

NOTE Confidence: 0.9706076

00:38:59.580 --> 00:39:00.960 fat attenuation index.

NOTE Confidence: 0.97631764

00:39:02.060 --> 00:39:03.420 We did this both immediately

NOTE Confidence: 0.97631764

00:39:03.420 --> 00:39:04.620 post the marathon when they're

NOTE Confidence: 0.97631764

00:39:04.620 --> 00:39:05.980 all still sore and inflamed

NOTE Confidence: 0.97631764

00:39:05.980 --> 00:39:06.815 and have just done a

NOTE Confidence: 0.97631764

00:39:06.815 --> 00:39:07.695 whole training block, and then

NOTE Confidence: 0.97631764

00:39:07.695 --> 00:39:08.735 we did it, three months

NOTE Confidence: 0.97631764

00:39:08.735 --> 00:39:09.695 later, and we asked for

NOTE Confidence: 0.97631764

00:39:09.695 --> 00:39:10.815 people that weren't using their

NOTE Confidence: 0.97631764

00:39:10.815 --> 00:39:11.855 marathon to train for their

NOTE Confidence: 0.97631764

00:39:11.855 --> 00:39:12.895 Ironman. And I say that

NOTE Confidence: 0.97631764

00:39:12.895 --> 00:39:13.775 tongue in cheek, but that

NOTE Confidence: 0.97631764

00:39:13.775 --> 00:39:15.395 is something people do.

NOTE Confidence: 0.97134304

00:39:16.655 --> 00:39:17.535 And so we asked for

NOTE Confidence: 0.97134304

00:39:17.535 --> 00:39:18.735 people that we were trying

NOTE Confidence: 0.97134304

00:39:18.735 --> 00:39:19.680 to pick people who were

NOTE Confidence: 0.97134304

00:39:19.680 --> 00:39:21.520 gonna naturally detrain, and, indeed,

NOTE Confidence: 0.97134304

00:39:21.520 --> 00:39:22.180 their mileage,

NOTE Confidence: 0.9770479

00:39:22.719 --> 00:39:24.239 halved over follow-up. Not with

NOTE Confidence: 0.9770479

00:39:24.239 --> 00:39:25.599 us doing anything. They just

NOTE Confidence: 0.9770479

00:39:25.599 --> 00:39:26.880 stopped running as much because

NOTE Confidence: 0.9770479

00:39:26.880 --> 00:39:28.480 many people in Boston for

NOTE Confidence: 0.9770479

00:39:28.480 --> 00:39:29.520 Boston, it tends to be

NOTE Confidence: 0.9770479

00:39:29.520 --> 00:39:30.640 people's a race, so they

NOTE Confidence: 0.9770479

00:39:30.640 --> 00:39:31.440 they train up for it,

NOTE Confidence: 0.9770479

00:39:31.440 --> 00:39:32.640 and then they rest over

NOTE Confidence: 0.9770479

00:39:32.640 --> 00:39:33.619 the summer afterwards.

NOTE Confidence: 0.94211423

00:39:34.344 --> 00:39:36.265 So alongside reduced training volume

NOTE Confidence: 0.94211423

00:39:36.265 --> 00:39:37.965 by their mileage about half,

NOTE Confidence: 0.9685449

00:39:38.745 --> 00:39:39.785 we saw that this fat

NOTE Confidence: 0.9685449

00:39:39.785 --> 00:39:41.305 attenuation with a higher score

NOTE Confidence: 0.9685449

00:39:41.305 --> 00:39:43.225 being worse directionally came down

NOTE Confidence: 0.9685449

00:39:43.225 --> 00:39:44.585 in everyone who detrained. This

NOTE Confidence: 0.9685449

00:39:44.585 --> 00:39:45.625 was just supposed to be

NOTE Confidence: 0.9685449

00:39:45.625 --> 00:39:47.530 something that showed directional consistency

NOTE Confidence: 0.9685449

00:39:47.589 --> 00:39:48.469 as pilot data for a

NOTE Confidence: 0.9685449

00:39:48.469 --> 00:39:49.430 grant, but, actually, it was

NOTE Confidence: 0.9685449

00:39:49.430 --> 00:39:51.450 statistically significant because the reductions,

NOTE Confidence: 0.9685449

00:39:51.589 --> 00:39:52.969 while small in some instances,

NOTE Confidence: 0.99609375

00:39:53.349 --> 00:39:54.330 were very consistent.

NOTE Confidence: 0.9671875

00:39:54.790 --> 00:39:56.230 The only two people whose

NOTE Confidence: 0.9671875

00:39:56.230 --> 00:39:57.510 inflammation did not go down

NOTE Confidence: 0.9671875

00:39:57.510 --> 00:39:58.390 were the two people who

NOTE Confidence: 0.9671875

00:39:58.390 --> 00:39:59.750 fibbed and basically didn't change

NOTE Confidence: 0.9671875

00:39:59.750 --> 00:40:01.255 their running volume and continued

NOTE Confidence: 0.9671875

00:40:01.255 --> 00:40:02.635 to hammer all summer long.

NOTE Confidence: 0.974435

00:40:03.495 --> 00:40:04.215 And you can look at

NOTE Confidence: 0.974435

00:40:04.215 --> 00:40:05.255 this either as an absolute

NOTE Confidence: 0.974435

00:40:05.255 --> 00:40:06.395 score or a percentile,

NOTE Confidence: 0.9415727

00:40:07.255 --> 00:40:08.855 where the those those numbers

NOTE Confidence: 0.9415727

00:40:08.855 --> 00:40:10.695 look more more market. So

NOTE Confidence: 0.9415727

00:40:10.695 --> 00:40:11.575 we're gonna look at this.

NOTE Confidence: 0.9415727

00:40:11.575 --> 00:40:12.695 We're hopefully on the opportunity

NOTE Confidence: 0.9415727

00:40:12.695 --> 00:40:13.575 to look at this with

NOTE Confidence: 0.9415727

00:40:13.575 --> 00:40:14.614 a bigger grant that sort

NOTE Confidence: 0.9415727

00:40:14.614 --> 00:40:16.110 of understands better is this

NOTE Confidence: 0.9415727

00:40:16.510 --> 00:40:17.950 exercise associated, and this is

NOTE Confidence: 0.9415727

00:40:17.950 --> 00:40:19.970 very specifically coronary inflammation.

NOTE Confidence: 0.9927775

00:40:21.390 --> 00:40:22.510 Is this the driver of

NOTE Confidence: 0.9927775

00:40:22.510 --> 00:40:23.570 the excess atherosclerosis

NOTE Confidence: 0.9152832

00:40:23.870 --> 00:40:25.170 we see in master's athletes?

NOTE Confidence: 0.9883789

00:40:25.470 --> 00:40:26.510 It it's great because this

NOTE Confidence: 0.9883789

00:40:26.510 --> 00:40:27.470 is a big sort of

NOTE Confidence: 0.9883789

00:40:27.470 --> 00:40:29.330 space in cardiovascular medicine overall.

NOTE Confidence: 0.9676453

00:40:30.144 --> 00:40:31.664 Statins are statins have been

NOTE Confidence: 0.9676453

00:40:31.664 --> 00:40:32.864 shown to improve phybe scores,

NOTE Confidence: 0.9676453

00:40:32.864 --> 00:40:33.585 and then we have things

NOTE Confidence: 0.9676453

00:40:33.585 --> 00:40:35.125 like colchicine and other therapies

NOTE Confidence: 0.9820862

00:40:35.585 --> 00:40:36.864 on deck with, you know,

NOTE Confidence: 0.9820862

00:40:36.864 --> 00:40:38.144 unclear, at least in my

NOTE Confidence: 0.9820862

00:40:38.144 --> 00:40:39.025 view, who to use those

NOTE Confidence: 0.9820862

00:40:39.025 --> 00:40:39.265 in.

NOTE Confidence: 0.9890137

00:40:39.984 --> 00:40:41.025 That could also help to

NOTE Confidence: 0.9890137

00:40:41.025 --> 00:40:42.944 ameliorate any excess inflammation that

NOTE Confidence: 0.9890137

00:40:42.944 --> 00:40:44.065 can be driving risk in

NOTE Confidence: 0.9890137

00:40:44.065 --> 00:40:44.805 this population.

NOTE Confidence: 0.95214844

00:40:47.400 --> 00:40:47.900 Alright.

NOTE Confidence: 0.9395504

00:40:49.400 --> 00:40:50.600 So those I think, hopefully,

NOTE Confidence: 0.9395504

00:40:50.600 --> 00:40:51.480 we got through the the

NOTE Confidence: 0.9395504

00:40:51.480 --> 00:40:52.920 important conditions we think about

NOTE Confidence: 0.9395504

00:40:52.920 --> 00:40:54.359 in young athletes and masters

NOTE Confidence: 0.9395504

00:40:54.359 --> 00:40:56.200 athletes, the panoply of conditions

NOTE Confidence: 0.9395504

00:40:56.200 --> 00:40:57.880 in young athletes, the focus

NOTE Confidence: 0.9395504

00:40:57.880 --> 00:40:59.480 on coronary disease in masters

NOTE Confidence: 0.9395504

00:40:59.480 --> 00:40:59.980 athletes,

NOTE Confidence: 0.9868534

00:41:00.280 --> 00:41:01.415 and then got along the

NOTE Confidence: 0.9868534

00:41:01.415 --> 00:41:02.214 way to dip into some

NOTE Confidence: 0.9868534

00:41:02.214 --> 00:41:03.255 of the research I've done.

NOTE Confidence: 0.9868534

00:41:03.255 --> 00:41:04.135 The research I do is

NOTE Confidence: 0.9868534

00:41:04.135 --> 00:41:05.415 always tends to be motivated

NOTE Confidence: 0.9868534

00:41:05.415 --> 00:41:06.535 by the things that bother

NOTE Confidence: 0.9868534

00:41:06.535 --> 00:41:07.335 me in clinic,

NOTE Confidence: 0.9977417

00:41:07.655 --> 00:41:08.555 as you can see.

NOTE Confidence: 0.9648813

00:41:10.055 --> 00:41:11.015 But then even if we

NOTE Confidence: 0.9648813

00:41:11.015 --> 00:41:12.055 were perfect and we could

NOTE Confidence: 0.9648813

00:41:12.055 --> 00:41:13.734 identify all athletes at risk

NOTE Confidence: 0.9648813

00:41:13.734 --> 00:41:14.935 at screening or manage all

NOTE Confidence: 0.9648813

00:41:14.935 --> 00:41:16.290 their risk factors from age,

NOTE Confidence: 0.9648813

00:41:16.370 --> 00:41:18.070 whatever, twenty five, thirty onward,

NOTE Confidence: 0.9648813

00:41:18.210 --> 00:41:19.170 you know, there are still

NOTE Confidence: 0.9648813

00:41:19.170 --> 00:41:20.630 gonna be events. And,

NOTE Confidence: 0.9939177

00:41:21.250 --> 00:41:22.850 that's where the importance of

NOTE Confidence: 0.9939177

00:41:22.850 --> 00:41:24.790 emergency action planning comes in.

NOTE Confidence: 0.9939177

00:41:24.850 --> 00:41:25.570 And I think if you're

NOTE Confidence: 0.9939177

00:41:25.570 --> 00:41:26.850 thinking about wanting to prevent

NOTE Confidence: 0.9939177

00:41:26.850 --> 00:41:28.070 sudden cardiac death,

NOTE Confidence: 0.96136945

00:41:28.370 --> 00:41:29.250 and, really, this is you

NOTE Confidence: 0.96136945

00:41:29.250 --> 00:41:30.370 could use this lens for

NOTE Confidence: 0.96136945

00:41:30.370 --> 00:41:31.110 all of cardiovascular

NOTE Confidence: 0.98413086

00:41:31.410 --> 00:41:32.645 medicine, not just athletes.

NOTE Confidence: 0.93753487

00:41:34.065 --> 00:41:35.265 It's how do you make

NOTE Confidence: 0.93753487

00:41:35.265 --> 00:41:36.085 sure communities,

NOTE Confidence: 0.9980469

00:41:36.625 --> 00:41:37.125 given

NOTE Confidence: 0.95051455

00:41:37.505 --> 00:41:39.344 populations, are protected by good

NOTE Confidence: 0.95051455

00:41:39.344 --> 00:41:41.105 emergency action planning if an

NOTE Confidence: 0.95051455

00:41:41.105 --> 00:41:42.245 event does occur?

NOTE Confidence: 0.9822719

00:41:43.665 --> 00:41:44.945 And, this is something I

NOTE Confidence: 0.9822719

00:41:44.945 --> 00:41:45.745 think we can all take

NOTE Confidence: 0.9822719

00:41:45.745 --> 00:41:46.989 out into our communities as

NOTE Confidence: 0.9822719

00:41:46.989 --> 00:41:48.350 cardiologists. We should we could

NOTE Confidence: 0.9822719

00:41:48.350 --> 00:41:50.030 all be invested in emergency

NOTE Confidence: 0.9822719

00:41:50.030 --> 00:41:51.390 action planning and reduction of

NOTE Confidence: 0.9822719

00:41:51.390 --> 00:41:52.690 these events in our communities.

NOTE Confidence: 0.9541931

00:41:53.150 --> 00:41:55.150 In highly resourced settings, this

NOTE Confidence: 0.9541931

00:41:55.150 --> 00:41:56.130 is like a,

NOTE Confidence: 0.9182129

00:41:57.070 --> 00:41:58.210 extremely rehearsed

NOTE Confidence: 0.98300403

00:41:59.005 --> 00:42:00.925 everyone has specific roles. You

NOTE Confidence: 0.98300403

00:42:00.925 --> 00:42:02.285 know, the World Cup's about

NOTE Confidence: 0.98300403

00:42:02.285 --> 00:42:03.565 to come to Boston. You

NOTE Confidence: 0.98300403

00:42:03.565 --> 00:42:04.765 know, FIFA's put out their

NOTE Confidence: 0.98300403

00:42:04.765 --> 00:42:06.125 publication about, like, where does

NOTE Confidence: 0.98300403

00:42:06.125 --> 00:42:07.565 each person stand if someone's

NOTE Confidence: 0.98300403

00:42:07.565 --> 00:42:08.685 having a cardiac arrest? Where

NOTE Confidence: 0.98300403

00:42:08.685 --> 00:42:10.145 does the defibrillator go?

NOTE Confidence: 0.9447937

00:42:10.925 --> 00:42:12.125 I'd say the the biggest

NOTE Confidence: 0.9447937

00:42:12.125 --> 00:42:13.565 limitation when we're thinking about

NOTE Confidence: 0.9447937

00:42:13.565 --> 00:42:15.210 emergency action planning in the

NOTE Confidence: 0.9447937

00:42:15.210 --> 00:42:15.710 community

NOTE Confidence: 0.99505615

00:42:16.090 --> 00:42:17.850 is recognizing a sudden cardiac

NOTE Confidence: 0.99505615

00:42:17.850 --> 00:42:18.910 arrest has occurred.

NOTE Confidence: 0.8342285

00:42:19.690 --> 00:42:21.130 If an athlete goes down,

NOTE Confidence: 0.8342285

00:42:21.130 --> 00:42:21.630 suddenly,

NOTE Confidence: 0.9452854

00:42:22.010 --> 00:42:22.890 there can be a lag

NOTE Confidence: 0.9452854

00:42:22.890 --> 00:42:23.850 time, and it can be

NOTE Confidence: 0.9452854

00:42:23.850 --> 00:42:25.370 quite lengthy before someone realize

NOTE Confidence: 0.9452854

00:42:25.370 --> 00:42:26.250 it is it is sudden

NOTE Confidence: 0.9452854

00:42:26.250 --> 00:42:27.530 cardiac arrest and hands are

NOTE Confidence: 0.9452854

00:42:27.530 --> 00:42:28.330 put on the chest and

NOTE Confidence: 0.9452854

00:42:28.330 --> 00:42:29.545 the emergency action plan is

NOTE Confidence: 0.9452854

00:42:29.545 --> 00:42:30.045 activated.

NOTE Confidence: 0.98499894

00:42:30.505 --> 00:42:31.705 So that's one space we

NOTE Confidence: 0.98499894

00:42:31.705 --> 00:42:32.765 need to narrow down.

NOTE Confidence: 0.88789874

00:42:33.225 --> 00:42:34.905 In in in in sport

NOTE Confidence: 0.88789874

00:42:34.905 --> 00:42:35.405 settings,

NOTE Confidence: 0.9499956

00:42:35.705 --> 00:42:37.385 coordinated roles for trained personnel,

NOTE Confidence: 0.9499956

00:42:37.385 --> 00:42:38.185 if you take this down

NOTE Confidence: 0.9499956

00:42:38.185 --> 00:42:39.545 to, like, more youth sports,

NOTE Confidence: 0.9499956

00:42:39.545 --> 00:42:40.685 you know, are all coaches

NOTE Confidence: 0.9499956

00:42:40.825 --> 00:42:42.344 and everyone trained in CPR,

NOTE Confidence: 0.9499956

00:42:42.344 --> 00:42:43.545 hands only CPR? Where are

NOTE Confidence: 0.9499956

00:42:43.545 --> 00:42:44.535 the AEDs? Because

NOTE Confidence: 0.9952637

00:42:44.880 --> 00:42:46.000 Because we know that early,

NOTE Confidence: 0.98812217

00:42:46.400 --> 00:42:48.000 immediate CPR and really early

NOTE Confidence: 0.98812217

00:42:48.000 --> 00:42:49.200 defibrillation are the ways that

NOTE Confidence: 0.98812217

00:42:49.200 --> 00:42:50.480 we turn a sudden cardiac

NOTE Confidence: 0.98812217

00:42:50.480 --> 00:42:51.599 arrest into a life instead

NOTE Confidence: 0.98812217

00:42:51.599 --> 00:42:52.259 of death.

NOTE Confidence: 0.9765625

00:42:53.599 --> 00:42:55.039 And, this is all gonna

NOTE Confidence: 0.9765625

00:42:55.039 --> 00:42:56.319 be customized depending on the

NOTE Confidence: 0.9765625

00:42:56.319 --> 00:42:57.599 environment you're in. At a

NOTE Confidence: 0.9765625

00:42:57.599 --> 00:42:58.739 at a soccer field,

NOTE Confidence: 0.9842006

00:42:59.555 --> 00:43:00.675 you can have a diagram

NOTE Confidence: 0.9842006

00:43:00.675 --> 00:43:01.635 that looks like this. I'm

NOTE Confidence: 0.9842006

00:43:01.635 --> 00:43:02.535 one of the co

NOTE Confidence: 0.92695755

00:43:02.835 --> 00:43:04.375 medical directors for the marathon

NOTE Confidence: 0.92695755

00:43:04.435 --> 00:43:05.715 recovering twenty six point two

NOTE Confidence: 0.92695755

00:43:05.715 --> 00:43:06.215 miles,

NOTE Confidence: 0.9430847

00:43:06.995 --> 00:43:07.875 and so the the it

NOTE Confidence: 0.9430847

00:43:07.875 --> 00:43:08.775 looks quite different.

NOTE Confidence: 0.97074527

00:43:10.114 --> 00:43:11.475 And the interesting thing, and

NOTE Confidence: 0.97074527

00:43:11.475 --> 00:43:12.195 I I think this could

NOTE Confidence: 0.97074527

00:43:12.195 --> 00:43:13.050 just be by chance, is

NOTE Confidence: 0.97074527

00:43:13.050 --> 00:43:14.010 that we actually have twenty

NOTE Confidence: 0.97074527

00:43:14.010 --> 00:43:15.530 six course medical stations. We'll

NOTE Confidence: 0.97074527

00:43:15.530 --> 00:43:16.570 have twenty seven next year,

NOTE Confidence: 0.97074527

00:43:16.570 --> 00:43:17.930 but that's it's it sounds

NOTE Confidence: 0.97074527

00:43:17.930 --> 00:43:18.810 like there would be one

NOTE Confidence: 0.97074527

00:43:18.810 --> 00:43:20.489 per mile, but that's actually

NOTE Confidence: 0.97074527

00:43:20.489 --> 00:43:21.370 not the way we plan

NOTE Confidence: 0.97074527

00:43:21.370 --> 00:43:22.670 it. Because if you look,

NOTE Confidence: 0.93178016

00:43:23.530 --> 00:43:25.070 at marathons and half marathons,

NOTE Confidence: 0.93178016

00:43:25.130 --> 00:43:25.710 the events

NOTE Confidence: 0.9808408

00:43:26.090 --> 00:43:27.710 cluster at the finish line

NOTE Confidence: 0.9808408

00:43:27.850 --> 00:43:29.255 and specifically over the last

NOTE Confidence: 0.9808408

00:43:29.255 --> 00:43:30.455 quarter of the race. And

NOTE Confidence: 0.9808408

00:43:30.455 --> 00:43:32.215 so for our marathon medical

NOTE Confidence: 0.9808408

00:43:32.215 --> 00:43:32.715 planning,

NOTE Confidence: 0.91546077

00:43:33.335 --> 00:43:34.295 this is the finish line

NOTE Confidence: 0.91546077

00:43:34.295 --> 00:43:35.415 of the Boston Harbor over

NOTE Confidence: 0.91546077

00:43:35.415 --> 00:43:35.915 here.

NOTE Confidence: 0.97245276

00:43:36.215 --> 00:43:37.495 The course medical stations are

NOTE Confidence: 0.97245276

00:43:37.495 --> 00:43:39.255 really quite spread out, and

NOTE Confidence: 0.97245276

00:43:39.255 --> 00:43:40.635 then really start to cluster

NOTE Confidence: 0.97245276

00:43:40.890 --> 00:43:42.730 such that we have three

NOTE Confidence: 0.97245276

00:43:42.730 --> 00:43:43.849 or four in the last

NOTE Confidence: 0.97245276

00:43:43.849 --> 00:43:45.210 mile, so that we have

NOTE Confidence: 0.97245276

00:43:45.210 --> 00:43:46.650 people available to respond as

NOTE Confidence: 0.97245276

00:43:46.650 --> 00:43:47.769 well as proceed out teams

NOTE Confidence: 0.97245276

00:43:47.769 --> 00:43:49.369 from every, med medical tent

NOTE Confidence: 0.97245276

00:43:49.369 --> 00:43:50.250 along the way where they

NOTE Confidence: 0.97245276

00:43:50.250 --> 00:43:51.210 can go attend to someone

NOTE Confidence: 0.97245276

00:43:51.210 --> 00:43:52.329 who's, had an event in

NOTE Confidence: 0.97245276

00:43:52.329 --> 00:43:52.910 the middle.

NOTE Confidence: 0.9390654

00:43:54.065 --> 00:43:55.585 And so, that's how we

NOTE Confidence: 0.9390654

00:43:55.585 --> 00:43:56.625 do it. Very different than

NOTE Confidence: 0.9390654

00:43:56.625 --> 00:43:57.585 how FIFA is doing it.

NOTE Confidence: 0.9390654

00:43:57.585 --> 00:43:58.305 Very different than how you

NOTE Confidence: 0.9390654

00:43:58.305 --> 00:43:59.105 do it in any youth

NOTE Confidence: 0.9390654

00:43:59.105 --> 00:44:00.145 sports setting depending on what

NOTE Confidence: 0.9390654

00:44:00.145 --> 00:44:01.445 the resources are available.

NOTE Confidence: 0.9564548

00:44:02.785 --> 00:44:03.585 These slides, I think I

NOTE Confidence: 0.9564548

00:44:03.585 --> 00:44:04.385 handed in so it could

NOTE Confidence: 0.9564548

00:44:04.385 --> 00:44:05.345 be handed back out to

NOTE Confidence: 0.9564548

00:44:05.345 --> 00:44:06.440 all of you guys. I

NOTE Confidence: 0.9564548

00:44:06.440 --> 00:44:07.640 think there's two videos I

NOTE Confidence: 0.9564548

00:44:07.640 --> 00:44:08.360 like to point out that

NOTE Confidence: 0.9564548

00:44:08.360 --> 00:44:10.520 are just available on, various

NOTE Confidence: 0.9564548

00:44:10.520 --> 00:44:11.020 platforms.

NOTE Confidence: 0.9989624

00:44:11.400 --> 00:44:12.280 The first is one made

NOTE Confidence: 0.9989624

00:44:12.280 --> 00:44:13.260 by our colleague,

NOTE Confidence: 0.94832367

00:44:13.640 --> 00:44:15.000 John Dresner, and it's quite

NOTE Confidence: 0.94832367

00:44:15.000 --> 00:44:16.120 upsetting to watch, but these

NOTE Confidence: 0.94832367

00:44:16.120 --> 00:44:17.400 are sudden cardiac arrests as

NOTE Confidence: 0.94832367

00:44:17.400 --> 00:44:18.060 they're occurring.

NOTE Confidence: 0.959467

00:44:18.520 --> 00:44:19.480 And I I don't mean

NOTE Confidence: 0.959467

00:44:19.480 --> 00:44:20.200 to be glib about it,

NOTE Confidence: 0.959467

00:44:20.200 --> 00:44:21.080 but I think every youth

NOTE Confidence: 0.959467

00:44:21.080 --> 00:44:22.494 sport coach should watch this

NOTE Confidence: 0.959467

00:44:22.494 --> 00:44:23.614 video. Right? Because I don't

NOTE Confidence: 0.959467

00:44:23.614 --> 00:44:25.055 think the biggest limitation is

NOTE Confidence: 0.959467

00:44:25.055 --> 00:44:26.335 recognizing the athlete that's gone

NOTE Confidence: 0.959467

00:44:26.335 --> 00:44:27.714 down is is in a

NOTE Confidence: 0.959467

00:44:27.775 --> 00:44:29.295 cardiac arrest. So,

NOTE Confidence: 0.98498535

00:44:29.775 --> 00:44:31.055 these are upsetting events,

NOTE Confidence: 0.97207034

00:44:31.535 --> 00:44:32.494 to watch because these are

NOTE Confidence: 0.97207034

00:44:32.494 --> 00:44:33.695 all people having an arrest.

NOTE Confidence: 0.98654044

00:44:34.175 --> 00:44:35.214 And but it gives you

NOTE Confidence: 0.98654044

00:44:35.214 --> 00:44:36.255 the good eyeball of what

NOTE Confidence: 0.98654044

00:44:36.255 --> 00:44:37.214 that actually looks like, and

NOTE Confidence: 0.98654044

00:44:37.214 --> 00:44:38.015 I don't think the lay

NOTE Confidence: 0.98654044

00:44:38.015 --> 00:44:39.050 public gets that.

NOTE Confidence: 0.99469393

00:44:40.150 --> 00:44:40.870 And then as part of

NOTE Confidence: 0.99469393

00:44:40.870 --> 00:44:42.390 the BAA, we actually run

NOTE Confidence: 0.967041

00:44:42.950 --> 00:44:43.830 so our idea is like,

NOTE Confidence: 0.967041

00:44:43.830 --> 00:44:44.790 okay. We have twenty six

NOTE Confidence: 0.967041

00:44:44.790 --> 00:44:45.290 miles.

NOTE Confidence: 0.9853011

00:44:45.750 --> 00:44:46.950 We can't have a medical

NOTE Confidence: 0.9853011

00:44:46.950 --> 00:44:48.630 station every ten feet. And

NOTE Confidence: 0.9853011

00:44:48.630 --> 00:44:49.830 so how do we further

NOTE Confidence: 0.9853011

00:44:49.830 --> 00:44:51.110 protect our athletes, like, in

NOTE Confidence: 0.9853011

00:44:51.110 --> 00:44:52.230 a bubble if an event

NOTE Confidence: 0.9853011

00:44:52.230 --> 00:44:53.450 occurs? So we actually,

NOTE Confidence: 0.984375

00:44:53.925 --> 00:44:55.225 we train athletes,

NOTE Confidence: 0.98703814

00:44:55.685 --> 00:44:57.125 and their whoever else is

NOTE Confidence: 0.98703814

00:44:57.125 --> 00:44:58.505 with them at our expo

NOTE Confidence: 0.98703814

00:44:58.565 --> 00:44:59.445 where they come to pick

NOTE Confidence: 0.98703814

00:44:59.445 --> 00:45:00.485 up their bib. We have

NOTE Confidence: 0.98703814

00:45:00.485 --> 00:45:01.685 a station where we train

NOTE Confidence: 0.98703814

00:45:01.685 --> 00:45:02.905 in hands only CPR.

NOTE Confidence: 0.96255153

00:45:03.285 --> 00:45:05.205 These are, two nurses and

NOTE Confidence: 0.96255153

00:45:05.205 --> 00:45:06.325 nurse practitioners that I work

NOTE Confidence: 0.96255153

00:45:06.325 --> 00:45:07.205 with at MGH, and they

NOTE Confidence: 0.96255153

00:45:07.205 --> 00:45:08.105 run the station.

NOTE Confidence: 0.9575548

00:45:08.485 --> 00:45:09.840 And, this year, we give

NOTE Confidence: 0.9575548

00:45:09.840 --> 00:45:11.040 out little bracelets, and we

NOTE Confidence: 0.9575548

00:45:11.040 --> 00:45:12.000 had three thousand of them,

NOTE Confidence: 0.9575548

00:45:12.000 --> 00:45:13.040 and they ran out. So

NOTE Confidence: 0.9575548

00:45:13.040 --> 00:45:14.239 we handed out we trained

NOTE Confidence: 0.9575548

00:45:14.239 --> 00:45:15.600 more than three thousand people,

NOTE Confidence: 0.97605616

00:45:16.080 --> 00:45:17.200 in CPR, and and I

NOTE Confidence: 0.97605616

00:45:17.280 --> 00:45:18.239 I've spent quite a bit

NOTE Confidence: 0.97605616

00:45:18.239 --> 00:45:19.280 of time with them amongst

NOTE Confidence: 0.97605616

00:45:19.280 --> 00:45:20.800 other duties on the race

NOTE Confidence: 0.97605616

00:45:20.800 --> 00:45:22.160 weekend. And, I mean, this

NOTE Confidence: 0.97605616

00:45:22.160 --> 00:45:22.820 is from,

NOTE Confidence: 0.97594535

00:45:23.694 --> 00:45:24.734 six, eight year old kids

NOTE Confidence: 0.97594535

00:45:24.734 --> 00:45:25.614 all the way up to

NOTE Confidence: 0.97594535

00:45:25.614 --> 00:45:27.295 older individuals. There's really very

NOTE Confidence: 0.97594535

00:45:27.295 --> 00:45:28.415 few people that can't perform

NOTE Confidence: 0.97594535

00:45:28.415 --> 00:45:29.694 hands only CPR, and we

NOTE Confidence: 0.97594535

00:45:29.694 --> 00:45:30.575 get through the if there's

NOTE Confidence: 0.97594535

00:45:30.575 --> 00:45:31.775 an emergency, call nine one

NOTE Confidence: 0.97594535

00:45:31.775 --> 00:45:32.275 one,

NOTE Confidence: 0.95833844

00:45:32.895 --> 00:45:34.494 steps as well. And then

NOTE Confidence: 0.95833844

00:45:34.494 --> 00:45:35.250 we have a video that

NOTE Confidence: 0.95833844

00:45:35.330 --> 00:45:36.610 we circulate to all runners.

NOTE Confidence: 0.95833844

00:45:36.610 --> 00:45:37.170 And you have to be

NOTE Confidence: 0.95833844

00:45:37.170 --> 00:45:38.050 careful. You can't give this

NOTE Confidence: 0.95833844

00:45:38.050 --> 00:45:38.850 out right before race day

NOTE Confidence: 0.95833844

00:45:38.850 --> 00:45:39.489 because this is gonna make

NOTE Confidence: 0.95833844

00:45:39.489 --> 00:45:41.570 everyone paranoid. So further further

NOTE Confidence: 0.95833844

00:45:41.570 --> 00:45:42.370 away from the race of

NOTE Confidence: 0.95833844

00:45:42.370 --> 00:45:43.190 the day before,

NOTE Confidence: 0.98915726

00:45:44.050 --> 00:45:45.489 teaching them through video about

NOTE Confidence: 0.98915726

00:45:45.489 --> 00:45:46.690 hands only CPR and what

NOTE Confidence: 0.98915726

00:45:46.690 --> 00:45:47.330 to do if they see

NOTE Confidence: 0.98915726

00:45:47.330 --> 00:45:47.989 an emergency.

NOTE Confidence: 0.96520466

00:45:49.325 --> 00:45:50.364 And every year at the

NOTE Confidence: 0.96520466

00:45:50.364 --> 00:45:51.244 booth, we have people come

NOTE Confidence: 0.96520466

00:45:51.244 --> 00:45:52.684 back saying we use this,

NOTE Confidence: 0.96520466

00:45:52.684 --> 00:45:54.364 and we we learned and

NOTE Confidence: 0.96520466

00:45:54.364 --> 00:45:55.085 then used it,

NOTE Confidence: 0.98551434

00:45:55.805 --> 00:45:56.704 in the community.

NOTE Confidence: 0.9592285

00:45:57.805 --> 00:45:58.545 And so,

NOTE Confidence: 0.9635606

00:45:59.085 --> 00:46:00.125 not actually at any of

NOTE Confidence: 0.9635606

00:46:00.125 --> 00:46:01.484 our races yet, so we've

NOTE Confidence: 0.9635606

00:46:01.484 --> 00:46:03.005 not had the return, whatever,

NOTE Confidence: 0.9635606

00:46:03.005 --> 00:46:03.884 if you wanna think of

NOTE Confidence: 0.9635606

00:46:03.884 --> 00:46:05.109 it on investment. But I

NOTE Confidence: 0.9635606

00:46:05.109 --> 00:46:06.150 like to think we're creating

NOTE Confidence: 0.9635606

00:46:06.150 --> 00:46:07.430 a return for, you know,

NOTE Confidence: 0.9635606

00:46:07.430 --> 00:46:09.190 broader communities, including race medicine,

NOTE Confidence: 0.9635606

00:46:09.190 --> 00:46:10.010 by doing this.

NOTE Confidence: 0.98706055

00:46:11.030 --> 00:46:11.530 Alright.

NOTE Confidence: 0.98404133

00:46:11.989 --> 00:46:13.109 To leave a few minutes

NOTE Confidence: 0.98404133

00:46:13.109 --> 00:46:14.150 for questions, I guess I'll

NOTE Confidence: 0.98404133

00:46:14.150 --> 00:46:15.510 I'll wrap up, which is,

NOTE Confidence: 0.98404133

00:46:15.750 --> 00:46:16.950 I'll cover what we we

NOTE Confidence: 0.98404133

00:46:16.950 --> 00:46:18.150 talked about today and then

NOTE Confidence: 0.98404133

00:46:18.150 --> 00:46:19.609 start thinking about your questions.

NOTE Confidence: 0.9160156

00:46:21.205 --> 00:46:22.344 We started by

NOTE Confidence: 0.9717221

00:46:22.805 --> 00:46:23.685 like, we really need to

NOTE Confidence: 0.9717221

00:46:23.685 --> 00:46:25.125 anchor for our broader community

NOTE Confidence: 0.9717221

00:46:25.125 --> 00:46:26.645 on exercises, medicine, and getting

NOTE Confidence: 0.9717221

00:46:26.645 --> 00:46:28.244 our patients more active, but

NOTE Confidence: 0.9717221

00:46:28.244 --> 00:46:29.945 we also discussed this paradox

NOTE Confidence: 0.9717221

00:46:30.005 --> 00:46:31.685 where exercise can serve as

NOTE Confidence: 0.9717221

00:46:31.685 --> 00:46:33.110 a trigger. And in particular,

NOTE Confidence: 0.9717221

00:46:33.110 --> 00:46:34.310 if you're thinking of events

NOTE Confidence: 0.9717221

00:46:34.310 --> 00:46:35.830 that are more enriched by

NOTE Confidence: 0.9717221

00:46:35.830 --> 00:46:36.330 exercise,

NOTE Confidence: 0.9970703

00:46:36.790 --> 00:46:37.290 these

NOTE Confidence: 0.95589197

00:46:37.670 --> 00:46:39.110 these diagnoses, there's no better

NOTE Confidence: 0.95589197

00:46:39.110 --> 00:46:39.830 way to say it. They're

NOTE Confidence: 0.95589197

00:46:39.830 --> 00:46:41.430 what sports cardiologists sees when

NOTE Confidence: 0.95589197

00:46:41.430 --> 00:46:42.390 they close their eyes thinking

NOTE Confidence: 0.95589197

00:46:42.390 --> 00:46:43.510 of a differential because those

NOTE Confidence: 0.95589197

00:46:43.510 --> 00:46:44.310 are the things that will

NOTE Confidence: 0.95589197

00:46:44.310 --> 00:46:45.690 get your athletes into trouble

NOTE Confidence: 0.95589197

00:46:45.965 --> 00:46:46.844 even if they are rare

NOTE Confidence: 0.95589197

00:46:46.844 --> 00:46:49.085 diagnoses, things like, coronary anomalies,

NOTE Confidence: 0.95589197

00:46:49.085 --> 00:46:49.745 for example.

NOTE Confidence: 0.9714704

00:46:51.085 --> 00:46:52.364 We talked about the in

NOTE Confidence: 0.9714704

00:46:52.364 --> 00:46:53.265 younger athletes,

NOTE Confidence: 0.98933107

00:46:53.805 --> 00:46:56.385 that these structural causes, particularly

NOTE Confidence: 0.98933107

00:46:56.525 --> 00:46:57.025 cardiomyopathy,

NOTE Confidence: 0.98166233

00:46:57.325 --> 00:46:58.285 are at times hard to

NOTE Confidence: 0.98166233

00:46:58.285 --> 00:46:59.640 distinguish from a big heart

NOTE Confidence: 0.98166233

00:46:59.640 --> 00:47:01.339 that is benign and physiologic.

NOTE Confidence: 0.9746094

00:47:01.960 --> 00:47:03.579 And we talked about

NOTE Confidence: 0.9737793

00:47:04.200 --> 00:47:05.960 integrated assessment and possible new

NOTE Confidence: 0.9737793

00:47:05.960 --> 00:47:07.079 tools and the research in

NOTE Confidence: 0.9737793

00:47:07.079 --> 00:47:08.839 that space. There's definitely more

NOTE Confidence: 0.9737793

00:47:08.839 --> 00:47:10.140 research that could be done.

NOTE Confidence: 0.99853516

00:47:10.520 --> 00:47:11.260 And then

NOTE Confidence: 0.953125

00:47:12.364 --> 00:47:13.645 in older athletes, we talked

NOTE Confidence: 0.953125

00:47:13.645 --> 00:47:14.145 about,

NOTE Confidence: 0.97705865

00:47:14.684 --> 00:47:15.724 I think one thing that

NOTE Confidence: 0.97705865

00:47:15.724 --> 00:47:17.085 I'm really dogmatic about is

NOTE Confidence: 0.97705865

00:47:17.085 --> 00:47:17.805 that I think if you

NOTE Confidence: 0.97705865

00:47:17.805 --> 00:47:19.244 come into clinic wearing a

NOTE Confidence: 0.97705865

00:47:19.244 --> 00:47:20.625 race T shirt, you automatically

NOTE Confidence: 0.97705865

00:47:20.844 --> 00:47:22.545 get classified as low ASCVD

NOTE Confidence: 0.97705865

00:47:22.765 --> 00:47:23.265 risk.

NOTE Confidence: 0.9549606

00:47:23.565 --> 00:47:24.444 And, like, I'm wearing a

NOTE Confidence: 0.9549606

00:47:24.444 --> 00:47:25.484 race T shirt that becomes

NOTE Confidence: 0.9549606

00:47:25.484 --> 00:47:26.364 a risk factor for heart

NOTE Confidence: 0.9549606

00:47:26.364 --> 00:47:27.810 disease because you're gonna have

NOTE Confidence: 0.9549606

00:47:27.890 --> 00:47:28.770 your blood pressure and your

NOTE Confidence: 0.9549606

00:47:28.770 --> 00:47:30.210 lipids under managed. Right? We

NOTE Confidence: 0.9549606

00:47:30.210 --> 00:47:31.090 know the inertia that takes

NOTE Confidence: 0.9549606

00:47:31.090 --> 00:47:31.850 over the blood pressure is

NOTE Confidence: 0.9549606

00:47:31.850 --> 00:47:32.690 a little high. The LDL

NOTE Confidence: 0.9549606

00:47:32.690 --> 00:47:33.730 is a little off, and

NOTE Confidence: 0.9549606

00:47:33.730 --> 00:47:34.710 we don't treat it.

NOTE Confidence: 0.98012465

00:47:35.170 --> 00:47:36.690 But, really, athletic status doesn't

NOTE Confidence: 0.98012465

00:47:36.690 --> 00:47:37.810 preclude the treatment of blood

NOTE Confidence: 0.98012465

00:47:37.810 --> 00:47:39.250 pressure and lipids. And this

NOTE Confidence: 0.98012465

00:47:39.250 --> 00:47:40.370 emerging data where we see

NOTE Confidence: 0.98012465

00:47:40.370 --> 00:47:41.030 more atherosclerosis

NOTE Confidence: 0.91038007

00:47:41.410 --> 00:47:42.515 and those really people who

NOTE Confidence: 0.91038007

00:47:42.515 --> 00:47:43.955 are hammering many marathons for

NOTE Confidence: 0.91038007

00:47:43.955 --> 00:47:44.695 many decades.

NOTE Confidence: 0.98810285

00:47:44.995 --> 00:47:45.795 Like, in in the end,

NOTE Confidence: 0.98810285

00:47:45.795 --> 00:47:46.835 I think there's a population

NOTE Confidence: 0.98810285

00:47:46.835 --> 00:47:47.635 we actually might start to

NOTE Confidence: 0.98810285

00:47:47.635 --> 00:47:48.935 think of as higher risk.

NOTE Confidence: 0.98810285

00:47:48.995 --> 00:47:49.955 Also, just by virtue of

NOTE Confidence: 0.98810285

00:47:49.955 --> 00:47:50.995 the fact these individuals are

NOTE Confidence: 0.98810285

00:47:50.995 --> 00:47:52.035 pushing their bodies to the

NOTE Confidence: 0.98810285

00:47:52.035 --> 00:47:53.475 degrees they are, there's really,

NOTE Confidence: 0.98810285

00:47:53.475 --> 00:47:54.435 in my view, no room

NOTE Confidence: 0.98810285

00:47:54.435 --> 00:47:56.275 for undermanaging their traditional risk.

NOTE Confidence: 0.98810285

00:47:56.275 --> 00:47:56.935 And then

NOTE Confidence: 0.97299033

00:47:57.410 --> 00:47:58.530 some, I think, hopefully, cool

NOTE Confidence: 0.97299033

00:47:58.530 --> 00:47:59.489 research should be done to

NOTE Confidence: 0.97299033

00:47:59.489 --> 00:48:00.770 understand why they have more

NOTE Confidence: 0.97299033

00:48:00.770 --> 00:48:01.910 plaque than we expect.

NOTE Confidence: 0.9603516

00:48:02.370 --> 00:48:03.410 And then no matter what

NOTE Confidence: 0.9603516

00:48:03.410 --> 00:48:04.870 risk will remain with sport,

NOTE Confidence: 0.9448591

00:48:05.170 --> 00:48:06.050 but sport is such an

NOTE Confidence: 0.9448591

00:48:06.050 --> 00:48:07.410 integral part of society and

NOTE Confidence: 0.9448591

00:48:07.410 --> 00:48:08.710 so many people's lives.

NOTE Confidence: 0.9539092

00:48:09.410 --> 00:48:10.850 That underscores the importance of

NOTE Confidence: 0.9539092

00:48:10.850 --> 00:48:12.545 emergency action planning, which is

NOTE Confidence: 0.9539092

00:48:12.545 --> 00:48:13.585 not a one size fits

NOTE Confidence: 0.9539092

00:48:13.585 --> 00:48:15.025 all. Depends on what resources

NOTE Confidence: 0.9539092

00:48:15.025 --> 00:48:16.545 you have, and that's something

NOTE Confidence: 0.9539092

00:48:16.545 --> 00:48:17.505 we can all take back

NOTE Confidence: 0.9539092

00:48:17.505 --> 00:48:18.325 to our communities.

NOTE Confidence: 0.9490095

00:48:20.385 --> 00:48:21.265 And right in time for

NOTE Confidence: 0.9490095

00:48:21.265 --> 00:48:21.924 some questions.

NOTE Confidence: 0.92679477

00:48:38.904 --> 00:48:40.204 Thank you for that wonderful

NOTE Confidence: 0.92679477

00:48:40.265 --> 00:48:41.944 presentation. It's really enlightening. I

NOTE Confidence: 0.92679477

00:48:41.944 --> 00:48:43.065 just have one comment and

NOTE Confidence: 0.92679477

00:48:43.065 --> 00:48:44.025 one question. The first is

NOTE Confidence: 0.92679477

00:48:44.025 --> 00:48:44.684 a comment,

NOTE Confidence: 0.98030597

00:48:45.625 --> 00:48:46.505 and I just wanted to

NOTE Confidence: 0.98030597

00:48:46.505 --> 00:48:47.944 point out to the fellows

NOTE Confidence: 0.98030597

00:48:47.944 --> 00:48:48.765 that based

NOTE Confidence: 0.93218315

00:48:49.065 --> 00:48:51.065 on doctor Waspi's definition, you're

NOTE Confidence: 0.93218315

00:48:51.065 --> 00:48:52.924 all approaching masters athlete.

NOTE Confidence: 0.9264181

00:48:53.540 --> 00:48:54.339 Yeah. I used to give

NOTE Confidence: 0.9264181

00:48:54.339 --> 00:48:55.140 this talk of when I

NOTE Confidence: 0.9264181

00:48:55.140 --> 00:48:56.020 was less than thirty five,

NOTE Confidence: 0.9264181

00:48:56.020 --> 00:48:56.980 but now I'm greater than

NOTE Confidence: 0.9264181

00:48:56.980 --> 00:48:57.960 thirty five. So,

NOTE Confidence: 0.9395258

00:48:58.339 --> 00:48:59.219 you do start to say

NOTE Confidence: 0.9395258

00:48:59.300 --> 00:49:00.020 you can say you win

NOTE Confidence: 0.9395258

00:49:00.020 --> 00:49:01.460 races, actually, you know, because

NOTE Confidence: 0.9395258

00:49:01.460 --> 00:49:02.339 you'll start to have age

NOTE Confidence: 0.9395258

00:49:02.339 --> 00:49:03.219 groups and stuff. So you

NOTE Confidence: 0.9395258

00:49:03.219 --> 00:49:04.200 can go back to winning

NOTE Confidence: 0.9395258

00:49:04.260 --> 00:49:05.060 as you get above that

NOTE Confidence: 0.9395258

00:49:05.060 --> 00:49:06.739 age. Something to look forward

NOTE Confidence: 0.9395258

00:49:06.739 --> 00:49:07.480 to. Mhmm.

NOTE Confidence: 0.9792383

00:49:08.580 --> 00:49:09.795 As as you talk about

NOTE Confidence: 0.9792383

00:49:09.915 --> 00:49:10.555 one of the things you

NOTE Confidence: 0.9792383

00:49:10.555 --> 00:49:11.835 didn't talk about was the

NOTE Confidence: 0.9792383

00:49:11.835 --> 00:49:13.675 issue of screening for coronary

NOTE Confidence: 0.9792383

00:49:13.675 --> 00:49:15.055 anomalies. And I was wondering,

NOTE Confidence: 0.96598786

00:49:15.515 --> 00:49:16.875 you know, now and you

NOTE Confidence: 0.96598786

00:49:16.875 --> 00:49:17.755 did touch on pet a

NOTE Confidence: 0.96598786

00:49:17.755 --> 00:49:19.195 little bit as you've as

NOTE Confidence: 0.96598786

00:49:19.435 --> 00:49:21.055 what what's been your approach

NOTE Confidence: 0.96598786

00:49:21.114 --> 00:49:22.075 now into the sort of

NOTE Confidence: 0.96598786

00:49:22.075 --> 00:49:23.910 the modern era with with

NOTE Confidence: 0.96598786

00:49:23.910 --> 00:49:25.910 coronary CTA and flow dynamics

NOTE Confidence: 0.96598786

00:49:25.910 --> 00:49:28.150 and and new perfusion tracers?

NOTE Confidence: 0.96598786

00:49:28.150 --> 00:49:29.190 Are you using any of

NOTE Confidence: 0.96598786

00:49:29.190 --> 00:49:30.630 those things in your clinical

NOTE Confidence: 0.96598786

00:49:30.630 --> 00:49:31.130 practice?

NOTE Confidence: 0.9840643

00:49:31.589 --> 00:49:32.869 Screening is so interesting because

NOTE Confidence: 0.9840643

00:49:32.869 --> 00:49:33.829 this we have to just

NOTE Confidence: 0.9840643

00:49:33.829 --> 00:49:34.329 acknowledge

NOTE Confidence: 0.9632161

00:49:34.869 --> 00:49:36.010 that this is a diagnosis

NOTE Confidence: 0.9632161

00:49:36.069 --> 00:49:37.369 we're missing at screening.

NOTE Confidence: 0.95739746

00:49:37.829 --> 00:49:38.489 And that,

NOTE Confidence: 0.9766291

00:49:39.114 --> 00:49:39.675 I don't know if that

NOTE Confidence: 0.9766291

00:49:39.675 --> 00:49:40.715 keeps you awake at night,

NOTE Confidence: 0.9766291

00:49:40.715 --> 00:49:42.075 Rachel. Because, you know, there's

NOTE Confidence: 0.9766291

00:49:42.075 --> 00:49:43.114 nice older data. I didn't

NOTE Confidence: 0.9766291

00:49:43.114 --> 00:49:43.775 show it.

NOTE Confidence: 0.94873047

00:49:44.075 --> 00:49:45.675 Italian data suggesting that the

NOTE Confidence: 0.94873047

00:49:45.675 --> 00:49:47.114 first manifestation of a coronary

NOTE Confidence: 0.94873047

00:49:47.114 --> 00:49:48.075 anomaly can be the sudden

NOTE Confidence: 0.94873047

00:49:48.075 --> 00:49:49.375 cardiac arrest. Right?

NOTE Confidence: 0.99090576

00:49:49.755 --> 00:49:51.035 So it just feels uncomfortable.

NOTE Confidence: 0.99090576

00:49:51.035 --> 00:49:51.660 And, of course,

NOTE Confidence: 0.98497516

00:49:52.219 --> 00:49:53.200 if we CT'd every incoming

NOTE Confidence: 0.98497516

00:49:53.260 --> 00:49:54.539 d one athlete, we could

NOTE Confidence: 0.98497516

00:49:54.539 --> 00:49:55.660 find them, but that's not

NOTE Confidence: 0.98497516

00:49:55.660 --> 00:49:56.940 practical and wouldn't be an

NOTE Confidence: 0.98497516

00:49:56.940 --> 00:49:58.079 approach I would recommend.

NOTE Confidence: 0.96668476

00:49:58.859 --> 00:50:00.380 Even echo based screening, one

NOTE Confidence: 0.96668476

00:50:00.380 --> 00:50:01.739 thing to know is, screening,

NOTE Confidence: 0.96668476

00:50:01.739 --> 00:50:03.260 just like emergency action planning,

NOTE Confidence: 0.96668476

00:50:03.260 --> 00:50:04.299 needs to be customized to

NOTE Confidence: 0.96668476

00:50:04.299 --> 00:50:05.579 the resources available. That's an

NOTE Confidence: 0.96668476

00:50:05.579 --> 00:50:07.135 important point to make. And

NOTE Confidence: 0.96668476

00:50:07.135 --> 00:50:08.735 there are some, certainly at

NOTE Confidence: 0.96668476

00:50:08.735 --> 00:50:10.655 the professional sports level and

NOTE Confidence: 0.96668476

00:50:10.655 --> 00:50:12.095 then even some more highly

NOTE Confidence: 0.96668476

00:50:12.095 --> 00:50:13.455 resourced d one sort of

NOTE Confidence: 0.96668476

00:50:13.455 --> 00:50:14.735 college sports level where they

NOTE Confidence: 0.96668476

00:50:14.735 --> 00:50:16.255 do include an echo, not

NOTE Confidence: 0.96668476

00:50:16.255 --> 00:50:17.614 just for abnormal ECGs, but

NOTE Confidence: 0.96668476

00:50:17.614 --> 00:50:19.235 for every athlete. Right?

NOTE Confidence: 0.9612004

00:50:20.170 --> 00:50:21.370 And in that instance, you

NOTE Confidence: 0.9612004

00:50:21.370 --> 00:50:22.250 know, the question is when

NOTE Confidence: 0.9612004

00:50:22.250 --> 00:50:23.230 we're doing echo

NOTE Confidence: 0.9728934

00:50:23.530 --> 00:50:24.969 in eighteen year olds, are

NOTE Confidence: 0.9728934

00:50:24.969 --> 00:50:25.850 are we gonna be able

NOTE Confidence: 0.9728934

00:50:25.850 --> 00:50:28.570 to effectively visualize coronaries and

NOTE Confidence: 0.9728934

00:50:28.570 --> 00:50:29.530 rule in or rule out

NOTE Confidence: 0.9728934

00:50:29.530 --> 00:50:31.050 coronary anomalies? If you look

NOTE Confidence: 0.9728934

00:50:31.050 --> 00:50:32.430 at published data, the suggestion

NOTE Confidence: 0.9728934

00:50:32.489 --> 00:50:34.030 might be yes from UVA.

NOTE Confidence: 0.8888114

00:50:34.635 --> 00:50:35.355 But I don't know. In

NOTE Confidence: 0.8888114

00:50:35.355 --> 00:50:37.355 a practical, now eleven years

NOTE Confidence: 0.8888114

00:50:37.355 --> 00:50:38.475 on staff and an Ecolab

NOTE Confidence: 0.8888114

00:50:38.475 --> 00:50:40.315 having seen some echo based

NOTE Confidence: 0.8888114

00:50:40.315 --> 00:50:40.815 misses,

NOTE Confidence: 0.9774264

00:50:42.315 --> 00:50:43.515 I I don't think that

NOTE Confidence: 0.9774264

00:50:43.515 --> 00:50:44.475 adding an echo to look

NOTE Confidence: 0.9774264

00:50:44.475 --> 00:50:45.535 for coronary origins

NOTE Confidence: 0.9608887

00:50:45.915 --> 00:50:47.609 is is gonna be satisfactory,

NOTE Confidence: 0.9921653

00:50:48.390 --> 00:50:49.589 right, with regards to, like,

NOTE Confidence: 0.9921653

00:50:49.589 --> 00:50:50.950 finding that diagnosis. So we're

NOTE Confidence: 0.9921653

00:50:50.950 --> 00:50:51.989 left with the old fashioned,

NOTE Confidence: 0.9921653

00:50:51.989 --> 00:50:53.190 which is that if someone

NOTE Confidence: 0.9921653

00:50:53.190 --> 00:50:53.930 has symptoms,

NOTE Confidence: 0.97502303

00:50:54.230 --> 00:50:55.670 that's when they're gonna present.

NOTE Confidence: 0.97502303

00:50:55.670 --> 00:50:57.670 Right? And then, I'm a

NOTE Confidence: 0.97502303

00:50:57.670 --> 00:50:58.869 humble person. Actually, I was

NOTE Confidence: 0.97502303

00:50:58.869 --> 00:50:59.864 just telling Rachel about this

NOTE Confidence: 0.97502303

00:50:59.864 --> 00:51:01.065 case. I found some coronary

NOTE Confidence: 0.97502303

00:51:01.065 --> 00:51:02.585 anomalies over the years, because

NOTE Confidence: 0.97502303

00:51:02.585 --> 00:51:04.105 they're in an infrequent diagnosis,

NOTE Confidence: 0.97502303

00:51:04.105 --> 00:51:05.225 and I'm not an adult

NOTE Confidence: 0.97502303

00:51:05.225 --> 00:51:06.745 congenital or congenital heart disease

NOTE Confidence: 0.97502303

00:51:06.745 --> 00:51:08.025 expert. I think that's where

NOTE Confidence: 0.97502303

00:51:08.025 --> 00:51:09.385 being in an academic center

NOTE Confidence: 0.97502303

00:51:09.385 --> 00:51:10.825 where there are experts I

NOTE Confidence: 0.97502303

00:51:10.825 --> 00:51:11.705 used to joke there's an

NOTE Confidence: 0.97502303

00:51:11.705 --> 00:51:12.585 expert in the left and

NOTE Confidence: 0.97502303

00:51:12.585 --> 00:51:13.165 the right

NOTE Confidence: 0.96475756

00:51:13.580 --> 00:51:15.020 hand and until I broke

NOTE Confidence: 0.96475756

00:51:15.020 --> 00:51:16.300 my, right pinky, and they're

NOTE Confidence: 0.96475756

00:51:16.300 --> 00:51:17.260 just hand surgeons as it

NOTE Confidence: 0.96475756

00:51:17.260 --> 00:51:17.920 turns out.

NOTE Confidence: 0.9380468

00:51:18.380 --> 00:51:19.500 But there are, in a

NOTE Confidence: 0.9380468

00:51:19.500 --> 00:51:21.020 functional sense, so many experts

NOTE Confidence: 0.9380468

00:51:21.020 --> 00:51:21.980 and so many things so

NOTE Confidence: 0.9380468

00:51:21.980 --> 00:51:23.180 that our our approach is

NOTE Confidence: 0.9380468

00:51:23.180 --> 00:51:24.300 to present it to the

NOTE Confidence: 0.9380468

00:51:24.300 --> 00:51:26.415 congenital group meeting. Surgeons there,

NOTE Confidence: 0.9380468

00:51:26.415 --> 00:51:27.375 the images are there, or

NOTE Confidence: 0.9380468

00:51:27.375 --> 00:51:29.135 the congenital disease experts are

NOTE Confidence: 0.9380468

00:51:29.135 --> 00:51:30.575 there. And and most often

NOTE Confidence: 0.9380468

00:51:30.575 --> 00:51:32.015 in in borderline cases, unless

NOTE Confidence: 0.9380468

00:51:32.015 --> 00:51:32.895 it's open and shut, do

NOTE Confidence: 0.9380468

00:51:32.895 --> 00:51:34.094 so do that for the

NOTE Confidence: 0.9380468

00:51:34.094 --> 00:51:35.135 athlete at more than one

NOTE Confidence: 0.9380468

00:51:35.135 --> 00:51:36.655 center if there's ambiguity about

NOTE Confidence: 0.9380468

00:51:36.655 --> 00:51:37.395 what to do.

NOTE Confidence: 0.9838867

00:51:37.695 --> 00:51:38.815 And then, I can tell

NOTE Confidence: 0.9838867

00:51:38.815 --> 00:51:40.489 you one recent update. I'm

NOTE Confidence: 0.9838867

00:51:40.489 --> 00:51:41.450 I'm always gonna start with

NOTE Confidence: 0.9838867

00:51:41.450 --> 00:51:42.969 a maximal effort exercise test

NOTE Confidence: 0.9838867

00:51:42.969 --> 00:51:44.489 on the, apparatus that the

NOTE Confidence: 0.9838867

00:51:44.489 --> 00:51:46.170 athlete is most accustomed to.

NOTE Confidence: 0.9838867

00:51:46.170 --> 00:51:47.530 That is only doable with

NOTE Confidence: 0.9838867

00:51:47.530 --> 00:51:49.290 CPET in my institution because

NOTE Confidence: 0.9838867

00:51:49.290 --> 00:51:50.170 we don't have, like, a

NOTE Confidence: 0.9838867

00:51:50.170 --> 00:51:51.369 bike or a really good

NOTE Confidence: 0.9838867

00:51:51.369 --> 00:51:51.869 treadmill

NOTE Confidence: 0.9734497

00:51:52.329 --> 00:51:53.469 or a rowing ergometer

NOTE Confidence: 0.99641925

00:51:53.770 --> 00:51:55.210 in the other exercise labs.

NOTE Confidence: 0.99641925

00:51:55.210 --> 00:51:55.710 Right?

NOTE Confidence: 0.9667969

00:51:56.085 --> 00:51:56.585 But,

NOTE Confidence: 0.9927391

00:51:57.685 --> 00:51:58.565 if you're then wanting to

NOTE Confidence: 0.9927391

00:51:58.565 --> 00:51:59.765 add imaging to get more

NOTE Confidence: 0.9927391

00:51:59.765 --> 00:52:01.125 information in a case that's

NOTE Confidence: 0.9927391

00:52:01.125 --> 00:52:02.484 not open and shut, we

NOTE Confidence: 0.9927391

00:52:02.484 --> 00:52:03.525 have just started to do

NOTE Confidence: 0.9927391

00:52:03.525 --> 00:52:04.665 exercise pets,

NOTE Confidence: 0.974528

00:52:05.445 --> 00:52:06.825 just perfusion pets,

NOTE Confidence: 0.93480426

00:52:07.765 --> 00:52:09.045 because of a new tracer

NOTE Confidence: 0.93480426

00:52:09.045 --> 00:52:10.005 that has a longer half

NOTE Confidence: 0.93480426

00:52:10.005 --> 00:52:11.300 life so is less fussy.

NOTE Confidence: 0.93480426

00:52:11.520 --> 00:52:12.000 And,

NOTE Confidence: 0.96606445

00:52:12.800 --> 00:52:14.160 that but that's extremely new

NOTE Confidence: 0.96606445

00:52:14.160 --> 00:52:15.040 and I don't think, like,

NOTE Confidence: 0.96606445

00:52:15.040 --> 00:52:16.239 even published on, but that's

NOTE Confidence: 0.96606445

00:52:16.239 --> 00:52:17.520 now our surgeon doesn't wanna

NOTE Confidence: 0.96606445

00:52:17.520 --> 00:52:18.560 see the patient until you've

NOTE Confidence: 0.96606445

00:52:18.560 --> 00:52:20.320 done the exercise. But, but

NOTE Confidence: 0.96606445

00:52:20.320 --> 00:52:21.620 other centers use dobutamine

NOTE Confidence: 0.9827435

00:52:21.920 --> 00:52:23.295 stress CMR, which we don't

NOTE Confidence: 0.9827435

00:52:23.295 --> 00:52:24.335 have at MGH. So this

NOTE Confidence: 0.9827435

00:52:24.335 --> 00:52:25.295 idea that you can use

NOTE Confidence: 0.9827435

00:52:25.295 --> 00:52:26.815 imaging and some kind of

NOTE Confidence: 0.9827435

00:52:26.815 --> 00:52:27.315 provocation,

NOTE Confidence: 0.9251302

00:52:27.934 --> 00:52:28.434 vasodilation

NOTE Confidence: 0.92679036

00:52:28.974 --> 00:52:29.734 is useless, so it has

NOTE Confidence: 0.92679036

00:52:29.734 --> 00:52:31.135 to be dobutamine or exercise

NOTE Confidence: 0.92679036

00:52:31.135 --> 00:52:31.855 to try to get at

NOTE Confidence: 0.92679036

00:52:31.855 --> 00:52:33.315 is there ischemia or not,

NOTE Confidence: 0.9627757

00:52:33.694 --> 00:52:35.375 is helpful. But, Paul Thompson,

NOTE Confidence: 0.9627757

00:52:35.375 --> 00:52:36.494 who's the grandfather of sports

NOTE Confidence: 0.9627757

00:52:36.494 --> 00:52:37.855 cardiology, has a saying that

NOTE Confidence: 0.9627757

00:52:37.855 --> 00:52:39.120 don't trust a normal exercise

NOTE Confidence: 0.9627757

00:52:39.120 --> 00:52:40.480 test than a coronary anomaly

NOTE Confidence: 0.9627757

00:52:40.480 --> 00:52:41.520 patient. I mean, sometimes it

NOTE Confidence: 0.9627757

00:52:41.520 --> 00:52:42.240 has to come down to

NOTE Confidence: 0.9627757

00:52:42.240 --> 00:52:43.760 the idea that this looks

NOTE Confidence: 0.9627757

00:52:43.760 --> 00:52:44.960 like high risk anatomy and

NOTE Confidence: 0.9627757

00:52:44.960 --> 00:52:46.000 there is a symptom or

NOTE Confidence: 0.9627757

00:52:46.000 --> 00:52:46.320 not.

NOTE Confidence: 0.96660155

00:52:46.800 --> 00:52:47.600 I don't I don't know

NOTE Confidence: 0.96660155

00:52:47.600 --> 00:52:48.400 that there's always a way

NOTE Confidence: 0.96660155

00:52:48.400 --> 00:52:49.520 you can image your way

NOTE Confidence: 0.96660155

00:52:49.520 --> 00:52:50.960 into being convinced that fixing

NOTE Confidence: 0.96660155

00:52:50.960 --> 00:52:51.940 it is the right call.

NOTE Confidence: 0.9758789

00:52:54.235 --> 00:52:55.455 Thank you for your talk.

NOTE Confidence: 0.98046875

00:52:56.075 --> 00:52:56.575 So,

NOTE Confidence: 0.9290597

00:52:56.955 --> 00:52:58.635 my question is regarding the

NOTE Confidence: 0.9290597

00:52:58.635 --> 00:52:59.614 masters athletes.

NOTE Confidence: 0.999721

00:52:59.994 --> 00:53:01.835 Do you see something similar

NOTE Confidence: 0.999721

00:53:01.835 --> 00:53:02.575 or analogous

NOTE Confidence: 0.99417114

00:53:03.035 --> 00:53:04.475 to the CAC paradox in

NOTE Confidence: 0.99417114

00:53:04.475 --> 00:53:05.695 other vascular beds?

NOTE Confidence: 0.99956053

00:53:06.440 --> 00:53:07.640 Oh, no. I don't know.

NOTE Confidence: 0.99956053

00:53:07.640 --> 00:53:08.760 I don't think we do.

NOTE Confidence: 0.9776566

00:53:09.160 --> 00:53:10.120 Certainly, I don't know anyone

NOTE Confidence: 0.9776566

00:53:10.120 --> 00:53:11.340 that's done, like, panvascular

NOTE Confidence: 0.99975586

00:53:11.640 --> 00:53:12.940 imaging in that setting.

NOTE Confidence: 0.991862

00:53:13.480 --> 00:53:14.600 I will say there's other

NOTE Confidence: 0.991862

00:53:14.600 --> 00:53:16.220 things that are paradoxically

NOTE Confidence: 0.96662784

00:53:16.840 --> 00:53:17.800 so the answer is I

NOTE Confidence: 0.96662784

00:53:17.800 --> 00:53:18.600 don't know, and I don't

NOTE Confidence: 0.96662784

00:53:18.600 --> 00:53:19.740 think anyone's looked.

NOTE Confidence: 0.9645767

00:53:21.225 --> 00:53:22.505 There are other things we

NOTE Confidence: 0.9645767

00:53:22.505 --> 00:53:24.025 see enriched in masters athletes.

NOTE Confidence: 0.9645767

00:53:24.025 --> 00:53:24.825 I just didn't hit on

NOTE Confidence: 0.9645767

00:53:24.825 --> 00:53:26.585 them today. The EPs will

NOTE Confidence: 0.9645767

00:53:26.585 --> 00:53:27.385 know we see a lot

NOTE Confidence: 0.9645767

00:53:27.385 --> 00:53:28.985 more atrial fibrillation. That is

NOTE Confidence: 0.9645767

00:53:28.985 --> 00:53:30.505 also sex specific. It's really

NOTE Confidence: 0.9645767

00:53:30.505 --> 00:53:31.785 just in the male masters

NOTE Confidence: 0.9645767

00:53:31.785 --> 00:53:32.905 athletes. So if you image,

NOTE Confidence: 0.9645767

00:53:32.905 --> 00:53:33.725 you can see

NOTE Confidence: 0.99472773

00:53:34.050 --> 00:53:35.489 it's some probably some combination

NOTE Confidence: 0.99472773

00:53:35.489 --> 00:53:37.350 of atrial enlargement, atrial fibrosis,

NOTE Confidence: 0.99472773

00:53:37.410 --> 00:53:38.790 and higher vagal tone.

NOTE Confidence: 0.9919262

00:53:39.250 --> 00:53:40.370 And then on MRI imaging,

NOTE Confidence: 0.9919262

00:53:40.370 --> 00:53:41.170 you can see that they

NOTE Confidence: 0.9919262

00:53:41.170 --> 00:53:42.950 have more insertion point LGE,

NOTE Confidence: 0.9919262

00:53:43.010 --> 00:53:44.150 so, like, more fibrosis.

NOTE Confidence: 0.9538512

00:53:44.850 --> 00:53:45.730 And then, you know, is

NOTE Confidence: 0.9538512

00:53:45.730 --> 00:53:46.610 that just sort of, like,

NOTE Confidence: 0.9538512

00:53:46.610 --> 00:53:47.650 the hinge got pulled on

NOTE Confidence: 0.9538512

00:53:47.650 --> 00:53:48.610 one too many times, and

NOTE Confidence: 0.9538512

00:53:48.610 --> 00:53:49.885 you formed a little fibrosis

NOTE Confidence: 0.9538512

00:53:49.885 --> 00:53:51.325 there? I collectively call all

NOTE Confidence: 0.9538512

00:53:51.325 --> 00:53:53.165 of these master athlete maladies,

NOTE Confidence: 0.9538512

00:53:53.165 --> 00:53:54.445 and they're not they're maladies,

NOTE Confidence: 0.9538512

00:53:54.445 --> 00:53:55.725 only in the sports cardiology

NOTE Confidence: 0.9538512

00:53:55.725 --> 00:53:56.225 lens.

NOTE Confidence: 0.96404624

00:53:56.605 --> 00:53:57.485 So those are the things

NOTE Confidence: 0.96404624

00:53:57.485 --> 00:53:58.364 we can see more of

NOTE Confidence: 0.96404624

00:53:58.364 --> 00:53:59.825 in a master's athlete population.

NOTE Confidence: 0.96974206

00:54:00.285 --> 00:54:01.445 We sometimes see more VPB

NOTE Confidence: 0.96974206

00:54:01.725 --> 00:54:03.005 PBCs and stuff like that

NOTE Confidence: 0.96974206

00:54:03.005 --> 00:54:04.445 when they have fibrosis, and

NOTE Confidence: 0.96974206

00:54:04.445 --> 00:54:05.609 ongoing research is trying to

NOTE Confidence: 0.96974206

00:54:05.609 --> 00:54:06.969 help us define who we

NOTE Confidence: 0.96974206

00:54:06.969 --> 00:54:08.410 need to worry about for

NOTE Confidence: 0.96974206

00:54:08.410 --> 00:54:09.390 all of those bins.

NOTE Confidence: 0.9746484

00:54:09.849 --> 00:54:11.529 Good question, though. So, Megan,

NOTE Confidence: 0.9746484

00:54:11.529 --> 00:54:12.569 what do you say to

NOTE Confidence: 0.9746484

00:54:12.569 --> 00:54:14.410 the, masters athlete who wants

NOTE Confidence: 0.9746484

00:54:14.410 --> 00:54:15.369 and comes in with their

NOTE Confidence: 0.9746484

00:54:15.369 --> 00:54:17.210 CAC score in hand? Yeah.

NOTE Confidence: 0.9746484

00:54:17.210 --> 00:54:17.694 Where Where do you go

NOTE Confidence: 0.9746484

00:54:17.694 --> 00:54:19.055 from there? Yeah. I took

NOTE Confidence: 0.9746484

00:54:19.055 --> 00:54:20.094 those slides out, but it's

NOTE Confidence: 0.9746484

00:54:20.094 --> 00:54:21.174 such a great question. Because

NOTE Confidence: 0.9746484

00:54:21.174 --> 00:54:22.275 I think at the beginning,

NOTE Confidence: 0.98223877

00:54:22.734 --> 00:54:23.614 there was this, like, we

NOTE Confidence: 0.98223877

00:54:23.614 --> 00:54:24.415 don't know what to make

NOTE Confidence: 0.98223877

00:54:24.415 --> 00:54:25.454 of this number because it's

NOTE Confidence: 0.98223877

00:54:25.454 --> 00:54:25.954 high

NOTE Confidence: 0.95682615

00:54:26.415 --> 00:54:27.694 and it's higher than we

NOTE Confidence: 0.95682615

00:54:27.694 --> 00:54:28.575 think it should be. So

NOTE Confidence: 0.95682615

00:54:28.575 --> 00:54:29.875 maybe we shouldn't use calcium

NOTE Confidence: 0.95682615

00:54:29.934 --> 00:54:31.295 scoring in masters athletes because

NOTE Confidence: 0.95682615

00:54:31.295 --> 00:54:32.594 we don't understand this phenomenon.

NOTE Confidence: 0.9504666

00:54:33.060 --> 00:54:34.260 But there's great work out

NOTE Confidence: 0.9504666

00:54:34.260 --> 00:54:35.560 of the career center,

NOTE Confidence: 0.975259

00:54:35.940 --> 00:54:37.940 longitudinal data, and it it's

NOTE Confidence: 0.975259

00:54:37.940 --> 00:54:39.460 combinatorial work. There's two papers

NOTE Confidence: 0.975259

00:54:39.460 --> 00:54:40.260 I could send out where

NOTE Confidence: 0.975259

00:54:40.260 --> 00:54:41.300 they look at CAC scores

NOTE Confidence: 0.975259

00:54:41.300 --> 00:54:41.960 by cardiorespiratory

NOTE Confidence: 0.9814941

00:54:42.260 --> 00:54:43.620 fitness and self reported PA,

NOTE Confidence: 0.9814941

00:54:43.620 --> 00:54:45.000 and it's two separate papers.

NOTE Confidence: 0.91674805

00:54:45.380 --> 00:54:45.700 And,

NOTE Confidence: 0.9635653

00:54:46.415 --> 00:54:47.775 you can look and and

NOTE Confidence: 0.9635653

00:54:47.775 --> 00:54:48.815 the easier one to remember

NOTE Confidence: 0.9635653

00:54:48.815 --> 00:54:50.335 is the cardiorespiratory fitness is

NOTE Confidence: 0.9635653

00:54:50.335 --> 00:54:51.875 that in in fitter individuals,

NOTE Confidence: 0.9635653

00:54:52.094 --> 00:54:53.535 they have less CBD. So

NOTE Confidence: 0.9635653

00:54:53.535 --> 00:54:54.974 regardless of their CAT score,

NOTE Confidence: 0.9635653

00:54:54.974 --> 00:54:56.335 they have less onward heart

NOTE Confidence: 0.9635653

00:54:56.335 --> 00:54:57.375 disease if you follow them

NOTE Confidence: 0.9635653

00:54:57.375 --> 00:54:57.875 longitudinally,

NOTE Confidence: 0.9691244

00:54:58.610 --> 00:55:00.130 which totally makes sense. Right?

NOTE Confidence: 0.9691244

00:55:00.370 --> 00:55:01.570 Your exercise capacity is like

NOTE Confidence: 0.9691244

00:55:01.570 --> 00:55:03.350 a very potent prognostic indicator.

NOTE Confidence: 0.99316406

00:55:04.370 --> 00:55:05.590 But if you look within

NOTE Confidence: 0.97588

00:55:05.969 --> 00:55:07.730 active or fit people, let's

NOTE Confidence: 0.97588

00:55:07.730 --> 00:55:09.110 say, like, fifteen met exercise

NOTE Confidence: 0.97588

00:55:09.170 --> 00:55:11.025 capacity or above, a calcium

NOTE Confidence: 0.97588

00:55:11.025 --> 00:55:12.944 score still risk stratifies. So

NOTE Confidence: 0.97588

00:55:12.944 --> 00:55:14.305 you're still three to four

NOTE Confidence: 0.97588

00:55:14.305 --> 00:55:15.184 times more likely to have

NOTE Confidence: 0.97588

00:55:15.184 --> 00:55:15.905 an event if you have

NOTE Confidence: 0.97588

00:55:15.905 --> 00:55:17.105 a calcium score greater than

NOTE Confidence: 0.97588

00:55:17.105 --> 00:55:18.405 four hundred versus zero.

NOTE Confidence: 0.99365234

00:55:18.864 --> 00:55:19.265 But,

NOTE Confidence: 0.9778239

00:55:19.665 --> 00:55:20.944 a calcium score of around

NOTE Confidence: 0.9778239

00:55:20.944 --> 00:55:22.224 four hundred in a highly

NOTE Confidence: 0.9778239

00:55:22.224 --> 00:55:22.964 fit person,

NOTE Confidence: 0.9408091

00:55:24.590 --> 00:55:26.030 predicts the similar amount of

NOTE Confidence: 0.9408091

00:55:26.030 --> 00:55:27.390 events as a calcium score

NOTE Confidence: 0.9408091

00:55:27.390 --> 00:55:28.830 of one hundred in an

NOTE Confidence: 0.9408091

00:55:28.830 --> 00:55:30.910 unfit person. And so if

NOTE Confidence: 0.9408091

00:55:30.910 --> 00:55:32.270 if your patient Googles, like,

NOTE Confidence: 0.9408091

00:55:32.270 --> 00:55:33.150 what is what is a

NOTE Confidence: 0.9408091

00:55:33.150 --> 00:55:34.590 calcium score of four hundred

NOTE Confidence: 0.9408091

00:55:34.590 --> 00:55:35.969 means, and it tells them

NOTE Confidence: 0.9408091

00:55:36.225 --> 00:55:37.425 they're at, you know, maybe

NOTE Confidence: 0.9408091

00:55:37.425 --> 00:55:39.185 almost in day CBD risk

NOTE Confidence: 0.9408091

00:55:39.185 --> 00:55:40.305 equivalent as high risk as

NOTE Confidence: 0.9408091

00:55:40.305 --> 00:55:41.265 someone who's ready heart heart

NOTE Confidence: 0.9408091

00:55:41.265 --> 00:55:42.225 attack. I use a thousand

NOTE Confidence: 0.9408091

00:55:42.225 --> 00:55:43.585 for them. That's incorrect for

NOTE Confidence: 0.9408091

00:55:43.585 --> 00:55:44.965 that highly active patient,

NOTE Confidence: 0.9581299

00:55:45.345 --> 00:55:46.545 because they're at overall lower

NOTE Confidence: 0.9581299

00:55:46.545 --> 00:55:47.345 risk if I could draw

NOTE Confidence: 0.9581299

00:55:47.345 --> 00:55:48.305 the graph. So they're at

NOTE Confidence: 0.9581299

00:55:48.305 --> 00:55:49.345 overall lower risk, but the

NOTE Confidence: 0.9581299

00:55:49.345 --> 00:55:50.465 calcium score is how they

NOTE Confidence: 0.9581299

00:55:50.465 --> 00:55:52.150 differentiate still matters. So you

NOTE Confidence: 0.9581299

00:55:52.150 --> 00:55:53.510 can still use calcium scoring

NOTE Confidence: 0.9581299

00:55:53.510 --> 00:55:55.130 to identify higher risk athletes,

NOTE Confidence: 0.99729276

00:55:55.430 --> 00:55:56.390 but the numbers get to

NOTE Confidence: 0.99729276

00:55:56.390 --> 00:55:57.670 be a little bonkers. Like,

NOTE Confidence: 0.99729276

00:55:57.670 --> 00:55:59.690 we're talking two, three thousand

NOTE Confidence: 0.99332684

00:56:00.150 --> 00:56:01.210 with no obstructive

NOTE Confidence: 0.9987793

00:56:01.510 --> 00:56:02.489 disease. Right?

NOTE Confidence: 0.9568315

00:56:03.270 --> 00:56:04.230 And so you just have

NOTE Confidence: 0.9568315

00:56:04.230 --> 00:56:05.350 to make sure you understand

NOTE Confidence: 0.9568315

00:56:05.350 --> 00:56:06.685 that quirky aspect of it

NOTE Confidence: 0.9568315

00:56:06.685 --> 00:56:07.885 that that that I think

NOTE Confidence: 0.9568315

00:56:07.885 --> 00:56:09.005 in the GenPop, if you

NOTE Confidence: 0.9568315

00:56:09.005 --> 00:56:10.045 saw those numbers, it would

NOTE Confidence: 0.9568315

00:56:10.045 --> 00:56:11.325 mean they have three vessel

NOTE Confidence: 0.9568315

00:56:11.325 --> 00:56:12.605 obstructive disease, and that's just

NOTE Confidence: 0.9568315

00:56:12.605 --> 00:56:13.565 not what we see when

NOTE Confidence: 0.9568315

00:56:13.565 --> 00:56:14.765 we look look at it

NOTE Confidence: 0.9568315

00:56:14.765 --> 00:56:16.204 in athletes. So it does

NOTE Confidence: 0.9568315

00:56:16.204 --> 00:56:17.484 identify since everyone I see

NOTE Confidence: 0.9568315

00:56:17.484 --> 00:56:18.285 who is is fit and

NOTE Confidence: 0.9568315

00:56:18.285 --> 00:56:18.785 active.

NOTE Confidence: 0.90419924

00:56:19.520 --> 00:56:21.200 Well, not not exclusively, but,

NOTE Confidence: 0.9720866

00:56:21.760 --> 00:56:22.880 since that's mostly what I

NOTE Confidence: 0.9720866

00:56:22.880 --> 00:56:24.739 see, my lens is that

NOTE Confidence: 0.9720866

00:56:24.880 --> 00:56:26.719 score still helps me identify

NOTE Confidence: 0.9720866

00:56:26.719 --> 00:56:27.920 within the bin of fit

NOTE Confidence: 0.9720866

00:56:27.920 --> 00:56:29.040 and active people who's at

NOTE Confidence: 0.9720866

00:56:29.040 --> 00:56:29.839 higher risk,

NOTE Confidence: 0.9950684

00:56:30.320 --> 00:56:31.540 and so I treat them.

NOTE Confidence: 0.9798014

00:56:32.135 --> 00:56:34.214 And, sometimes that's the the

NOTE Confidence: 0.9798014

00:56:34.214 --> 00:56:35.255 the quirky part is sometimes

NOTE Confidence: 0.9798014

00:56:35.255 --> 00:56:36.635 they don't really have egregious

NOTE Confidence: 0.92778987

00:56:37.175 --> 00:56:38.535 lipids or other things making

NOTE Confidence: 0.92778987

00:56:38.535 --> 00:56:39.974 me wonder what else about

NOTE Confidence: 0.92778987

00:56:39.974 --> 00:56:41.335 the exercise itself is just

NOTE Confidence: 0.92778987

00:56:41.335 --> 00:56:42.375 driven in the formation of

NOTE Confidence: 0.92778987

00:56:42.375 --> 00:56:43.114 their plaque.

NOTE Confidence: 0.9418335

00:56:45.270 --> 00:56:46.710 That was a wonderful talk.

NOTE Confidence: 0.9418335

00:56:46.710 --> 00:56:47.910 Thank you. It's one of

NOTE Confidence: 0.9418335

00:56:47.910 --> 00:56:49.670 those talks that every single

NOTE Confidence: 0.9418335

00:56:49.670 --> 00:56:51.030 person in the audience is

NOTE Confidence: 0.9418335

00:56:51.030 --> 00:56:52.710 thinking, okay. How many MET

NOTE Confidence: 0.9418335

00:56:52.710 --> 00:56:53.850 hours per minute

NOTE Confidence: 0.92046875

00:56:54.390 --> 00:56:55.510 do I do, and where

NOTE Confidence: 0.92046875

00:56:55.510 --> 00:56:56.390 do I Go back to

NOTE Confidence: 0.92046875

00:56:56.390 --> 00:56:57.670 that slide. Fit into those

NOTE Confidence: 0.92046875

00:56:57.830 --> 00:56:59.045 It's asked me to translate

NOTE Confidence: 0.92046875

00:56:59.105 --> 00:57:00.944 his exercise activity into that

NOTE Confidence: 0.92046875

00:57:01.025 --> 00:57:02.145 Yeah. Response curve. I was

NOTE Confidence: 0.92046875

00:57:02.145 --> 00:57:03.025 like, where am I on

NOTE Confidence: 0.92046875

00:57:03.025 --> 00:57:04.545 this curve? Yes. Yeah. We

NOTE Confidence: 0.92046875

00:57:04.545 --> 00:57:06.484 won't even talk about master's

NOTE Confidence: 0.92046875

00:57:06.545 --> 00:57:08.244 age groups and things. But,

NOTE Confidence: 0.99902344

00:57:09.185 --> 00:57:09.685 but

NOTE Confidence: 0.98483074

00:57:10.430 --> 00:57:11.390 the I have a couple

NOTE Confidence: 0.98483074

00:57:11.390 --> 00:57:13.090 questions. One is the the

NOTE Confidence: 0.98483074

00:57:13.150 --> 00:57:15.650 sex paradox of the accumulation

NOTE Confidence: 0.97558594

00:57:15.950 --> 00:57:17.630 over over time and and

NOTE Confidence: 0.97558594

00:57:17.630 --> 00:57:18.130 years.

NOTE Confidence: 0.9630127

00:57:18.670 --> 00:57:20.210 I'm wondering because there

NOTE Confidence: 0.9998915

00:57:21.230 --> 00:57:23.230 are really dramatic differences in

NOTE Confidence: 0.9998915

00:57:23.230 --> 00:57:24.690 the way gonadal hormones

NOTE Confidence: 0.9968465

00:57:25.070 --> 00:57:27.295 affect blood vessels in males

NOTE Confidence: 0.9968465

00:57:27.295 --> 00:57:29.695 and females. Yep. Estrogens are

NOTE Confidence: 0.9968465

00:57:29.695 --> 00:57:30.595 probably protective

NOTE Confidence: 0.9781359

00:57:31.055 --> 00:57:32.015 up to a point in

NOTE Confidence: 0.9781359

00:57:32.015 --> 00:57:34.015 females, and androgens are probably

NOTE Confidence: 0.9781359

00:57:34.015 --> 00:57:35.955 protective in males, but deleterious

NOTE Confidence: 0.9867054

00:57:36.255 --> 00:57:37.855 in females. And so I'm

NOTE Confidence: 0.9867054

00:57:37.855 --> 00:57:40.415 wondering what exercise training over

NOTE Confidence: 0.9867054

00:57:40.415 --> 00:57:40.915 years,

NOTE Confidence: 0.9540405

00:57:41.220 --> 00:57:42.980 how that correlates with changes

NOTE Confidence: 0.9540405

00:57:42.980 --> 00:57:44.900 in gonadal hormones, and if

NOTE Confidence: 0.9540405

00:57:44.900 --> 00:57:45.480 we can

NOTE Confidence: 0.98185223

00:57:45.859 --> 00:57:47.380 reflect back to what may

NOTE Confidence: 0.98185223

00:57:47.380 --> 00:57:48.740 be happening at the level

NOTE Confidence: 0.98185223

00:57:48.740 --> 00:57:50.740 of vascular pathology. Yeah. I

NOTE Confidence: 0.98185223

00:57:50.740 --> 00:57:51.460 think that's so

NOTE Confidence: 0.9231181

00:57:52.820 --> 00:57:54.020 whenever someone asks a question

NOTE Confidence: 0.9231181

00:57:54.020 --> 00:57:54.885 and it's the slide you

NOTE Confidence: 0.9231181

00:57:54.885 --> 00:57:55.925 cut, you know it's a

NOTE Confidence: 0.9231181

00:57:55.925 --> 00:57:56.805 good one because I think

NOTE Confidence: 0.9231181

00:57:56.805 --> 00:57:57.925 there's a there's a lot

NOTE Confidence: 0.9231181

00:57:57.925 --> 00:57:59.145 to be unfurled here.

NOTE Confidence: 0.9523573

00:57:59.525 --> 00:58:00.725 We know that exercise training

NOTE Confidence: 0.9523573

00:58:00.725 --> 00:58:02.005 when at high levels, there

NOTE Confidence: 0.9523573

00:58:02.405 --> 00:58:04.005 it makes entirely sense when

NOTE Confidence: 0.9523573

00:58:04.005 --> 00:58:05.145 you think of, like, evolution

NOTE Confidence: 0.9523573

00:58:05.285 --> 00:58:07.190 suppresses sex hormones. Right? It

NOTE Confidence: 0.9523573

00:58:07.190 --> 00:58:08.230 does so even if you

NOTE Confidence: 0.9523573

00:58:08.230 --> 00:58:09.430 still like, even if women

NOTE Confidence: 0.9523573

00:58:09.430 --> 00:58:10.550 are still getting their menstrual

NOTE Confidence: 0.9523573

00:58:10.550 --> 00:58:12.170 cycles and men aren't, like,

NOTE Confidence: 0.9523573

00:58:12.230 --> 00:58:14.410 like, fulminently hypo hypoandrogen.

NOTE Confidence: 0.9589844

00:58:15.190 --> 00:58:16.570 But then there's this extreme,

NOTE Confidence: 0.9589844

00:58:16.630 --> 00:58:17.670 and the term we prefer

NOTE Confidence: 0.9589844

00:58:17.670 --> 00:58:18.710 to use now, we I'm

NOTE Confidence: 0.9589844

00:58:18.710 --> 00:58:19.910 in sports medicine too, is

NOTE Confidence: 0.9589844

00:58:19.910 --> 00:58:21.510 low energy availability. We're not

NOTE Confidence: 0.9589844

00:58:21.510 --> 00:58:23.585 labeling these as, like, DSM

NOTE Confidence: 0.9589844

00:58:23.645 --> 00:58:24.845 eating disorders and stuff, but

NOTE Confidence: 0.9589844

00:58:24.845 --> 00:58:26.305 the concept that low energy

NOTE Confidence: 0.9589844

00:58:26.365 --> 00:58:26.865 availability

NOTE Confidence: 0.83774704

00:58:27.484 --> 00:58:28.685 or the the acronym that's

NOTE Confidence: 0.83774704

00:58:28.685 --> 00:58:29.725 used is RED, which is

NOTE Confidence: 0.83774704

00:58:29.725 --> 00:58:31.965 relative energy deficiency in sport,

NOTE Confidence: 0.83774704

00:58:31.965 --> 00:58:32.705 RED s.

NOTE Confidence: 0.9648641

00:58:33.405 --> 00:58:35.165 These are definitely associated in

NOTE Confidence: 0.9648641

00:58:35.165 --> 00:58:35.665 perturbations,

NOTE Confidence: 0.9632235

00:58:36.685 --> 00:58:38.120 and sex hormones, which do

NOTE Confidence: 0.9632235

00:58:38.120 --> 00:58:39.000 make sense. If you think

NOTE Confidence: 0.9632235

00:58:39.000 --> 00:58:39.880 you're in a low energy

NOTE Confidence: 0.9632235

00:58:39.880 --> 00:58:40.680 state, it's not a time

NOTE Confidence: 0.9632235

00:58:40.680 --> 00:58:41.340 to reproduce.

NOTE Confidence: 0.9905229

00:58:42.520 --> 00:58:43.480 But what are the onward

NOTE Confidence: 0.9905229

00:58:43.480 --> 00:58:44.680 health effects of that? There's

NOTE Confidence: 0.9905229

00:58:44.680 --> 00:58:46.760 definitely performance effects. Your bones

NOTE Confidence: 0.9905229

00:58:46.760 --> 00:58:47.880 are affected by that, right,

NOTE Confidence: 0.9905229

00:58:47.880 --> 00:58:49.400 and and performance affected by

NOTE Confidence: 0.9905229

00:58:49.400 --> 00:58:51.415 that. But there's nothing this

NOTE Confidence: 0.9905229

00:58:51.415 --> 00:58:52.615 is an open pasture. If

NOTE Confidence: 0.9905229

00:58:52.615 --> 00:58:53.734 anyone wants to run into

NOTE Confidence: 0.9905229

00:58:53.734 --> 00:58:54.615 it with me and study

NOTE Confidence: 0.9905229

00:58:54.615 --> 00:58:55.974 it, let's do it. There's

NOTE Confidence: 0.9905229

00:58:55.974 --> 00:58:58.075 really no information about what

NOTE Confidence: 0.92182076

00:58:58.535 --> 00:58:59.734 what the intersect between that

NOTE Confidence: 0.92182076

00:58:59.734 --> 00:59:01.675 and cardiovascular health is.

NOTE Confidence: 0.9674247

00:59:02.310 --> 00:59:03.190 We know that if people

NOTE Confidence: 0.9674247

00:59:03.190 --> 00:59:03.990 come in and sort of

NOTE Confidence: 0.9674247

00:59:03.990 --> 00:59:05.350 start fully starved states, actually,

NOTE Confidence: 0.9674247

00:59:05.350 --> 00:59:06.630 weird enough, their LDLs are

NOTE Confidence: 0.9674247

00:59:06.630 --> 00:59:08.310 high. Right? So that's even

NOTE Confidence: 0.9674247

00:59:08.310 --> 00:59:09.270 a simple thing, and and

NOTE Confidence: 0.9674247

00:59:09.270 --> 00:59:10.710 there's some small studies that

NOTE Confidence: 0.9674247

00:59:10.710 --> 00:59:12.410 show vascular stiffness is elevated.

NOTE Confidence: 0.9674247

00:59:12.470 --> 00:59:14.070 So I think that those

NOTE Confidence: 0.9674247

00:59:14.070 --> 00:59:15.430 states are probably not good

NOTE Confidence: 0.9674247

00:59:15.430 --> 00:59:16.950 for CVD risk factors as

NOTE Confidence: 0.9674247

00:59:16.950 --> 00:59:17.450 well.

NOTE Confidence: 0.93082684

00:59:21.505 --> 00:59:22.625 Maybe I'll ask the last,

NOTE Confidence: 0.93082684

00:59:23.025 --> 00:59:24.485 a quick question. You

NOTE Confidence: 0.9201117

00:59:25.105 --> 00:59:26.865 didn't, speak to and maybe

NOTE Confidence: 0.9201117

00:59:26.865 --> 00:59:27.905 get give you me your

NOTE Confidence: 0.9201117

00:59:27.905 --> 00:59:28.805 thoughts around

NOTE Confidence: 0.9050293

00:59:29.425 --> 00:59:30.510 strategies of,

NOTE Confidence: 0.99645996

00:59:30.990 --> 00:59:32.050 intentional deconditioning

NOTE Confidence: 0.7939453

00:59:32.830 --> 00:59:33.730 and to understand,

NOTE Confidence: 0.93307936

00:59:34.270 --> 00:59:34.990 you know, who do you

NOTE Confidence: 0.93307936

00:59:34.990 --> 00:59:36.110 do that and and in

NOTE Confidence: 0.93307936

00:59:36.110 --> 00:59:37.710 what situations would that still

NOTE Confidence: 0.93307936

00:59:37.710 --> 00:59:39.230 be, you know, part of

NOTE Confidence: 0.93307936

00:59:39.230 --> 00:59:40.990 the guidelines. Yeah. With research,

NOTE Confidence: 0.93307936

00:59:40.990 --> 00:59:42.430 it's nice to have, like,

NOTE Confidence: 0.93307936

00:59:42.430 --> 00:59:44.590 unintentional or whatever natural deconditioning.

NOTE Confidence: 0.93307936

00:59:44.590 --> 00:59:45.310 And I've done a lot

NOTE Confidence: 0.93307936

00:59:45.310 --> 00:59:46.290 of studies where,

NOTE Confidence: 0.90960014

00:59:46.845 --> 00:59:48.445 you're watching a a natural

NOTE Confidence: 0.90960014

00:59:48.445 --> 00:59:49.965 escalation and training load like

NOTE Confidence: 0.90960014

00:59:49.965 --> 00:59:51.885 that early exercise induced remodeling

NOTE Confidence: 0.90960014

00:59:51.885 --> 00:59:52.785 stuff we take,

NOTE Confidence: 0.9291992

00:59:53.485 --> 00:59:54.385 college freshmen

NOTE Confidence: 0.96318305

00:59:54.765 --> 00:59:55.725 who I'm not sure this

NOTE Confidence: 0.96318305

00:59:55.725 --> 00:59:57.005 would work these days, but

NOTE Confidence: 0.96318305

00:59:57.005 --> 00:59:57.885 back in those days, ten

NOTE Confidence: 0.96318305

00:59:57.885 --> 00:59:58.845 years ago, you know, they

NOTE Confidence: 0.96318305

00:59:58.845 --> 00:59:59.725 came in. They had high

NOTE Confidence: 0.96318305

00:59:59.725 --> 01:00:01.020 school coaches. They were training.

NOTE Confidence: 0.96318305

01:00:01.020 --> 01:00:02.140 Right? They were not athletes,

NOTE Confidence: 0.96318305

01:00:02.140 --> 01:00:03.020 but then they hit, like,

NOTE Confidence: 0.96318305

01:00:03.020 --> 01:00:04.080 the Harvard coaches.

NOTE Confidence: 0.9272572

01:00:04.860 --> 01:00:05.660 You know, in the first

NOTE Confidence: 0.9272572

01:00:05.660 --> 01:00:07.420 three months, they their training

NOTE Confidence: 0.9272572

01:00:07.420 --> 01:00:08.700 was up a lot. Right?

NOTE Confidence: 0.9272572

01:00:08.700 --> 01:00:09.820 So we're using those natural

NOTE Confidence: 0.9272572

01:00:09.820 --> 01:00:11.180 experiments of up, and then

NOTE Confidence: 0.9272572

01:00:11.180 --> 01:00:12.620 in the marathon experiment, just

NOTE Confidence: 0.9272572

01:00:12.620 --> 01:00:13.680 the natural down,

NOTE Confidence: 0.9545356

01:00:14.385 --> 01:00:15.745 to look at change over

NOTE Confidence: 0.9545356

01:00:15.745 --> 01:00:17.185 time because it's it's pretty

NOTE Confidence: 0.9545356

01:00:17.185 --> 01:00:18.865 hard to tell a population

NOTE Confidence: 0.9545356

01:00:18.865 --> 01:00:19.825 like that to do something

NOTE Confidence: 0.9545356

01:00:19.825 --> 01:00:21.185 different. Right? When we think

NOTE Confidence: 0.9545356

01:00:21.185 --> 01:00:22.785 about using deconditioning as a

NOTE Confidence: 0.9545356

01:00:22.785 --> 01:00:24.305 clinical tool, that was in

NOTE Confidence: 0.9545356

01:00:24.305 --> 01:00:25.665 an algorithm of sorts for

NOTE Confidence: 0.9545356

01:00:25.665 --> 01:00:27.045 figuring out is this athletic

NOTE Confidence: 0.9545356

01:00:27.105 --> 01:00:29.290 HT, like, athletic LVH versus

NOTE Confidence: 0.9545356

01:00:29.290 --> 01:00:29.790 HCM.

NOTE Confidence: 0.97725767

01:00:31.609 --> 01:00:32.650 And it makes natural sense.

NOTE Confidence: 0.97725767

01:00:32.650 --> 01:00:33.530 So if you have an

NOTE Confidence: 0.97725767

01:00:33.530 --> 01:00:34.890 athlete detrain and the LVH

NOTE Confidence: 0.97725767

01:00:34.890 --> 01:00:36.329 goes away, it probably is

NOTE Confidence: 0.97725767

01:00:36.329 --> 01:00:37.630 athletic and not HCM.

NOTE Confidence: 0.9471762

01:00:37.930 --> 01:00:38.570 But I have to say

NOTE Confidence: 0.9471762

01:00:38.570 --> 01:00:39.369 I'm not a big fan

NOTE Confidence: 0.9471762

01:00:39.369 --> 01:00:40.250 for two reasons. One is

NOTE Confidence: 0.9471762

01:00:40.250 --> 01:00:41.244 that's asking a lot of

NOTE Confidence: 0.9471762

01:00:41.244 --> 01:00:42.285 the athlete. Right? Instead in

NOTE Confidence: 0.9471762

01:00:42.285 --> 01:00:43.325 shared decision making, we can

NOTE Confidence: 0.9471762

01:00:43.325 --> 01:00:44.365 just say, we don't know

NOTE Confidence: 0.9471762

01:00:44.365 --> 01:00:45.165 if this is HTM. We're

NOTE Confidence: 0.9471762

01:00:45.165 --> 01:00:46.045 gonna follow you over time

NOTE Confidence: 0.9471762

01:00:46.045 --> 01:00:47.005 and do all the risk

NOTE Confidence: 0.9471762

01:00:47.005 --> 01:00:47.505 stratification.

NOTE Confidence: 0.98050207

01:00:48.205 --> 01:00:49.325 The other is that there's

NOTE Confidence: 0.98050207

01:00:49.405 --> 01:00:50.205 I think each of us

NOTE Confidence: 0.98050207

01:00:50.205 --> 01:00:51.005 has a case like this,

NOTE Confidence: 0.98050207

01:00:51.005 --> 01:00:52.045 and there are published case

NOTE Confidence: 0.98050207

01:00:52.045 --> 01:00:52.945 reports where

NOTE Confidence: 0.92068917

01:00:54.060 --> 01:00:55.740 you detrain and even things

NOTE Confidence: 0.92068917

01:00:55.740 --> 01:00:57.340 like t wave inversions improve

NOTE Confidence: 0.92068917

01:00:57.340 --> 01:00:59.040 and hypertrophy gets better,

NOTE Confidence: 0.9538812

01:00:59.420 --> 01:01:00.940 but then it becomes HTM,

NOTE Confidence: 0.9538812

01:01:00.940 --> 01:01:01.900 like, three or four years

NOTE Confidence: 0.9538812

01:01:01.900 --> 01:01:03.740 later. Speaking to this, like,

NOTE Confidence: 0.9538812

01:01:03.740 --> 01:01:05.920 interesting intersect because it clearly

NOTE Confidence: 0.9538812

01:01:05.980 --> 01:01:07.200 was in part exercise

NOTE Confidence: 0.99009484

01:01:07.580 --> 01:01:09.245 and whatever their genetic thing

NOTE Confidence: 0.99009484

01:01:09.245 --> 01:01:10.205 was, but not all of

NOTE Confidence: 0.99009484

01:01:10.205 --> 01:01:10.765 it. I have a,

NOTE Confidence: 0.9611593

01:01:11.965 --> 01:01:13.325 he's probably now masters. He

NOTE Confidence: 0.9611593

01:01:13.405 --> 01:01:14.525 maybe in his early thirties

NOTE Confidence: 0.9611593

01:01:14.525 --> 01:01:15.485 who has the most bizarre

NOTE Confidence: 0.9611593

01:01:15.485 --> 01:01:16.525 ECG you could ever see

NOTE Confidence: 0.9611593

01:01:16.525 --> 01:01:17.245 and a little bit of

NOTE Confidence: 0.9611593

01:01:17.245 --> 01:01:18.605 hypertrophy, but it's never turned

NOTE Confidence: 0.9611593

01:01:18.605 --> 01:01:19.885 into anything. And he tore

NOTE Confidence: 0.9611593

01:01:19.885 --> 01:01:20.845 his ACL. He just does,

NOTE Confidence: 0.9611593

01:01:20.845 --> 01:01:22.045 like, men's basketball leagues. He

NOTE Confidence: 0.9611593

01:01:22.045 --> 01:01:23.085 tore his ACL, and he

NOTE Confidence: 0.9611593

01:01:23.085 --> 01:01:24.100 was out for some period

NOTE Confidence: 0.9611593

01:01:24.100 --> 01:01:25.300 of time rehabbing that. And

NOTE Confidence: 0.9611593

01:01:25.300 --> 01:01:26.420 this if I had it

NOTE Confidence: 0.9611593

01:01:26.420 --> 01:01:27.220 on a slide, it'd just

NOTE Confidence: 0.9611593

01:01:27.220 --> 01:01:28.020 be like, this is the

NOTE Confidence: 0.9611593

01:01:28.020 --> 01:01:29.380 most wacky ECG ever. It

NOTE Confidence: 0.9611593

01:01:29.380 --> 01:01:31.060 almost completely normalized when he

NOTE Confidence: 0.9611593

01:01:31.060 --> 01:01:31.800 was detrained.

NOTE Confidence: 0.9836162

01:01:32.740 --> 01:01:33.859 There's no reason for that.

NOTE Confidence: 0.9836162

01:01:33.859 --> 01:01:35.300 It's very interesting it happened.

NOTE Confidence: 0.9836162

01:01:35.300 --> 01:01:36.365 It shows I don't know.

NOTE Confidence: 0.9836162

01:01:36.365 --> 01:01:37.565 What we understand about medicine

NOTE Confidence: 0.9836162

01:01:37.565 --> 01:01:38.605 is probably less than what

NOTE Confidence: 0.9836162

01:01:38.605 --> 01:01:40.045 we don't understand. So I

NOTE Confidence: 0.9836162

01:01:40.045 --> 01:01:41.005 don't tend to prescribe it

NOTE Confidence: 0.9836162

01:01:41.005 --> 01:01:41.805 as a tool in these

NOTE Confidence: 0.9836162

01:01:41.805 --> 01:01:43.244 gray zone cases, for those

NOTE Confidence: 0.9836162

01:01:43.244 --> 01:01:44.365 reasons, both because I'm worried

NOTE Confidence: 0.9836162

01:01:44.365 --> 01:01:45.405 I'll get tricked and provide

NOTE Confidence: 0.9836162

01:01:45.405 --> 01:01:46.765 false reassurance and because we

NOTE Confidence: 0.9836162

01:01:46.765 --> 01:01:48.204 can sort of default back

NOTE Confidence: 0.9836162

01:01:48.204 --> 01:01:49.325 to shared decision making in

NOTE Confidence: 0.9836162

01:01:49.325 --> 01:01:50.305 the face of uncertainty.

NOTE Confidence: 0.9005534

01:01:51.240 --> 01:01:52.120 Well, everyone, let's,

NOTE Confidence: 0.95182294

01:01:52.760 --> 01:01:54.520 raise our hands and clap

NOTE Confidence: 0.95182294

01:01:54.520 --> 01:01:56.120 for, doctor Waspy. Thank you

NOTE Confidence: 0.95182294

01:01:56.120 --> 01:01:56.780 so much.

NOTE Confidence: 0.67196655

01:02:06.236 --> 01:02:07.536 Oh, a broken foot.

NOTE Confidence: 0.57719725

01:02:08.317 --> 01:02:09.837 It looks actually very that

NOTE Confidence: 0.57719725

01:02:09.837 --> 01:02:11.296 is very much like this.