1
00:00:03,830 --> 00:00:02,149
we're going to take a moment now to go

2
00:00:05,590 --> 00:00:03,840
down to the marshall space flight center

3
00:00:07,590 --> 00:00:05,600
in huntsville alabama where laurie megs

4
00:00:09,110 --> 00:00:07,600
is standing by lori let's talk about the

5
00:00:11,110 --> 00:00:09,120
new study that's on space station that's

6
00:00:13,430 --> 00:00:11,120
looking at cardiovascular health on the

7
00:00:15,110 --> 00:00:13,440
astronauts it's called cardio ox for

8
00:00:17,349 --> 00:00:15,120
short and it's looking at the space

9
00:00:19,830 --> 00:00:17,359
related space-related cardiovascular

10
00:00:21,269 --> 00:00:19,840
disease risk to long-duration astronauts

11
00:00:23,429 --> 00:00:21,279
steve platts is the principal

12
00:00:26,470 --> 00:00:23,439
investigator at the johnson space center

13
00:00:28,070 --> 00:00:26,480

and he tells us more about this study

14
00:00:29,509 --> 00:00:28,080
the short title is

15
00:00:31,910 --> 00:00:29,519
cardio ox and that stands for

16
00:00:34,310 --> 00:00:31,920
cardiovascular oxidative stress

17
00:00:35,590 --> 00:00:34,320
and we're looking at how space flight

18
00:00:37,830 --> 00:00:35,600
may induce

19
00:00:39,590 --> 00:00:37,840
oxidative stress and inflammation in

20
00:00:41,670 --> 00:00:39,600
astronauts it's actually something you

21
00:00:43,430 --> 00:00:41,680
hear about all the time so when you see

22
00:00:45,750 --> 00:00:43,440
these

23
00:00:47,830 --> 00:00:45,760
medications or vitamins but vitamin e

24
00:00:50,150 --> 00:00:47,840
vitamin c they say they're antioxidants

25
00:00:52,069 --> 00:00:50,160
and you take an antioxidant to fight

26
00:00:54,310 --> 00:00:52,079
oxidative stress so it's a natural

27
00:00:57,110 --> 00:00:54,320
process in the body every time you burn

28
00:00:58,869 --> 00:00:57,120
atp for your cells to do anything you

29
00:01:01,270 --> 00:00:58,879
produce these

30
00:01:03,750 --> 00:01:01,280
free radicals and your body also

31
00:01:05,590 --> 00:01:03,760
produces things that fight them and you

32
00:01:07,510 --> 00:01:05,600
get this balance between the two and

33
00:01:10,230 --> 00:01:07,520
that's when everything is okay when you

34
00:01:12,230 --> 00:01:10,240
get into stressful situations or or have

35
00:01:14,390 --> 00:01:12,240
other issues that get out of balance and

36
00:01:16,550 --> 00:01:14,400
that's when it can become a problem

37
00:01:18,310 --> 00:01:16,560
so they're out of balance what we see in

38
00:01:20,310 --> 00:01:18,320

in astronauts or have we even our

39
00:01:22,469 --> 00:01:20,320
hypothesis is that we're out of balance

40
00:01:24,070 --> 00:01:22,479
there's a little bit of data that shows

41
00:01:26,950 --> 00:01:24,080
we could be out of balance in space

42
00:01:29,670 --> 00:01:26,960
flight but on earth we know that a lot

43
00:01:31,030 --> 00:01:29,680
of the situations that they end up in in

44
00:01:33,429 --> 00:01:31,040
space

45
00:01:35,830 --> 00:01:33,439
the deconditioning the the diet they

46
00:01:37,749 --> 00:01:35,840
have the radiation exposure all those

47
00:01:39,910 --> 00:01:37,759
things cause oxidative stress here on

48
00:01:41,910 --> 00:01:39,920
earth so our hypothesis is that it's

49
00:01:44,310 --> 00:01:41,920
doing the same thing in space flight so

50
00:01:46,389 --> 00:01:44,320
how are we going to prove this is true

51
00:01:48,069 --> 00:01:46,399
well we have 12 12 astronauts that we're

52
00:01:49,990 --> 00:01:48,079
going to study and we're taking blood

53
00:01:51,830 --> 00:01:50,000
samples and urine samples and at the

54
00:01:54,389 --> 00:01:51,840
same time we're looking at how the blood

55
00:01:56,950 --> 00:01:54,399
vessels respond so we're getting a

56
00:01:58,950 --> 00:01:56,960
measure of structure and function and we

57
00:02:00,950 --> 00:01:58,960
can compare the biomarkers that we're

58
00:02:02,550 --> 00:02:00,960
getting that show us what degree of

59
00:02:05,350 --> 00:02:02,560
inflammation and oxidative stress we

60
00:02:06,870 --> 00:02:05,360
have and what the functional consequence

61
00:02:09,589 --> 00:02:06,880
of that is

62
00:02:11,670 --> 00:02:09,599
what do we hope to gain from this

63
00:02:13,670 --> 00:02:11,680

it'll it'll be helpful for the crew but

64
00:02:14,710 --> 00:02:13,680
it's also potentially helpful here on

65
00:02:16,869 --> 00:02:14,720
earth so

66
00:02:18,550 --> 00:02:16,879
there are all these different hypotheses

67
00:02:20,949 --> 00:02:18,560
about oxidative stress and inflammation

68
00:02:22,949 --> 00:02:20,959
and how they can lead to coronary artery

69
00:02:24,390 --> 00:02:22,959
disease and that's one of our major

70
00:02:26,070 --> 00:02:24,400
research gaps

71
00:02:28,710 --> 00:02:26,080
here at nasa is

72
00:02:31,509 --> 00:02:28,720
do does space flight induce any kind of

73
00:02:33,430 --> 00:02:31,519
cardiovascular issues long-term not just

74
00:02:34,949 --> 00:02:33,440
while the crew are in flight but when

75
00:02:36,470 --> 00:02:34,959
they return are we putting them at

76
00:02:38,150 --> 00:02:36,480
additional risk for

77
00:02:39,830 --> 00:02:38,160
for a heart attack or something else and

78
00:02:42,070 --> 00:02:39,840
this study will help us

79
00:02:44,630 --> 00:02:42,080
to see if we have any potential

80
00:02:46,150 --> 00:02:44,640
pre-clinical issues and

81
00:02:48,070 --> 00:02:46,160
in the time frames that we're talking

82
00:02:49,350 --> 00:02:48,080
about we wouldn't be able to see

83
00:02:52,470 --> 00:02:49,360
full-blown

84
00:02:55,270 --> 00:02:52,480
clinical issues but the the measures

85
00:02:58,550 --> 00:02:55,280
that we're using can predict future

86
00:03:00,070 --> 00:02:58,560
potential for atherosclerosis

87
00:03:01,990 --> 00:03:00,080
three astronauts are actively

88
00:03:03,830 --> 00:03:02,000

participating in pre-flight and training

89
00:03:05,990 --> 00:03:03,840
activities for this experiment one

90
00:03:08,630 --> 00:03:06,000
astronaut has actually completed some

91
00:03:10,309 --> 00:03:08,640
in-flight data collection and three more

92
00:03:11,910 --> 00:03:10,319
have just signed on to participate in

93
00:03:13,589 --> 00:03:11,920
the study we'll see the first

94
00:03:15,670 --> 00:03:13,599
post-flight data collection sessions

95
00:03:17,509 --> 00:03:15,680
sometime next spring now let's take a

96
00:03:19,350 --> 00:03:17,519
live look into the payload operations

97
00:03:21,190 --> 00:03:19,360
integration center and josh as you

98
00:03:22,869 --> 00:03:21,200
mentioned they are participating in that

99
00:03:24,869 --> 00:03:22,879
simulation i actually walked in to find

100
00:03:26,630 --> 00:03:24,879
out what was going on this morning and

101
00:03:27,830 --> 00:03:26,640
they told me now's not a good time so i

102
00:03:29,030 --> 00:03:27,840
just turned around and left you know

103
00:03:31,430 --> 00:03:29,040
they have to be prepared they say

104
00:03:33,350 --> 00:03:31,440
sometimes they have to train together

105
00:03:34,949 --> 00:03:33,360
for a bad day that they hope never

106
00:03:37,670 --> 00:03:34,959
happens and

107
00:03:39,589 --> 00:03:37,680
today is that day but it's just training

108
00:03:41,509 --> 00:03:39,599
and it's well worth it to be prepared

109
00:03:43,830 --> 00:03:41,519
and you can also see they're waiting for

110
00:03:46,630 --> 00:03:43,840
santa claus too those hats and

111
00:03:48,309 --> 00:03:46,640
and stockings so hopefully somebody will

112
00:03:50,470 --> 00:03:48,319
put something in there that'll do it for

113
00:03:52,229 --> 00:03:50,480

us at the payload operations integration