
NASA
SPACESTATION
LIVE

1
00:00:10,950 --> 00:00:08,629
so in the almost 15 years of uh manned

2
00:00:12,310 --> 00:00:10,960
habitation on board the station we've

3
00:00:13,830 --> 00:00:12,320
been learning quite a bit of how the

4
00:00:17,109 --> 00:00:13,840
body functions after being in

5
00:00:19,029 --> 00:00:17,119
microgravity for six months at a time

6
00:00:21,429 --> 00:00:19,039
simple tasks like walking or even

7
00:00:23,109 --> 00:00:21,439
turning a latch or a lever

8
00:00:25,349 --> 00:00:23,119
or standing from a seated position may

9
00:00:27,429 --> 00:00:25,359
sound easy but for crew members right

10
00:00:29,029 --> 00:00:27,439
after they return from space it can be a

11
00:00:30,630 --> 00:00:29,039
little more difficult

12
00:00:32,709 --> 00:00:30,640
we're learning how those tasks are going

13
00:00:34,950 --> 00:00:32,719

to be affected

14
00:00:37,750 --> 00:00:34,960
even more after spending a year in space

15
00:00:39,350 --> 00:00:37,760
with the one-year mission so lori mags

16
00:00:41,350 --> 00:00:39,360
out at nasa's marshall space flight

17
00:00:43,350 --> 00:00:41,360
center visited the neuroscience lab at

18
00:00:45,270 --> 00:00:43,360
johnson space center here where crew

19
00:00:47,670 --> 00:00:45,280
members undergo pre and post flight

20
00:00:49,350 --> 00:00:47,680
analysis as part of the functional task

21
00:00:50,790 --> 00:00:49,360
test

22
00:00:52,470 --> 00:00:50,800
i'm here with jacob bloomberg we're in

23
00:00:54,229 --> 00:00:52,480
the neuroscience lab at johnson space

24
00:00:55,990 --> 00:00:54,239
center jacob what goes on here well what

25
00:00:57,830 --> 00:00:56,000
you see here is a subject doing one of

26
00:01:00,150 --> 00:00:57,840
the component tests of the functional

27
00:01:02,069 --> 00:01:00,160
task test and this test is really

28
00:01:03,830 --> 00:01:02,079
focused on the ability of astronauts to

29
00:01:05,990 --> 00:01:03,840
egress a vehicle

30
00:01:07,750 --> 00:01:06,000
after a long duration space flight so

31
00:01:10,789 --> 00:01:07,760
you can see our subject unbuckling the

32
00:01:12,469 --> 00:01:10,799
belt standing up and negotiating an

33
00:01:14,789 --> 00:01:12,479
obstacle course here

34
00:01:16,630 --> 00:01:14,799
simulation through a portal

35
00:01:18,630 --> 00:01:16,640
and then you'll see our subject walk

36
00:01:21,190 --> 00:01:18,640
through the pylons

37
00:01:23,030 --> 00:01:21,200
turning while she walks through there

38
00:01:24,950 --> 00:01:23,040

which challenges the balance control

39
00:01:26,870 --> 00:01:24,960
system and then you'll see her walk up

40
00:01:29,670 --> 00:01:26,880
this ramp

41
00:01:31,510 --> 00:01:29,680
which again simulates an active

42
00:01:33,429 --> 00:01:31,520
performance activity

43
00:01:35,910 --> 00:01:33,439
and that completes the path it looks

44
00:01:37,270 --> 00:01:35,920
like a simple task but thank you aaron

45
00:01:38,390 --> 00:01:37,280
great job

46
00:01:40,230 --> 00:01:38,400
but

47
00:01:41,749 --> 00:01:40,240
what are we learning from this well what

48
00:01:43,910 --> 00:01:41,759
we're learning from this is that we know

49
00:01:46,230 --> 00:01:43,920
that astronauts experience postural and

50
00:01:47,109 --> 00:01:46,240
gait instabilities after space flight

51
00:01:49,510 --> 00:01:47,119
and what we're trying to do is

52
00:01:51,270 --> 00:01:49,520
understand the underlying physiological

53
00:01:53,749 --> 00:01:51,280
changes that contribute to some of those

54
00:01:55,670 --> 00:01:53,759
changes and what this test gives us is

55
00:01:57,270 --> 00:01:55,680
an estimate or measure of their

56
00:01:59,030 --> 00:01:57,280
functional performance and our goal is

57
00:02:01,429 --> 00:01:59,040
then to relate those changes with

58
00:02:03,270 --> 00:02:01,439
underlying tests of balance control and

59
00:02:04,950 --> 00:02:03,280
you've finished this with 13 subjects

60
00:02:06,870 --> 00:02:04,960
what have you learned well what have we

61
00:02:08,869 --> 00:02:06,880
learned we've learned that

62
00:02:10,869 --> 00:02:08,879
when we look at all our tests as a

63
00:02:13,030 --> 00:02:10,879

composite those tests that have a

64
00:02:15,030 --> 00:02:13,040
balanced challenge like what you see are

65
00:02:17,510 --> 00:02:15,040
the tests that that have the greatest

66
00:02:19,670 --> 00:02:17,520
change in performance and so for example

67
00:02:21,430 --> 00:02:19,680
test that where you have to move through

68
00:02:23,910 --> 00:02:21,440
space we have to move objects we have to

69
00:02:26,229 --> 00:02:23,920
actually move are those where we see the

70
00:02:28,229 --> 00:02:26,239
greatest deficit and so what this tells

71
00:02:30,309 --> 00:02:28,239
us is that we need to expand our

72
00:02:31,750 --> 00:02:30,319
countermeasures to include balance

73
00:02:32,869 --> 00:02:31,760
training as part of our complement of

74
00:02:34,869 --> 00:02:32,879
countermeasures that we're going to use

75
00:02:36,309 --> 00:02:34,879
on iss to improve post-flight

76
00:02:38,710 --> 00:02:36,319
performance all right let's go look at

77
00:02:40,550 --> 00:02:38,720
that activity board next thing tell us

78
00:02:43,190 --> 00:02:40,560
what she's doing now well what she's

79
00:02:45,350 --> 00:02:43,200
doing is she's doing a complex manual

80
00:02:46,710 --> 00:02:45,360
control task and and this is one of the

81
00:02:48,309 --> 00:02:46,720
concerns we have with crew members

82
00:02:50,470 --> 00:02:48,319
whether after long duration space flight

83
00:02:52,070 --> 00:02:50,480
they can do complex manual control

84
00:02:54,150 --> 00:02:52,080
attacks like what you're saying so she's

85
00:02:54,869 --> 00:02:54,160
doing various tasks where she's moving

86
00:02:57,110 --> 00:02:54,879
uh

87
00:02:58,710 --> 00:02:57,120
the these connectors from one receptacle

88
00:03:00,790 --> 00:02:58,720

to another and then you can see her with

89
00:03:02,550 --> 00:03:00,800
the power drill taking those bolts off

90
00:03:04,869 --> 00:03:02,560
and then moving that handle 90 degrees

91
00:03:07,030 --> 00:03:04,879
so we test our performance before and

92
00:03:08,710 --> 00:03:07,040
after flight doing this particular task

93
00:03:10,470 --> 00:03:08,720
and as we mentioned we've had 13

94
00:03:12,630 --> 00:03:10,480
subjects complete this

95
00:03:13,910 --> 00:03:12,640
one of those happens to be now going on

96
00:03:15,509 --> 00:03:13,920
a year-long mission so you're going to

97
00:03:17,190 --> 00:03:15,519
get a lot more data from this i know

98
00:03:18,790 --> 00:03:17,200
that's exciting for you absolutely we're

99
00:03:21,030 --> 00:03:18,800
very excited about the opportunity to do

100
00:03:22,790 --> 00:03:21,040
the one year mission and so we as you

101
00:03:24,470 --> 00:03:22,800
know we'll be testing scott kelly before

102
00:03:25,910 --> 00:03:24,480
and after space flight

103
00:03:28,229 --> 00:03:25,920
and we've had the opportunity to pass

104
00:03:29,589 --> 00:03:28,239
the testing on this particular test

105
00:03:31,750 --> 00:03:29,599
after six months so we'll be able to

106
00:03:33,270 --> 00:03:31,760
compare the six-month data with one-year

107
00:03:34,789 --> 00:03:33,280
data to see if there's any differences

108
00:03:36,550 --> 00:03:34,799
between them all right i know there are

109
00:03:38,949 --> 00:03:36,560
a lot more tasks and i think i see one

110
00:03:40,869 --> 00:03:38,959
that i might be able to do okay here i

111
00:03:42,630 --> 00:03:40,879
don't know

112
00:03:44,949 --> 00:03:42,640
looks pretty easy right now okay so this

113
00:03:47,270 --> 00:03:44,959

is a meant to be equivalent to a hatch

114
00:03:48,949 --> 00:03:47,280
opening task so your task will be to

115
00:03:50,390 --> 00:03:48,959
move that wheel as many times as you can

116
00:03:53,030 --> 00:03:50,400
in 20 seconds

117
00:03:54,869 --> 00:03:53,040
move it as many times as i can oh okay

118
00:03:56,550 --> 00:03:54,879
as if you're opening a hatch i think

119
00:03:58,550 --> 00:03:56,560
they put something on this yeah it's got

120
00:04:00,309 --> 00:03:58,560
a bit of resistance in there

121
00:04:01,589 --> 00:04:00,319
and we and this is something that is

122
00:04:03,270 --> 00:04:01,599
really going to be important on the long

123
00:04:04,869 --> 00:04:03,280
duration mission absolutely got to be

124
00:04:06,309 --> 00:04:04,879
able to open a hatch absolutely it's an

125
00:04:08,149 --> 00:04:06,319
important task for us to be able to look

126
00:04:09,589 --> 00:04:08,159
at well thank you so much for showing us