



1
00:00:06,950 --> 00:00:05,269
so two of the crew members on board the

2
00:00:09,030 --> 00:00:06,960
international space station right now

3
00:00:11,830 --> 00:00:09,040
scott kelly mikhail kornyenko digging in

4
00:00:12,870 --> 00:00:11,840
to spend almost entire year in orbit and

5
00:00:14,549 --> 00:00:12,880
they're going to be doing a lot of

6
00:00:16,710 --> 00:00:14,559
studies that are going to be tracking

7
00:00:19,189 --> 00:00:16,720
how the body adapts to even longer times

8
00:00:20,790 --> 00:00:19,199
in microgravity now i have with me one

9
00:00:23,109 --> 00:00:20,800
of the principal investigators of one of

10
00:00:25,509 --> 00:00:23,119
those studies dr tina holden who's the

11
00:00:26,790 --> 00:00:25,519
pi for the fine motor skills study first

12
00:00:29,269 --> 00:00:26,800
off thank you so much for joining me

13
00:00:31,509 --> 00:00:29,279

today doctor and first off give me just

14

00:00:33,270 --> 00:00:31,519

a real general overview what is it that

15

00:00:35,430 --> 00:00:33,280

you guys are looking for while they're

16

00:00:37,430 --> 00:00:35,440

in space you know that kind of that

17

00:00:38,630 --> 00:00:37,440

microgravity can do to the body while

18

00:00:40,229 --> 00:00:38,640

they're up there

19

00:00:42,709 --> 00:00:40,239

well we know from the spaceflight

20

00:00:44,470 --> 00:00:42,719

experience that we have to date that

21

00:00:45,990 --> 00:00:44,480

extended weightlessness tends to

22

00:00:48,869 --> 00:00:46,000

decondition the body and that's why it's

23

00:00:50,709 --> 00:00:48,879

so important for crew to do exercise on

24

00:00:52,630 --> 00:00:50,719

board what we don't really have a good

25

00:00:55,110 --> 00:00:52,640

handle on is what are the effects of

26

00:00:56,869 --> 00:00:55,120

extended microgravity on fine motor

27

00:00:58,389 --> 00:00:56,879

skills we don't really have a complete

28

00:00:59,830 --> 00:00:58,399

data set in that area

29

00:01:01,830 --> 00:00:59,840

and so the results are kind of

30

00:01:04,149 --> 00:01:01,840

inconclusive at this point okay and when

31

00:01:06,230 --> 00:01:04,159

you talk fine motor skills what what

32

00:01:07,750 --> 00:01:06,240

falls into that category

33

00:01:09,750 --> 00:01:07,760

well it's important to note that this

34

00:01:11,990 --> 00:01:09,760

study is not a medical study it is a

35

00:01:13,510 --> 00:01:12,000

space human factors engineering study

36

00:01:15,749 --> 00:01:13,520

okay and what that means is that we're

37

00:01:17,670 --> 00:01:15,759

very focused on the effects of

38

00:01:20,310 --> 00:01:17,680

long-duration microgravity on task

39

00:01:22,310 --> 00:01:20,320

performance specifically fine motor task

40

00:01:24,550 --> 00:01:22,320

performance the type that's required to

41

00:01:26,550 --> 00:01:24,560

interact with computer-based devices

42

00:01:29,429 --> 00:01:26,560

like tablet computers with touch screens

43

00:01:31,590 --> 00:01:29,439

so a lot of dexterous activities things

44

00:01:32,710 --> 00:01:31,600

like that just really you know working

45

00:01:34,390 --> 00:01:32,720

with their hands a lot that kind of

46

00:01:36,310 --> 00:01:34,400

falls into the fine motor

47

00:01:39,350 --> 00:01:36,320

exactly and particularly human computer

48

00:01:41,429 --> 00:01:39,360

action interaction so your ability to

49

00:01:43,590 --> 00:01:41,439

interact with user interface pointing

50

00:01:46,069 --> 00:01:43,600

clicking dragging targets on the screen

51
00:01:47,590 --> 00:01:46,079
okay and so we've had crews flying to

52
00:01:49,270 --> 00:01:47,600
the international space station for

53
00:01:51,749 --> 00:01:49,280
years now and i mean what are some of

54
00:01:54,069 --> 00:01:51,759
the things that we've seen with their

55
00:01:56,709 --> 00:01:54,079
you know fine motor skills in that time

56
00:01:58,310 --> 00:01:56,719
so far we know for the most part crews

57
00:02:00,310 --> 00:01:58,320
have been very successful in completing

58
00:02:03,270 --> 00:02:00,320
their mission objectives and we really

59
00:02:05,030 --> 00:02:03,280
haven't seen uh problems but there

60
00:02:07,109 --> 00:02:05,040
haven't been a lot of studies looking at

61
00:02:08,869 --> 00:02:07,119
the fine details of how long tasks are

62
00:02:10,869 --> 00:02:08,879
taking to perform there have been a few

63
00:02:12,390 --> 00:02:10,879

studies that have shown tasks take

64

00:02:14,309 --> 00:02:12,400

longer in microgravity than on the

65

00:02:15,910 --> 00:02:14,319

ground but really none of the studies

66

00:02:17,270 --> 00:02:15,920

completed have looked at the types of

67

00:02:19,270 --> 00:02:17,280

tests that we're including in this

68

00:02:21,589 --> 00:02:19,280

investigation those specifically

69

00:02:24,229 --> 00:02:21,599

targeted at working with computer-based

70

00:02:25,830 --> 00:02:24,239

devices okay walk me walk me through

71

00:02:27,750 --> 00:02:25,840

some of the tests that you guys are

72

00:02:30,070 --> 00:02:27,760

going to be doing how are you collecting

73

00:02:32,470 --> 00:02:30,080

you know the data for this study

74

00:02:34,949 --> 00:02:32,480

okay so we're going to have crew members

75

00:02:37,110 --> 00:02:34,959

complete four different types of tasks

76

00:02:38,390 --> 00:02:37,120

these have been very specifically chosen

77

00:02:40,150 --> 00:02:38,400

because they

78

00:02:43,110 --> 00:02:40,160

include the component actions of

79

00:02:45,830 --> 00:02:43,120

interacting with a computer-based device

80

00:02:46,470 --> 00:02:45,840

they are a pointing task a dragging task

81

00:02:57,270 --> 00:02:46,480

a

82

00:02:59,430 --> 00:02:57,280

on iss for science so it's kind of

83

00:03:01,430 --> 00:02:59,440

exciting okay yeah i mean they use them

84

00:03:03,430 --> 00:03:01,440

for a lot of just reading manuals and

85

00:03:06,149 --> 00:03:03,440

stuff like that and so and this is

86

00:03:07,990 --> 00:03:06,159

important because you know so much more

87

00:03:10,070 --> 00:03:08,000

and more things are computerized and

88

00:03:11,589 --> 00:03:10,080

miniaturized so really tracking that

89

00:03:13,350 --> 00:03:11,599

fine motor skill could be important and

90

00:03:15,509 --> 00:03:13,360

we need to see if there is anything that

91

00:03:17,270 --> 00:03:15,519

could inhibit that correct absolutely

92

00:03:19,589 --> 00:03:17,280

and our real concern is just making sure

93

00:03:21,830 --> 00:03:19,599

that in the future if a crew member goes

94

00:03:23,509 --> 00:03:21,840

on a long duration flight to mars for

95

00:03:25,750 --> 00:03:23,519

example that when they go down to the

96

00:03:27,350 --> 00:03:25,760

planetary surface and need to interact

97

00:03:29,509 --> 00:03:27,360

with their computer-based devices they

98

00:03:31,270 --> 00:03:29,519

can do so with accuracy okay and what

99

00:03:33,509 --> 00:03:31,280

are some of the so much of the research

100

00:03:35,509 --> 00:03:33,519

we do on station has direct effects and

101
00:03:36,949 --> 00:03:35,519
benefits for us down here on earth what

102
00:03:38,630 --> 00:03:36,959
are some of the benefits or some of the

103
00:03:40,309 --> 00:03:38,640
things that we could hope to learn from

104
00:03:42,070 --> 00:03:40,319
this study that you know you and i down

105
00:03:44,390 --> 00:03:42,080
here on earth might you know benefit

106
00:03:46,070 --> 00:03:44,400
from we're very excited about the

107
00:03:48,630 --> 00:03:46,080
development of this fine motor skills

108
00:03:50,949 --> 00:03:48,640
test battery and we think that it has

109
00:03:53,350 --> 00:03:50,959
promised to be used as a diagnostic tool

110
00:03:56,390 --> 00:03:53,360
or rehabilitation tool for earth

111
00:03:58,149 --> 00:03:56,400
populations who have fine motor deficits

112
00:03:59,990 --> 00:03:58,159
and that would include people for

113
00:04:02,390 --> 00:04:00,000

example that have brain injuries or

114

00:04:04,309 --> 00:04:02,400

suffering from diseases like parkinson's

115

00:04:05,830 --> 00:04:04,319

okay so not only safeguarding our

116

00:04:07,350 --> 00:04:05,840

astronauts and making sure they'll be

117

00:04:09,030 --> 00:04:07,360

able to work when they're heading off to

118

00:04:10,710 --> 00:04:09,040

mars but also potentially helping you

119

00:04:13,030 --> 00:04:10,720

know some of us down here on earth

120

00:04:14,550 --> 00:04:13,040

absolutely very cool well again dr tina

121

00:04:16,710 --> 00:04:14,560

holden the principal investigator for

122

00:04:18,150 --> 00:04:16,720

fine motor skills taking place onboard

123

00:04:20,229 --> 00:04:18,160

the international space station right

124

00:04:22,069 --> 00:04:20,239

now with the one-year crew member scott

125

00:04:23,590 --> 00:04:22,079

kelly mikhail kornanko doctor thank you

