
SpacetoGround

1
00:00:00,179 --> 00:00:04,850
foreign

2
00:00:08,870 --> 00:00:06,829
welcome to space to ground and welcome

3
00:00:12,730 --> 00:00:08,880
to the space vehicle mock-up facility at

4
00:00:17,769 --> 00:00:15,350
this is where astronauts get to train on

5
00:00:20,570 --> 00:00:17,779
full-scale components of space Vehicles

6
00:00:22,490 --> 00:00:20,580
every detail down to the switch is as

7
00:00:24,230 --> 00:00:22,500
close to the actual flying vehicle as

8
00:00:27,470 --> 00:00:24,240
possible so when they get to space

9
00:00:29,990 --> 00:00:27,480
Everything feels and looks familiar one

10
00:00:31,250 --> 00:00:30,000
of the latest mock-ups here is Orion the

11
00:00:33,229 --> 00:00:31,260
spacecraft that will take the next

12
00:00:36,470 --> 00:00:33,239
humans to the Moon again for the first

13
00:00:38,090 --> 00:00:36,480

time in more than 50 years four human

14
00:00:40,369 --> 00:00:38,100
beings will be aboard Orion during the

15
00:00:42,770 --> 00:00:40,379
Artemis 2 mission one Canadian and three

16
00:00:44,810 --> 00:00:42,780
NASA astronauts they'll sit right here

17
00:00:47,750 --> 00:00:44,820
where I'm sitting but in a real deal

18
00:00:49,310 --> 00:00:47,760
Orion spacecraft Bound for the Moon

19
00:00:51,290 --> 00:00:49,320
we've actually been preparing for a

20
00:00:52,610 --> 00:00:51,300
return to the moon for a long time the

21
00:00:54,229 --> 00:00:52,620
work that we've been conducting aboard

22
00:00:56,869 --> 00:00:54,239
the International Space Station has been

23
00:00:58,250 --> 00:00:56,879
crucial in our future lunar missions to

24
00:00:59,569 --> 00:00:58,260
learn more about the research we've been

25
00:01:00,950 --> 00:00:59,579
doing with astronauts on the

26
00:01:02,810 --> 00:01:00,960
International Space Station missions

27
00:01:04,310 --> 00:01:02,820
we're joined by Steve Platz the chief

28
00:01:05,870 --> 00:01:04,320
scientist for NASA's human research

29
00:01:07,070 --> 00:01:05,880
program here at NASA's Johnson Space

30
00:01:09,170 --> 00:01:07,080
Center

31
00:01:10,730 --> 00:01:09,180
Steve thanks so much for joining us I'm

32
00:01:12,230 --> 00:01:10,740
sure you can name hundreds of

33
00:01:13,370 --> 00:01:12,240
experiments going on aboard the

34
00:01:15,109 --> 00:01:13,380
International Space Station that have to

35
00:01:16,910 --> 00:01:15,119
do with human research uh what are some

36
00:01:18,530 --> 00:01:16,920
that come to mind yep quite a few going

37
00:01:20,749 --> 00:01:18,540
on right now and one I like to talk

38
00:01:22,190 --> 00:01:20,759

about is studying the immune system so

39
00:01:24,230 --> 00:01:22,200
you know after the pandemic we're all

40
00:01:25,850 --> 00:01:24,240
used to talking about immunity but we

41
00:01:27,710 --> 00:01:25,860
know that the immune system changes in

42
00:01:28,969 --> 00:01:27,720
space flight we saw it in shuttle and

43
00:01:31,310 --> 00:01:28,979
we've definitely seen it in space

44
00:01:33,649 --> 00:01:31,320
station we want to know how that will

45
00:01:35,749 --> 00:01:33,659
change going to the moon and especially

46
00:01:38,090 --> 00:01:35,759
going to Mars we're looking at blood

47
00:01:39,649 --> 00:01:38,100
samples see if any of the chemicals are

48
00:01:42,050 --> 00:01:39,659
changing and then we also look at the

49
00:01:44,450 --> 00:01:42,060
cells how do the cells respond to that

50
00:01:45,950 --> 00:01:44,460
time and space to microgravity so it

51
00:01:48,109 --> 00:01:45,960
sounds like cells and Immunity is a

52
00:01:49,490 --> 00:01:48,119
Biology experiment but do you have other

53
00:01:51,230 --> 00:01:49,500
biology experiments going on in space

54
00:01:54,350 --> 00:01:51,240
station we do we collaborate a lot with

55
00:01:55,789 --> 00:01:54,360
the space biology program and we have an

56
00:01:57,410 --> 00:01:55,799
experiment called veggie that we're

57
00:01:59,510 --> 00:01:57,420
really excited about and in that

58
00:02:01,789 --> 00:01:59,520
experiment space biology is interested

59
00:02:03,889 --> 00:02:01,799
in how do the plants grow so how do you

60
00:02:05,929 --> 00:02:03,899
package the seeds how do you what type

61
00:02:08,330 --> 00:02:05,939
of media do you use how do you water

62
00:02:10,910 --> 00:02:08,340
them in space with no gravity what we're

63
00:02:13,970 --> 00:02:10,920

interested in is the human component so

64
00:02:15,530 --> 00:02:13,980
what is that counter measure to Growing

65
00:02:17,150 --> 00:02:15,540
the plants we've actually had crew name

66
00:02:18,770 --> 00:02:17,160
their plants that get really attached to

67
00:02:20,750 --> 00:02:18,780
the plants as they're growing them they

68
00:02:22,610 --> 00:02:20,760
talk to their plants but then the

69
00:02:24,949 --> 00:02:22,620
psychological countermeasure the benefit

70
00:02:26,930 --> 00:02:24,959
of eating a fresh salad in the middle of

71
00:02:28,729 --> 00:02:26,940
your mission is huge and then also the

72
00:02:30,830 --> 00:02:28,739
nutritional benefit that we have from

73
00:02:33,410 --> 00:02:30,840
growing our own crops and as we think

74
00:02:35,270 --> 00:02:33,420
about going to Mars long-term missions

75
00:02:37,250 --> 00:02:35,280
you know will we have to grow crops

76
00:02:38,690 --> 00:02:37,260
there as well so this gives us a head

77
00:02:40,070 --> 00:02:38,700
start on that so it sounds like they

78
00:02:42,170 --> 00:02:40,080
actually get to become space Farmers

79
00:02:44,030 --> 00:02:42,180
they do they do but no potatoes yet

80
00:02:45,830 --> 00:02:44,040
sounds like there's tons going on in

81
00:02:47,509 --> 00:02:45,840
microgravity that we're researching what

82
00:02:49,790 --> 00:02:47,519
about here on Earth yeah you know it's

83
00:02:52,009 --> 00:02:49,800
really expensive to do experiments in

84
00:02:54,110 --> 00:02:52,019
space you have to fly all the equipment

85
00:02:55,670 --> 00:02:54,120
up you have to bring samples back and

86
00:02:57,410 --> 00:02:55,680
you have a limited number of crew

87
00:02:59,210 --> 00:02:57,420
members that you can have access to so

88
00:03:00,890 --> 00:02:59,220

we have facilities here on Earth that we

89
00:03:04,070 --> 00:03:00,900
call analog some of them are for

90
00:03:05,690 --> 00:03:04,080
isolation simulating that closeness of a

91
00:03:07,670 --> 00:03:05,700
small group of people in a confined

92
00:03:09,410 --> 00:03:07,680
space where you can't really get out and

93
00:03:11,449 --> 00:03:09,420
then we also have a bed rest facility in

94
00:03:13,670 --> 00:03:11,459
Cologne Germany where we study the

95
00:03:16,550 --> 00:03:13,680
microgravity aspect so we put them at

96
00:03:18,649 --> 00:03:16,560
six degree head down tilt for you know

97
00:03:20,809 --> 00:03:18,659
several months at a time and then study

98
00:03:22,550 --> 00:03:20,819
how that fluid shift and how that

99
00:03:24,470 --> 00:03:22,560
deconditioning affects the human body

100
00:03:25,729 --> 00:03:24,480
wow so in addition to the ones you

101
00:03:28,009 --> 00:03:25,739
mentioned I know that we've got our

102
00:03:29,990 --> 00:03:28,019
chipia simulated Mars mission so it

103
00:03:31,610 --> 00:03:30,000
sounds like we get to study isolation

104
00:03:34,190 --> 00:03:31,620
and confinement without even leaving the

105
00:03:36,649 --> 00:03:34,200
Earth we do yes so Steve I wanted to ask

106
00:03:37,729 --> 00:03:36,659
you I heard that when astronauts get

107
00:03:39,770 --> 00:03:37,739
home from the International Space

108
00:03:41,630 --> 00:03:39,780
Station as soon as they land they have

109
00:03:43,670 --> 00:03:41,640
to do an obstacle course is that true

110
00:03:45,350 --> 00:03:43,680
yeah know we've had several experiments

111
00:03:46,970 --> 00:03:45,360
like that and the ones we're doing now

112
00:03:49,130 --> 00:03:46,980
they're designed to look at the sensory

113
00:03:51,890 --> 00:03:49,140

motor system so that's your sense of

114
00:03:53,990 --> 00:03:51,900
balance your your what controls your

115
00:03:55,789 --> 00:03:54,000
gait how you walk how you perceive the

116
00:03:57,589 --> 00:03:55,799
world up and down and those kind of

117
00:03:59,869 --> 00:03:57,599
things so we know that changes in space

118
00:04:02,449 --> 00:03:59,879
flight and the longer you're in space

119
00:04:05,449 --> 00:04:02,459
it's likely the the worst that could be

120
00:04:08,449 --> 00:04:05,459
so we're studying that now where we we

121
00:04:09,830 --> 00:04:08,459
do obstacle courses before flight and

122
00:04:11,869 --> 00:04:09,840
then when they come home to see how

123
00:04:13,550 --> 00:04:11,879
space flight has changed that system so

124
00:04:17,330 --> 00:04:13,560
it sounds like when we go to the moon or

125
00:04:19,729 --> 00:04:17,340
Mars we'll know will they be able to hit

126
00:04:21,590 --> 00:04:19,739
the ground running or will they need a

127
00:04:23,030 --> 00:04:21,600
couple or will they need a while to get

128
00:04:24,590 --> 00:04:23,040
their landlines out of them yep that's

129
00:04:26,510 --> 00:04:24,600
exactly why we're doing that experiment

130
00:04:28,070 --> 00:04:26,520
yep very cool well Steve thanks so much

131
00:04:29,870 --> 00:04:28,080
for joining us oh you're welcome

132
00:04:31,730 --> 00:04:29,880
so learn more about NASA's human

133
00:04:34,070 --> 00:04:31,740
research program be sure to follow at

134
00:04:36,170 --> 00:04:34,080
NASA Johnson on social media and be sure

135
00:04:38,150 --> 00:04:36,180
to watch NASA TV on April 3rd to find

136
00:04:40,010 --> 00:04:38,160
out which astronauts are traveling to

137
00:04:41,810 --> 00:04:40,020
the Moon putting some of this amazing

138
00:04:43,430 --> 00:04:41,820

research to good work