SPACE STATION STORIES

1
00:00:08,730 --> 00:00:06,269
human beings want to go to Mars it's a

2
00:00:12,360 --> 00:00:08,740
fabulous destination for us to explore

3
00:00:14,699 --> 00:00:12,370
it has so many scientific questions that

4
00:00:16,760 --> 00:00:14,709
we could answer and it might actually be

5
00:00:20,179 --> 00:00:16,770
the first place where we find life

6
00:00:23,009 --> 00:00:20,189
beyond the atmosphere of our own earth

7
00:00:24,779 --> 00:00:23,019
we're already working on what to do when

8
00:00:27,300 --> 00:00:24,789
we get there and how to protect the

9
00:00:29,640 --> 00:00:27,310
people who'll make the trip we're doing

10
00:00:32,130 --> 00:00:29,650
quite a bit now actually in many

11
00:00:34,470 --> 00:00:32,140
different fields medical engineering

12
00:00:38,040 --> 00:00:34,480
social sciences to understand what we

13
00:00:39,979 --> 00:00:38,050

have to to send people to Mars and much

14
00:00:58,430 --> 00:00:39,989
of that work is in progress right now

15
00:01:03,420 --> 00:01:00,990
since the first people flew in space

16
00:01:05,730 --> 00:01:03,430
we've been studying how their bodies

17
00:01:08,520 --> 00:01:05,740
react in an environment where everything

18
00:01:10,920 --> 00:01:08,530
is up in the air because they're

19
00:01:12,900 --> 00:01:10,930
weightless you may develop motion

20
00:01:15,750 --> 00:01:12,910
sickness you will definitely have fluid

21
00:01:18,330 --> 00:01:15,760
shifts into your chest and head

22
00:01:20,930 --> 00:01:18,340
you will lose muscle strength you'll

23
00:01:23,280 --> 00:01:20,940
lose bone strength you will be receiving

24
00:01:25,020 --> 00:01:23,290
radiation that we don't receive on the

25
00:01:27,810 --> 00:01:25,030
ground and we're not sure exactly what

26
00:01:29,880 --> 00:01:27,820
that will do exercise is a very

27
00:01:32,130 --> 00:01:29,890
effective countermeasure that coupled

28
00:01:34,230 --> 00:01:32,140
with drugs used for osteoporosis have

29
00:01:36,390 --> 00:01:34,240
allowed us to eliminate bone loss in

30
00:01:38,790 --> 00:01:36,400
most or all of the astronauts that have

31
00:01:41,100 --> 00:01:38,800
done both the exercise and taking the

32
00:01:43,469 --> 00:01:41,110
drugs but there's also the isolated

33
00:01:45,450 --> 00:01:43,479
confined extreme environment that the

34
00:01:47,880 --> 00:01:45,460
astronauts are in and that's a challenge

35
00:01:50,670 --> 00:01:47,890
to the psychology and mental health and

36
00:01:52,410 --> 00:01:50,680
performance on the international space

37
00:01:54,300 --> 00:01:52,420
station we've studied people in the

38
00:01:54,810 --> 00:01:54,310

space environment for six months at a

39
00:02:00,750 --> 00:01:54,820
time

40
00:02:02,970 --> 00:02:00,760
as long Mars missions may take 30 months

41
00:02:05,310 --> 00:02:02,980
start to finish so I don't think it's a

42
00:02:07,080 --> 00:02:05,320
bad idea to start getting some longer

43
00:02:08,820 --> 00:02:07,090
experience on the International Space

44
00:02:12,210 --> 00:02:08,830
Station to give us an idea of what's

45
00:02:14,850 --> 00:02:12,220
awaiting us on these future very long

46
00:02:17,370 --> 00:02:14,860
flights so the station partners are

47
00:02:19,620 --> 00:02:17,380
taking the next step for the first time

48
00:02:23,610 --> 00:02:19,630
ever on this vehicle a pair of crew

49
00:02:25,470 --> 00:02:23,620
members is going to space for a year my

50
00:02:28,650 --> 00:02:25,480
first flight was very warning there are

51
00:02:30,660 --> 00:02:28,660
certain times that are you know fun it

52
00:02:33,210 --> 00:02:30,670
is very challenging to live on the space

53
00:02:37,170 --> 00:02:33,220
station for six months if we're gonna go

54
00:02:39,990 --> 00:02:37,180
to Mars we need to understand how the

55
00:02:44,460 --> 00:02:40,000
human body reacts in space for longer

56
00:02:46,979 --> 00:02:44,470
periods of time chelation for Arabic you

57
00:02:47,740 --> 00:02:46,989
see a military Buddhist new Messiah of a

58
00:02:52,780 --> 00:02:47,750
planet and

59
00:02:55,570 --> 00:02:52,790
nayad solution is STM watney's Birla

60
00:02:59,710 --> 00:02:55,580
here the palooka Vaqueros a logic with

61
00:03:01,960 --> 00:02:59,720
my Damini station science during this

62
00:03:03,760 --> 00:03:01,970
year we'll continue to study bone and

63
00:03:06,460 --> 00:03:03,770

muscle weakness and psychological

64
00:03:09,040 --> 00:03:06,470
effects but there are new goals too like

65
00:03:11,770 --> 00:03:09,050
engaging how being weightless for many

66
00:03:14,860 --> 00:03:11,780
many months impacts fine motor skills

67
00:03:17,350 --> 00:03:14,870
and restful sleep and evaluating Li

68
00:03:19,960 --> 00:03:17,360
adaptation to gravity after the

69
00:03:21,220 --> 00:03:19,970
astronauts land in Central Asia after

70
00:03:23,110 --> 00:03:21,230
the one-year mission will take them into

71
00:03:26,080 --> 00:03:23,120
a small tent and ask him to do certain

72
00:03:28,600 --> 00:03:26,090
very simple and very routine activities

73
00:03:30,400 --> 00:03:28,610
and measure how much they can and cannot

74
00:03:33,280 --> 00:03:30,410
do after the long period of spaceflight

75
00:03:35,890 --> 00:03:33,290
and the crew will use equipment that's

76
00:03:38,710 --> 00:03:35,900
already on board to try to quantify the

77
00:03:41,979 --> 00:03:38,720
fluid shift that is the prime suspect in

78
00:03:42,900 --> 00:03:41,989
vision changes and maybe do something

79
00:03:44,949 --> 00:03:42,910
about it

80
00:03:46,990 --> 00:03:44,959
wouldn't it be nice if we could change

81
00:03:49,030 --> 00:03:47,000
that fluid distribution in spaceflight

82
00:03:51,610 --> 00:03:49,040
and make measurements of the shape of

83
00:03:53,970 --> 00:03:51,620
the eye and another function and see if

84
00:03:57,460 --> 00:03:53,980
that really is the cause and the effect

85
00:03:59,080 --> 00:03:57,470
at the same time Kelly and Kornienko and

86
00:04:00,910 --> 00:03:59,090
their crewmates will help with the

87
00:04:02,920 --> 00:04:00,920
development of technologies that will

88
00:04:05,530 --> 00:04:02,930

need to be improved if future deep space

89
00:04:07,570 --> 00:04:05,540
missions are to succeed the

90
00:04:10,030 --> 00:04:07,580
International Space Station is a testbed

91
00:04:13,539 --> 00:04:10,040
allows us to test our communications

92
00:04:16,810 --> 00:04:13,549
methods perfect them so that we know how

93
00:04:19,180 --> 00:04:16,820
to handle large delays later on station

94
00:04:21,340 --> 00:04:19,190
robotics on ISS are developing tools

95
00:04:22,930 --> 00:04:21,350
that are going to assist crewmembers for

96
00:04:25,540 --> 00:04:22,940
future missions especially long-duration

97
00:04:27,850 --> 00:04:25,550
missions to Mars but we're gonna assist

98
00:04:30,370 --> 00:04:27,860
the crew members by having the robots do

99
00:04:31,900 --> 00:04:30,380
the repetitive tasks and also do the the

100
00:04:33,280 --> 00:04:31,910
tasks that are in the dangerous

101
00:04:35,350 --> 00:04:33,290
environment that we don't want to

102
00:04:37,180 --> 00:04:35,360
subject our crew members to when we go

103
00:04:38,890 --> 00:04:37,190
to sit down and finally design the new

104
00:04:40,600 --> 00:04:38,900
next-generation regenerative life

105
00:04:42,520 --> 00:04:40,610
support for spacecraft to take us to

106
00:04:44,020 --> 00:04:42,530
Mars we'll be able to draw on all the

107
00:04:46,030 --> 00:04:44,030
operational experience we've gotten with

108
00:04:48,030 --> 00:04:46,040
the space station systems to improve the

109
00:04:50,330 --> 00:04:48,040
system and make a more reliable and

110
00:04:52,740 --> 00:04:50,340
user-friendly system for the crew

111
00:04:54,900 --> 00:04:52,750
while fostering international

112
00:04:57,719 --> 00:04:54,910
cooperation and providing benefits to

113
00:04:59,580 --> 00:04:57,729

people on earth right now and serving as

114
00:05:02,309 --> 00:04:59,590
a destination for commercial vehicles

115
00:05:04,649 --> 00:05:02,319
and research the international space

116
00:05:07,740 --> 00:05:04,659
station is enabling future space