1
00:00:05,829 --> 00:00:02,629
the international space station's

2
00:00:07,990 --> 00:00:05,839
expedition 36 and 37 is an increment

3
00:00:11,190 --> 00:00:08,000
filled with visiting vehicles and

4
00:00:15,270 --> 00:00:11,200
spacewalks all on top of a packed agenda

5
00:00:20,630 --> 00:00:18,550
the iss today is

6
00:00:23,349 --> 00:00:20,640
pretty much the pinnacle of

7
00:00:25,990 --> 00:00:23,359
space exploration arts

8
00:00:28,630 --> 00:00:26,000
and it shows how many different

9
00:00:33,750 --> 00:00:28,640
countries dozens of countries engineers

10
00:00:35,110 --> 00:00:33,760
specialists can work jointly on one

11
00:00:35,910 --> 00:00:35,120
project

12
00:00:38,470 --> 00:00:35,920
and

13
00:00:40,389 --> 00:00:38,480

to work reliably

14
00:00:42,790 --> 00:00:40,399
some of the dozens and dozens of

15
00:00:44,869 --> 00:00:42,800
experiments are automated and monitored

16
00:00:47,029 --> 00:00:44,879
from control centers on earth

17
00:00:49,430 --> 00:00:47,039
others require a helping hand from the

18
00:00:51,510 --> 00:00:49,440
laboratory assistance on orbit

19
00:00:55,029 --> 00:00:51,520
taking care of those human crew members

20
00:00:56,830 --> 00:00:55,039
is a top priority the most important

21
00:01:01,510 --> 00:00:56,840
purpose of

22
00:01:05,910 --> 00:01:01,520
iss is to to learn to study how people

23
00:01:09,190 --> 00:01:05,920
can live in space how to make their life

24
00:01:11,590 --> 00:01:09,200
there more safely and these crew members

25
00:01:14,149 --> 00:01:11,600
are subjects for tests designed to learn

26
00:01:16,950 --> 00:01:14,159
exactly how a human body changes during

27
00:01:18,550 --> 00:01:16,960
an extended period of time in space

28
00:01:20,789 --> 00:01:18,560
some of these tests can also have

29
00:01:21,749 --> 00:01:20,799
benefits for people who never go to

30
00:01:24,310 --> 00:01:21,759
space

31
00:01:27,670 --> 00:01:24,320
for example there's an experiment called

32
00:01:30,469 --> 00:01:27,680
pro k it's a very simple experiment

33
00:01:32,950 --> 00:01:30,479
apparently where we're going to look how

34
00:01:34,469 --> 00:01:32,960
a diet can influence

35
00:01:36,710 --> 00:01:34,479
the loss

36
00:01:38,350 --> 00:01:36,720
of calcium from our bones which could

37
00:01:40,950 --> 00:01:38,360
have an impact on the treatment of

38
00:01:43,749 --> 00:01:40,960

osteoporosis for people on earth

39
00:01:46,789 --> 00:01:43,759
another is called sarcolab we will be

40
00:01:49,030 --> 00:01:46,799
looking at how

41
00:01:52,469 --> 00:01:49,040
the sarcomeres which is it's part of our

42
00:01:53,670 --> 00:01:52,479
muscles how do they work how do they

43
00:01:55,590 --> 00:01:53,680
interact

44
00:01:57,109 --> 00:01:55,600
what happens to them when

45
00:01:59,190 --> 00:01:57,119
they're put in a condition that is

46
00:02:01,510 --> 00:01:59,200
different from what they're used to as

47
00:02:03,350 --> 00:02:01,520
in weak due to no gravity to work

48
00:02:05,350 --> 00:02:03,360
against similar to the condition of

49
00:02:08,150 --> 00:02:05,360
someone who is bedridden

50
00:02:09,830 --> 00:02:08,160
another area of concern is ocular health

51
00:02:11,750 --> 00:02:09,840
since it's been discovered that some

52
00:02:13,350 --> 00:02:11,760
crew members have been coming home with

53
00:02:15,830 --> 00:02:13,360
diminished vision

54
00:02:17,430 --> 00:02:15,840
and it's not known exactly at this time

55
00:02:18,869 --> 00:02:17,440
what causes this but it's an important

56
00:02:20,630 --> 00:02:18,879
thing especially if we're going to be

57
00:02:23,670 --> 00:02:20,640
spending longer and longer times will it

58
00:02:25,430 --> 00:02:23,680
get worse as the time goes on and so

59
00:02:27,270 --> 00:02:25,440
they're really starting to do a lot of

60
00:02:29,670 --> 00:02:27,280
experiments with us

61
00:02:31,110 --> 00:02:29,680
taking images of the retina taking

62
00:02:32,550 --> 00:02:31,120
pressures

63
00:02:35,350 --> 00:02:32,560

looking at your you know getting

64
00:02:37,589 --> 00:02:35,360
eyesight checks throughout the mission

65
00:02:39,430 --> 00:02:37,599
the station crew is also learning about

66
00:02:40,550 --> 00:02:39,440
technology that can have an impact on

67
00:02:42,550 --> 00:02:40,560
the ground

68
00:02:44,869 --> 00:02:42,560
for instance crew members are proving

69
00:02:48,309 --> 00:02:44,879
the efficacy of using an ultrasound to

70
00:02:51,430 --> 00:02:48,319
examine the spine rather than an mri

71
00:02:53,750 --> 00:02:51,440
but ultrasound is a very now inexpensive

72
00:02:57,110 --> 00:02:53,760
and can come in small briefcase size

73
00:02:59,910 --> 00:02:57,120
packaging so that in my opinion would

74
00:03:01,430 --> 00:02:59,920
spread to lots of places on this planet

75
00:03:03,990 --> 00:03:01,440
that don't have the means and the

76
00:03:05,990 --> 00:03:04,000
financial wherewithal to to get this

77
00:03:07,990 --> 00:03:06,000
expensive medical equipment

78
00:03:10,070 --> 00:03:08,000
among these experiments designed to

79
00:03:11,830 --> 00:03:10,080
prepare people for deep space missions

80
00:03:13,990 --> 00:03:11,840
in the future are improved

81
00:03:16,149 --> 00:03:14,000
countermeasures to fight the bad effects

82
00:03:18,470 --> 00:03:16,159
of weightlessness better exercise

83
00:03:20,550 --> 00:03:18,480
equipment and protocols that are already

84
00:03:21,990 --> 00:03:20,560
making a difference in mitigating bone

85
00:03:23,750 --> 00:03:22,000
and muscle loss

86
00:03:26,470 --> 00:03:23,760
now on station we have very nice

87
00:03:28,149 --> 00:03:26,480
equipment it's irate equipment

88
00:03:31,509 --> 00:03:28,159

it's physical training

89
00:03:33,509 --> 00:03:31,519
it's like our gym my second flight it

90
00:03:35,830 --> 00:03:33,519
was long flight on

91
00:03:39,190 --> 00:03:35,840
station in 2007 we

92
00:03:41,110 --> 00:03:39,200
don't have irat we have a e-read yes

93
00:03:44,630 --> 00:03:41,120
it's more simple

94
00:03:47,270 --> 00:03:44,640
yes and i know about myself from 2010

95
00:03:49,110 --> 00:03:47,280
when i used tired my physical condition

96
00:03:51,750 --> 00:03:49,120
it was more

97
00:03:54,390 --> 00:03:51,760
better than on 2007.

98
00:03:56,869 --> 00:03:54,400
but that's not all the station's several

99
00:03:59,190 --> 00:03:56,879
laboratories are also hosting research

100
00:04:01,429 --> 00:03:59,200
in a range of disciplines that is taking

101
00:04:03,990 --> 00:04:01,439
advantage of the lack of gravity the

102
00:04:05,190 --> 00:04:04,000
italian combustion experiment green air

103
00:04:07,429 --> 00:04:05,200
is one of them

104
00:04:10,470 --> 00:04:07,439
we will study its combustion

105
00:04:13,429 --> 00:04:10,480
uh in order to uh to understand

106
00:04:15,589 --> 00:04:13,439
how to ameliorate to make it better so

107
00:04:17,270 --> 00:04:15,599
that the results of combustion which

108
00:04:20,150 --> 00:04:17,280
normally have toxic

109
00:04:21,909 --> 00:04:20,160
substances how to to make them

110
00:04:25,030 --> 00:04:21,919
either disappear or reduce them to the

111
00:04:27,110 --> 00:04:25,040
minimum a lot of the processes that take

112
00:04:28,390 --> 00:04:27,120
place on earth as in

113
00:04:31,030 --> 00:04:28,400

fires

114
00:04:33,830 --> 00:04:31,040
combustions of materials

115
00:04:36,710 --> 00:04:33,840
solidification of materials

116
00:04:39,189 --> 00:04:36,720
flow of liquids all of that is highly

117
00:04:41,510 --> 00:04:39,199
affected by the force of gravity

118
00:04:43,830 --> 00:04:41,520
and all of that along with earth

119
00:04:46,150 --> 00:04:43,840
observation technology development and

120
00:04:47,510 --> 00:04:46,160
education are being studied on this

121
00:04:50,629 --> 00:04:47,520
mission

122
00:04:52,390 --> 00:04:50,639
during expeditions 36 and 37 the crews

123
00:04:53,670 --> 00:04:52,400
expect to greet most of the cargo

124
00:04:56,230 --> 00:04:53,680
vehicles that are keeping the

125
00:04:58,390 --> 00:04:56,240
international space station supplied the

126
00:05:00,390 --> 00:04:58,400
fourth of the european space agency's

127
00:05:02,950 --> 00:05:00,400
automated transfer vehicles

128
00:05:05,830 --> 00:05:02,960
the fourth h2 transfer vehicle from the

129
00:05:08,310 --> 00:05:05,840
japan aerospace exploration agency a

130
00:05:10,310 --> 00:05:08,320
visit from a russian progress freighter

131
00:05:12,469 --> 00:05:10,320
and we're also hoping that in the period

132
00:05:13,749 --> 00:05:12,479
of time that we're there we'll get the

133
00:05:15,909 --> 00:05:13,759
vehicle from the orbital sciences

134
00:05:17,830 --> 00:05:15,919
corporation the cygnus vehicle it will

135
00:05:20,230 --> 00:05:17,840
be potentially we will get their first

136
00:05:22,310 --> 00:05:20,240
demonstration flight and so that would

137
00:05:24,070 --> 00:05:22,320
be very exciting

138
00:05:26,629 --> 00:05:24,080

all of that visiting traffic is

139
00:05:29,990 --> 00:05:26,639
scheduled during a very busy period for

140
00:05:32,230 --> 00:05:30,000
spacewalks the eva frenzy kicks off in

141
00:05:34,870 --> 00:05:32,240
late june with veteran spacewalker

142
00:05:37,029 --> 00:05:34,880
yurchikhin and first-timer misurkin

143
00:05:39,909 --> 00:05:37,039
replacing a fluid flow regulator on the

144
00:05:42,390 --> 00:05:39,919
zarya module testing the station's coors

145
00:05:44,550 --> 00:05:42,400
automated docking system equipment and

146
00:05:45,909 --> 00:05:44,560
removing an experiment from the exterior

147
00:05:48,310 --> 00:05:45,919
of zvezda

148
00:05:50,550 --> 00:05:48,320
in july there are two spacewalks planned

149
00:05:53,189 --> 00:05:50,560
for cassidy and parmitano who will

150
00:05:54,230 --> 00:05:53,199
become the first italian spacewalker in

151
00:05:56,710 --> 00:05:54,240
history

152
00:05:59,029 --> 00:05:56,720
the tasks for those evas include

153
00:06:00,390 --> 00:05:59,039
replacing a failed transmitter receiver

154
00:06:01,990 --> 00:06:00,400
box for the space-to-ground

155
00:06:03,990 --> 00:06:02,000
communication system

156
00:06:05,909 --> 00:06:04,000
routing power cables from the u.s

157
00:06:08,309 --> 00:06:05,919
segment to the russian segment to

158
00:06:09,990 --> 00:06:08,319
support a new russian laboratory module

159
00:06:12,230 --> 00:06:10,000
being prepared for launch

160
00:06:14,550 --> 00:06:12,240
retrieving scientific payloads and

161
00:06:16,950 --> 00:06:14,560
relocating other hardware

162
00:06:19,110 --> 00:06:16,960
in august yurchikhin and misurkin go

163
00:06:21,189 --> 00:06:19,120

back outside twice

164
00:06:23,430 --> 00:06:21,199
first they'll concentrate on routing

165
00:06:26,150 --> 00:06:23,440
those power and data cables from the us

166
00:06:28,550 --> 00:06:26,160
segment along the length of zarya into

167
00:06:31,110 --> 00:06:28,560
position at poisk to later be connected

168
00:06:33,909 --> 00:06:31,120
to the new russian lab and on the second

169
00:06:36,390 --> 00:06:33,919
eva they'll install hardware for a new

170
00:06:37,909 --> 00:06:36,400
optical telescope and retrieve science

171
00:06:40,629 --> 00:06:37,919
experiments

172
00:06:43,510 --> 00:06:40,639
and then crew changes take over

173
00:06:46,070 --> 00:06:43,520
in mid-september vinogradov's soyuz crew

174
00:06:49,189 --> 00:06:46,080
departs yurchikhin assumes command for

175
00:06:51,510 --> 00:06:49,199
expedition 37 and shortly thereafter he

176
00:06:53,990 --> 00:06:51,520
greets the arrival of veteran cosmonaut

177
00:06:56,469 --> 00:06:54,000
oleg kotov and first-time flyers

178
00:06:58,070 --> 00:06:56,479
astronaut michael hopkins and cosmonaut

179
00:07:00,230 --> 00:06:58,080
sergey ryazanskiy

180
00:07:02,790 --> 00:07:00,240
after just six weeks together they'll

181
00:07:04,550 --> 00:07:02,800
all be joined by cosmonaut michael turin

182
00:07:07,670 --> 00:07:04,560
and astronauts rick mastracchio and

183
00:07:09,909 --> 00:07:07,680
koichi wakata who arrive only days

184
00:07:12,629 --> 00:07:09,919
before your chicken parmitano and nyberg

185
00:07:14,870 --> 00:07:12,639
depart for a landing in kazakhstan to

186
00:07:16,870 --> 00:07:14,880
wrap up their on-orbit part of

187
00:07:18,629 --> 00:07:16,880
humankind's ongoing effort at

188
00:07:21,909 --> 00:07:18,639

exploration

189
00:07:24,070 --> 00:07:21,919
50 years from now we will we will use

190
00:07:26,550 --> 00:07:24,080
uh the science and then technology that

191
00:07:29,589 --> 00:07:26,560
we are creating right now and and that's

192
00:07:31,430 --> 00:07:29,599
why i'm proud of the very

193
00:07:32,309 --> 00:07:31,440
small contribution and i will be able to

194
00:07:34,309 --> 00:07:32,319
give

195
00:07:36,710 --> 00:07:34,319
in my six months increment because i

196
00:07:38,790 --> 00:07:36,720
think that i will be opening the doors