



**Fluid pressure causes
optic nerve compression,
flattening of the back of the eyeball,
and optic disc swelling**

1
00:00:02,070 --> 00:00:00,310

[Music]

2
00:00:04,150 --> 00:00:02,080

we have recently identified that some

3
00:00:05,749 --> 00:00:04,160

astronauts experience changes in their

4
00:00:07,670 --> 00:00:05,759

vision which might be related to the

5
00:00:09,509 --> 00:00:07,680

cardiovascular system

6
00:00:11,270 --> 00:00:09,519

our hearts pump blood around our body

7
00:00:13,110 --> 00:00:11,280

through blood vessels special

8
00:00:15,190 --> 00:00:13,120

adaptations in our bodies ensure that

9
00:00:15,920 --> 00:00:15,200

fluid is evenly distributed despite the

10
00:00:17,990 --> 00:00:15,930

pull of gravity

11
00:00:20,230 --> 00:00:18,000

[Music]

12
00:00:22,070 --> 00:00:20,240

in space astronauts no longer experience

13
00:00:23,590 --> 00:00:22,080

the downward pull of gravity and the

14

00:00:26,550 --> 00:00:23,600

fluid in their bodies tends to move

15

00:00:28,710 --> 00:00:26,560

towards the upper body and the head

16

00:00:30,470 --> 00:00:28,720

our cranium is a rigid container as the

17

00:00:32,549 --> 00:00:30,480

fluid moves towards the head it causes

18

00:00:34,630 --> 00:00:32,559

the pressure inside the skull to rise

19

00:00:35,830 --> 00:00:34,640

this is known as increased intracranial

20

00:00:37,670 --> 00:00:35,840

pressure

21

00:00:39,830 --> 00:00:37,680

the optic nerve travels from the brain

22

00:00:41,670 --> 00:00:39,840

to the eye the increased pressure from

23

00:00:43,830 --> 00:00:41,680

the cranium travels down the nerve and

24

00:00:45,990 --> 00:00:43,840

affects the eye it causes the optic

25

00:00:47,830 --> 00:00:46,000

nerve to be squeezed in the optic disc

26
00:00:48,709 --> 00:00:47,840
where the optic nerve meets the eye to

27
00:00:50,310 --> 00:00:48,719
swell

28
00:00:52,150 --> 00:00:50,320
the back of the eyeball flattens as

29
00:00:53,910 --> 00:00:52,160
pressure builds behind it and the blood

30
00:00:55,270 --> 00:00:53,920
vessels in the back of the eyeball also

31
00:00:57,110 --> 00:00:55,280
swell

32
00:00:59,430 --> 00:00:57,120
these changes can affect the astronaut's

33
00:01:01,670 --> 00:00:59,440
vision one change is that the astronauts

34
00:01:03,750 --> 00:01:01,680
become farsighted a second change is

35
00:01:05,590 --> 00:01:03,760
that they can develop cotton wool spots

36
00:01:07,750 --> 00:01:05,600
which represent damage of the nerve

37
00:01:10,250 --> 00:01:07,760
fibers in the back of the eye these can

38
00:01:11,750 --> 00:01:10,260

cause discrete areas of vision loss

39

00:01:13,270 --> 00:01:11,760

[Music]

40

00:01:14,870 --> 00:01:13,280

nasa is working to understand and

41

00:01:16,550 --> 00:01:14,880

prevent these changes in astronauts

42

00:01:18,630 --> 00:01:16,560

which may also help us understand and

43

00:01:20,480 --> 00:01:18,640

prevent related vision changes here on