

1

00:00:00,000 --> 00:00:03,800

Remember, don't try this at home.

2

00:00:03,800 --> 00:00:09,520

We've got years of experience that keeps us safe.

3

00:00:09,520 --> 00:00:14,240

On this episode of MythBusters...

4

00:00:14,240 --> 00:00:16,000

That is just crazy.

5

00:00:16,000 --> 00:00:20,360

Adam and Jamie test the myth that falling bullets can kill.

6

00:00:20,360 --> 00:00:22,920

Please don't fire bullets into my head.

7

00:00:22,920 --> 00:00:27,000

Take cover as they spray the skies with ammo to find out.

8

00:00:27,000 --> 00:00:30,440

I've been searching across the desert for a pencil-sized hole.

9

00:00:30,440 --> 00:00:36,240

And sit back and unwind as the team takes the top off some more vodka myths.

10

00:00:36,240 --> 00:00:39,280

That's all group cut.

11

00:00:39,280 --> 00:00:41,880

Who are the MythBusters?

12

00:00:41,880 --> 00:00:45,920

Adam Savage.

13

00:00:45,920 --> 00:00:47,200

Jamie Heinemann.

14

00:00:47,200 --> 00:00:49,720

Aren't trace-arounds illegal?

15

00:00:49,720 --> 00:00:53,760

Between them, more than 30 years special effects experience.

16

00:00:53,760 --> 00:00:56,000

That's what I'm talking about.

17

00:00:56,000 --> 00:00:58,200

Joining them, Tori Balachy.

18

00:00:58,200 --> 00:00:59,640

Science is fun.

19

00:00:59,640 --> 00:01:00,880

Carrie Byron.

20

00:01:00,880 --> 00:01:02,080

Guess what I did today?

21

00:01:02,080 --> 00:01:03,720

And Grant Imahara.

22

00:01:03,720 --> 00:01:05,240

You guys ready for this?

23

00:01:05,240 --> 00:01:08,240

They don't just tell the myth.

24

00:01:08,240 --> 00:01:10,240

They put them to the test.

25

00:01:20,240 --> 00:01:21,760

What do we got?

26

00:01:21,760 --> 00:01:24,480

This one's another one of those myths that everybody's heard of.

27

00:01:24,480 --> 00:01:29,600

And that is that if you fire a gun straight up in the air, that the bullet, after it's

28

00:01:29,600 --> 00:01:34,600

done its thing, got all the way up there, is going to come down with lethal velocity.

29

00:01:34,600 --> 00:01:36,920

If it hits you, it'll kill you.

30

00:01:36,920 --> 00:01:40,120

This is the kind of thing that happens on the 4th of July or some type of celebration.

31

00:01:40,120 --> 00:01:45,760

Someone pulls out their gun to add to the festivities.

32

00:01:45,760 --> 00:01:51,160

And the bullets rain down on society and innocent bystanders thinning the herd.

33

00:01:51,160 --> 00:01:52,160

That's it.

34

00:01:52,160 --> 00:01:56,600

What are they talking about when celebrations really go off with a bang?

35

00:01:56,600 --> 00:02:01,920

When revelers get fired up and start firing up.

36

00:02:01,920 --> 00:02:05,640

They think it's harmless fun, but are they right?

37

00:02:05,640 --> 00:02:11,640

Or when the bullets come down, are they still deadly?

38

00:02:11,640 --> 00:02:17,520

To find out, they'll start with some in-shop simulations.

39

00:02:17,520 --> 00:02:23,960

First they'll clock the terminal velocity of a falling bullet.

40

00:02:23,960 --> 00:02:28,560

Then they'll figure a way to fire bullets at terminal velocity to see what damage they

41

00:02:28,560 --> 00:02:29,560

do.

42

00:02:29,560 --> 00:02:38,960

And finally, they'll fire real bullets straight up to see what falling bullets do for real.

43

00:02:38,960 --> 00:02:44,760

So step one, to find out how fast a bullet falls, they want to know how high one goes.

44

00:02:45,120 --> 00:02:49,320

The question is, what height will a bullet go to when you fire it into the air?

45

00:02:49,320 --> 00:02:54,000

And to answer the question, what we were thinking was to correlate the density of ballistics

46

00:02:54,000 --> 00:02:56,400

gel with the density of air.

47

00:02:56,400 --> 00:02:57,400

Huh.

48

00:02:57,400 --> 00:03:02,160

Jamie doesn't seem entirely convinced, but Adam's adamant.

49

00:03:02,160 --> 00:03:04,760

So he plows on alone.

50

00:03:04,760 --> 00:03:09,200

He knows that one cubic centimeter of air weighs 1.2 milligrams.

51

00:03:09,200 --> 00:03:12,080

But what about ballistics gel?

52

00:03:12,080 --> 00:03:14,200

Look at that.

53

00:03:14,200 --> 00:03:16,280

That is so beautiful.

54

00:03:16,280 --> 00:03:22,000

At one gram, ballistics gel is 650 times more dense than air.

55

00:03:22,000 --> 00:03:28,200

So by my theory, if I'm correct, if we fire a bullet into ballistics gel and it goes one

56

00:03:28,200 --> 00:03:33,680

foot, then it would go 650 feet in air.

57

00:03:33,680 --> 00:03:39,120

Next morning, the guys decamp to the police firing range, along with a half a ton of ballistics

58

00:03:39,120 --> 00:03:45,080

gel at it, which they arrange into a 16 foot long block.

59

00:03:45,080 --> 00:03:49,760

After mixing up all this lot, Adam set his sights on some gun fun.

60

00:03:49,760 --> 00:03:53,800

Hey, given that you're always shooting, you mind if I take these shots?

61

00:03:53,800 --> 00:03:59,360

Firearms instructor Sergeant Al Normandy is on hand to keep an eye on the experiment.

62

00:03:59,360 --> 00:04:03,680

First up, a 9 millimeter pistol.

63

00:04:03,680 --> 00:04:05,640

Magazine's out, slides locked back, we're safe.

64

00:04:05,640 --> 00:04:06,640

Go ahead and proceed forward.

65

00:04:06,640 --> 00:04:07,920

Let's take a look at it.

66

00:04:07,920 --> 00:04:08,920

Look at this.

67

00:04:08,920 --> 00:04:09,920

It's beautiful.

68

00:04:09,920 --> 00:04:12,520

The slug made it all the way to the third block.

69

00:04:12,520 --> 00:04:13,520

Look at that.

70

00:04:13,520 --> 00:04:14,520

There it is.

71

00:04:14,520 --> 00:04:15,520

Five feet in.

72

00:04:15,520 --> 00:04:21,520

According to Adam's theory, that's equivalent to 3,250 feet in air.

73

00:04:21,520 --> 00:04:30,800

Now for the 30 odd six, some serious firepower.

74

00:04:30,800 --> 00:04:32,640

What the hell happened to that?

75

00:04:32,640 --> 00:04:34,640

Dude.

76

00:04:34,640 --> 00:04:36,720

I think it got stopped in the first block.

77

00:04:36,720 --> 00:04:43,320

I don't think it moved outside the first block, but I mean, shouldn't it go farther

78

00:04:43,320 --> 00:04:45,840

than the 9 millimeter round?

79

00:04:45,840 --> 00:04:49,320

It's a little counterintuitive, but actually because of the speed of the bullet, the bullet

80

00:04:49,320 --> 00:04:53,480

has a tendency to break up more so than the pistol round, which is technically a very

81

00:04:53,480 --> 00:04:58,320

low velocity projectile.

82

00:04:58,320 --> 00:04:59,320

They've been here before.

83

00:04:59,320 --> 00:05:05,240

In a previous episode, Adam and Jamie discovered that high velocity bullets break up when fired

84

00:05:05,240 --> 00:05:07,440

into water.

85

00:05:07,440 --> 00:05:19,320

And because ballistics gel is 90% water, exactly the same thing happens.

86

00:05:19,320 --> 00:05:26,040

With the experiment dead in the water, Jamie applies the coup de gras.

87

00:05:26,040 --> 00:05:32,080

Oh, that is just crazy.

88

00:05:33,080 --> 00:05:38,520

Crazy, but in terms of how high a rifle bullet goes, totally useless.

89

00:05:38,520 --> 00:05:44,880

Myth one, mythbusters zero.

90

00:05:44,880 --> 00:05:49,520

Around the world, millions of gallons of vodka are consumed every year.

91

00:05:49,520 --> 00:05:56,440

Most people choose to drink it, but the mythbusters have been testing it for other uses.

92

00:05:56,440 --> 00:05:58,640

As a bee killer, it was busted.

93

00:05:58,640 --> 00:05:59,640

That's terrible.

94

00:05:59,640 --> 00:06:00,640

They're drunk.

95

00:06:01,440 --> 00:06:05,280

As a mouthwash for Adam, it defied all odds.

96

00:06:05,280 --> 00:06:06,960

Not that bad.

97

00:06:06,960 --> 00:06:09,560

It even removed the cheese from Adam's feet.

98

00:06:09,560 --> 00:06:15,520

And it rose to the occasion by freshening up the smell of a chain smoking jacket.

99

00:06:15,520 --> 00:06:17,040

So this is the better smelling one, right?

100

00:06:17,040 --> 00:06:21,040

And it's the one that we sprayed vodka on.

101

00:06:23,040 --> 00:06:26,040

And if it's going to help it, just pour it on there.

102

00:06:27,040 --> 00:06:31,480

First up, can vodka combat poison oak?

103

00:06:31,480 --> 00:06:32,720

Why poison oak?

104

00:06:32,720 --> 00:06:34,720

It's another vodka related myth.

105

00:06:34,720 --> 00:06:39,560

Apparently, if you pour vodka over an area that's been affected by poison oak, it will

106

00:06:39,560 --> 00:06:44,160

remove the erythroxiol oil and prevent you from developing a rash.

107

00:06:44,160 --> 00:06:46,960

Tauri's drawn the short straw.

108

00:06:46,960 --> 00:06:51,440

Ironic, isn't it, that I'm protecting myself from poison oak just so that I can rub it

109

00:06:51,440 --> 00:06:52,440

on my arm later?

110

00:06:52,440 --> 00:06:54,120

We don't want it everywhere.

111

00:06:54,120 --> 00:06:59,400

Even more like ghostbusters than mythbusters, Tauri prepares to take one for the team.

112

00:06:59,400 --> 00:07:00,400

This?

113

00:07:00,400 --> 00:07:01,400

Yeah.

114

00:07:01,400 --> 00:07:02,400

Oh.

115

00:07:02,400 --> 00:07:03,400

Seahawk glistens with poison.

116

00:07:03,400 --> 00:07:04,400

Look at that, scissors.

117

00:07:04,400 --> 00:07:07,000

So you guys sure that's poison oak, right?

118

00:07:07,000 --> 00:07:09,440

Yeah, it's got the three leaves.

119

00:07:09,440 --> 00:07:12,840

It's that beautiful dark green color.

120

00:07:12,840 --> 00:07:18,040

Carrie's ruled out of this rash myth as she's been dangerously allergic to poison oak since

121

00:07:18,040 --> 00:07:19,040

childhood.

122

00:07:19,040 --> 00:07:21,800

What are you trying to do, get enough to make a salad?

123

00:07:21,800 --> 00:07:22,800

Cool.

124

00:07:22,920 --> 00:07:26,840

According to some, chewing poison oak protects against its effects.

125

00:07:26,840 --> 00:07:30,080

Others say it will make you very, very sick.

126

00:07:30,080 --> 00:07:32,720

So what's the toxic ingredient?

127

00:07:32,720 --> 00:07:37,680

What makes them painful is the erythroxiol oil, and that's the active ingredient that

128

00:07:37,680 --> 00:07:41,360

causes an allergy in 90% of people.

129

00:07:41,360 --> 00:07:44,520

Remember that figure, 90%.

130

00:07:44,520 --> 00:07:49,560

And the most common side effect is a rash, but some people have such a severe reaction

131

00:07:49,560 --> 00:07:51,080

that they have to be hospitalized.

132

00:07:51,080 --> 00:07:52,080

No problem.

133

00:07:52,080 --> 00:07:56,800

Carrie's health insurance is paid up, and in any case, vodka may just work.

134

00:07:56,800 --> 00:08:00,080

This is going against everything I've ever been taught as a kid.

135

00:08:00,080 --> 00:08:01,880

It boggles my mind.

136

00:08:01,880 --> 00:08:06,200

His arm is divided into three sections, and the poison oak is applied.

137

00:08:06,200 --> 00:08:07,200

Oh.

138

00:08:07,200 --> 00:08:08,200

It's okay.

139

00:08:08,200 --> 00:08:12,280

It's not like you've never had a rash before.

140

00:08:12,280 --> 00:08:16,880

That's right, that was that time that you and I were hanging out, and you gave it.

141

00:08:16,880 --> 00:08:21,080

In section one, they use an orthodox remedy, a commercial balm.

142

00:08:21,080 --> 00:08:22,080

Rub it in.

143

00:08:22,080 --> 00:08:26,360

It cleanses and decontaminates skin by removing the invisible oils.

144

00:08:26,360 --> 00:08:31,280

Now for the vodka, which they pour over a separate section of skin.

145

00:08:31,280 --> 00:08:34,240

The middle section is left untreated as the control.

146

00:08:34,240 --> 00:08:38,640

Well, I hope you don't have a date tonight because you're showing up smelling like liquor,

147

00:08:38,640 --> 00:08:40,080

poison oak on your arm.

148

00:08:40,080 --> 00:08:41,080

It works every time.

149

00:08:41,080 --> 00:08:46,480

Okay, now I guess we just wait and see what happens.

150

00:08:46,480 --> 00:08:49,960

Let's all group hug.

151

00:08:49,960 --> 00:08:59,480

Let the games begin.

152

00:08:59,480 --> 00:09:03,440

And can you find a myth buster who isn't immune to poison oak?

153

00:09:03,440 --> 00:09:04,440

I have no rash.

154

00:09:04,440 --> 00:09:05,440

But you're allergic.

155

00:09:05,440 --> 00:09:12,920

In the myth that bullets fired up can kill, Adam and Jamie have been trying to find out

156

00:09:12,920 --> 00:09:15,880

how high a bullet can go.

157

00:09:15,880 --> 00:09:19,240

Oh, that is just crazy.

158

00:09:20,120 --> 00:09:24,120

Their first experiment drew a blank, so it's back to the drawing board.

159

00:09:24,120 --> 00:09:27,240

Well, that was a good waste of time.

160

00:09:27,240 --> 00:09:31,760

I mean, we didn't really get any useful data at all from firing a bullet into the ballistic

161

00:09:31,760 --> 00:09:32,760

shell.

162

00:09:32,760 --> 00:09:33,760

No.

163

00:09:33,760 --> 00:09:36,840

I mean, if faster the bullet, the more the shell resisted, just like water.

164

00:09:36,840 --> 00:09:41,800

Well, we might have busted out experimentally, but there are computer simulation programs

165

00:09:41,800 --> 00:09:45,160

that can give us the figures on a vertically discharged bullet.

166

00:09:45,160 --> 00:09:46,160

And here's what we got.

167

00:09:46,160 --> 00:09:52,040

A 30-odd-6 bullet will reach a maximum height of 10,000 feet and take 58 seconds to make

168

00:09:52,040 --> 00:09:53,280

its round trip.

169

00:09:53,280 --> 00:09:58,920

A 9-millimeter bullet will reach a maximum height of 4,000 feet and take 37 seconds to

170

00:09:58,920 --> 00:10:00,280

make its round trip.

171

00:10:00,280 --> 00:10:04,320

Well, that's certainly high enough for it to reach its terminal velocity on the way

172

00:10:04,320 --> 00:10:06,440

down on both bullets.

173

00:10:06,440 --> 00:10:10,600

So all we need to do is find out what that is.

174

00:10:10,600 --> 00:10:15,400

Terminal velocity is the maximum speed at which an object can fall through the air.

175

00:10:16,400 --> 00:10:22,000

Its reach when the force of gravity is matched by the force of wind resistance, at which

176

00:10:22,000 --> 00:10:26,240

point the object can't go any faster.

177

00:10:26,240 --> 00:10:35,080

To find the terminal velocity of a bullet, Adam builds an acrylic wind tunnel.

178

00:10:35,080 --> 00:10:43,000

He fires a high-speed jet of air from below and inserts a wind speed meter at the top.

179

00:10:43,000 --> 00:10:44,080

Everything's set.

180

00:10:44,080 --> 00:10:48,200

The way this wind tunnel measures the terminal velocity of a bullet is when I put a bullet

181

00:10:48,200 --> 00:10:54,800

into this tube and I get it to a point at which it's stable and it floats in the tube,

182

00:10:54,800 --> 00:11:00,280

I know that that is this, I'm equaling the bullet's weight and mass with the air pressure

183

00:11:00,280 --> 00:11:05,320

below it and that speed that I get on my wind speed indicator is exactly the speed at which

184

00:11:05,320 --> 00:11:08,320

this bullet will fall if it's falling through the air.

185

00:11:08,320 --> 00:11:10,840

First up, a 9-millimeter bullet.

186

00:11:10,960 --> 00:11:17,360

Take some adjustment to find the right wind speed, but Adam soon dials it in and he's

187

00:11:17,360 --> 00:11:18,360

in business.

188

00:11:18,360 --> 00:11:20,860

Look at that!

189

00:11:20,860 --> 00:11:25,720

It was pretty consistent, I see on the wind speed indicator I've got here, it's just almost

190

00:11:25,720 --> 00:11:28,040

exactly 100 miles an hour.

191

00:11:28,040 --> 00:11:33,040

That's how fast this thing would be heading towards you if it fell from the sky.

192

00:11:33,040 --> 00:11:35,040

So now I've got to do the other bullet.

193

00:11:35,040 --> 00:11:37,040

This is a 30-odd 6-bullet!

194

00:11:38,040 --> 00:11:41,040

Longer, but closer to the simile of weight!

195

00:11:45,040 --> 00:11:47,040

Look at that!

196

00:11:48,040 --> 00:11:52,040

This wind tunnel demonstrates absolutely the terminal velocity of both the 9-millimeter

197

00:11:52,040 --> 00:11:56,040

and the 30-odd 6 is just about 100 miles per hour.

198

00:11:56,040 --> 00:12:01,240

Now, this wind tunnel also demonstrates really clearly that their most stable way of falling

199

00:12:01,240 --> 00:12:06,040

is on their side and that's their stable speed, that's the speed they're going to hit you at.

200

00:12:07,040 --> 00:12:10,040

100 miles per hour is about 150 feet per second.

201

00:12:10,040 --> 00:12:14,040

That sounds pretty quick, but is it quick enough to kill?

202

00:12:15,040 --> 00:12:21,040

Now that I've determined that, next up is to build a device that will fire these at exactly

203

00:12:21,040 --> 00:12:29,040

150 feet per second, fire them into some human head analog and see if they're in fact lethal

204

00:12:29,040 --> 00:12:31,040

at those speeds.

205

00:12:31,040 --> 00:12:33,040

Human head analog.

206

00:12:33,040 --> 00:12:36,040

Hmm, on this show, that only means one thing.

207

00:12:36,040 --> 00:12:40,040

Jamie, please don't fire bullets into my head.

208

00:12:40,040 --> 00:12:42,040

It's only got one ear though.

209

00:12:42,040 --> 00:12:46,040

We don't need ears for testing the lethality of bullets at terminal velocity, man!

210

00:12:46,040 --> 00:12:51,040

A pig's cranium is harder than a human's, but it's close enough.

211

00:12:51,040 --> 00:12:56,040

And don't worry, as always on the show, Adam and Jamie got these at the Slaughterhouse.

212

00:12:57,040 --> 00:13:04,040

Now they need a way of firing bullets at just 150 feet per second, so Adam takes some aluminum piping,

213

00:13:04,040 --> 00:13:07,040

a high pressure air hose, and a 9mm bullet.

214

00:13:10,040 --> 00:13:14,040

Simple, but dangerous, so don't try this at home.

215

00:13:14,040 --> 00:13:16,040

I think you might have put a dent in your door.

216

00:13:16,040 --> 00:13:17,040

That would have hurt.

217

00:13:17,040 --> 00:13:20,040

In fact, I wouldn't want to get hit in the head with that.

218

00:13:20,040 --> 00:13:24,040

I know that, I mean, that could potentially do you harm.

219

00:13:24,040 --> 00:13:27,040

Sounds encouraging, so Adam goes into production.

220

00:13:27,040 --> 00:13:34,040

He makes two high pressure P-shooters, one each for the 9mm and 30 caliber bullets.

221

00:13:34,040 --> 00:13:40,040

Both consist of an aluminum barrel with a solenoid valve plumbed into one end.

222

00:13:40,040 --> 00:13:44,040

He'll fire through a chronograph, which measures in feet per second,

223

00:13:44,040 --> 00:13:48,040

so he can tune the velocity until it matches a falling bullet.

224

00:13:49,040 --> 00:13:53,040

Once again, Sergeant Normandy's there to lend a hand.

225

00:13:54,040 --> 00:13:58,040

First up, the 9mm bullet at 120 psi.

226

00:14:00,040 --> 00:14:02,040

The gun is loaded, prepare to fire.

227

00:14:02,040 --> 00:14:03,040

Here we go.

228

00:14:03,040 --> 00:14:04,040

Three, two, one.

229

00:14:06,040 --> 00:14:10,040

140, actually I was looking for exactly 146.

230

00:14:10,040 --> 00:14:11,040

That's amazing.

231

00:14:11,040 --> 00:14:12,040

Perfect.

232

00:14:12,040 --> 00:14:15,040

Okay, 9mm is dialed in perfectly.

233

00:14:16,040 --> 00:14:19,040

Next up, the 30 caliber bullet.

234

00:14:19,040 --> 00:14:24,040

And with Adam dialed in, it too is soon hitting its terminal velocity target.

235

00:14:24,040 --> 00:14:25,040

151.

236

00:14:25,040 --> 00:14:26,040

151.

237

00:14:26,040 --> 00:14:27,040

One of my favorite numbers.

238

00:14:27,040 --> 00:14:29,040

Dead on the money.

239

00:14:29,040 --> 00:14:35,040

Now, with a little help from the pigs, he should soon know if bullets fall fast enough to butcher.

240

00:14:36,040 --> 00:14:40,040

Back at the myth that vodka can relieve a poison oak reaction,

241

00:14:40,040 --> 00:14:42,040

Tari's looking alarmingly healthy.

242

00:14:42,040 --> 00:14:47,040

13 days ago, I put poison oak on my arm, but apparently I don't get it anymore.

243

00:14:47,040 --> 00:14:50,040

I mean, I got it when I was a kid, but I don't get it anymore.

244

00:14:50,040 --> 00:14:52,040

So, I need your arm.

245

00:14:52,040 --> 00:14:57,040

I need somebody, you know, a weaker individual, or not individual, but...

246

00:14:57,040 --> 00:15:00,040

While Tari gloves up, Adam fires.

247

00:15:00,040 --> 00:15:02,040

But he needn't have worry.

248

00:15:02,040 --> 00:15:07,040

Turns out he too is one of the 10% who are immune to poison oak.

249

00:15:08,040 --> 00:15:10,040

So poison oak.

250

00:15:10,040 --> 00:15:18,040

I did the test a week ago, and it seems that the myth now isn't about poison oak and vodka as a topical treatment.

251

00:15:18,040 --> 00:15:24,040

It's about whether or not a myth buster can actually get to the point where it's not about poison oak.

252

00:15:24,040 --> 00:15:26,040

So now it's your turn.

253

00:15:26,040 --> 00:15:28,040

Oh, it's cool.

254

00:15:28,040 --> 00:15:30,040

And what do you know?

255

00:15:30,040 --> 00:15:32,040

Tari tried it.

256

00:15:32,040 --> 00:15:33,040

Yeah.

257

00:15:33,040 --> 00:15:34,040

Adam tried it.

258

00:15:34,040 --> 00:15:35,040

Yeah.

259

00:15:35,040 --> 00:15:38,040

And now two weeks later, I have no rash.

260

00:15:38,040 --> 00:15:39,040

But you were allergic.

261

00:15:39,040 --> 00:15:43,040

They've tested the leaves at a lab, and it really is poison oak.

262

00:15:43,040 --> 00:15:46,040

Seems like myth busters is hosted by mutants.

263

00:15:46,040 --> 00:15:48,040

So how about the crew?

264

00:15:48,040 --> 00:15:51,040

We have a lot of people who are not immune to poison oak.

265

00:15:51,040 --> 00:15:53,040

But they're not immune to the mutants.

266

00:15:53,040 --> 00:15:55,040

So how about the crew?

267

00:15:55,040 --> 00:15:57,040

We have got to get a result on this one.

268

00:15:57,040 --> 00:15:59,040

There's just no ifs and buts about it.

269

00:15:59,040 --> 00:16:01,040

So we're going to have to test it on three people this time.

270

00:16:01,040 --> 00:16:04,040

Hopefully one of them might possibly be allergic to poison oak.

271

00:16:04,040 --> 00:16:09,040

Press ganged into compliance, they offer themselves up for science.

272

00:16:12,040 --> 00:16:16,040

With this myth on the line, it's rash up or flunk out.

273

00:16:16,040 --> 00:16:19,040

It's been 24 hours, you guys.

274

00:16:19,040 --> 00:16:20,040

What do you got?

275

00:16:20,040 --> 00:16:21,040

Flunked.

276

00:16:21,040 --> 00:16:23,040

Not enough to call anything at this point.

277

00:16:23,040 --> 00:16:24,040

Flunked.

278

00:16:24,040 --> 00:16:25,040

Hey!

279

00:16:25,040 --> 00:16:29,040

And straight A's for John the researcher.

280

00:16:29,040 --> 00:16:31,040

That is definitely poison oak.

281

00:16:31,040 --> 00:16:34,040

I'm glad you guys are really happy about this result.

282

00:16:34,040 --> 00:16:37,040

This is a very, very clear cut result.

283

00:16:37,040 --> 00:16:40,040

Vodka and control have the same amount of rash.

284

00:16:40,040 --> 00:16:44,040

The commercial topical brands, there's really nothing to speak of.

285

00:16:44,040 --> 00:16:47,040

I would say we can definitely call this one busted.

286

00:16:50,040 --> 00:16:51,040

After the break.

287

00:16:51,040 --> 00:16:54,040

Three, two, one.

288

00:16:54,040 --> 00:16:59,040

Can falling bullets kill or is it a case of pigs might fly?

289

00:16:59,040 --> 00:17:00,040

That bounced right off of them.

290

00:17:00,040 --> 00:17:05,040

And Iron Man Imahara tests another vodka myth.

291

00:17:11,040 --> 00:17:14,040

Firing guns in the air can be bad for your health.

292

00:17:14,040 --> 00:17:16,040

Or at least that's the myth.

293

00:17:16,040 --> 00:17:20,040

If it's true, these cowboys should be wearing helmets, not hats,

294

00:17:20,040 --> 00:17:23,040

because falling bullets can kill.

295

00:17:25,040 --> 00:17:28,040

Adams found a way to fire bullets at their terminal velocity.

296

00:17:28,040 --> 00:17:32,040

The speed at which they would fall if fired straight up.

297

00:17:32,040 --> 00:17:35,040

Now he's planning to take a pot shot at some porkers.

298

00:17:35,040 --> 00:17:38,040

Look and then come with these handy targets.

299

00:17:38,040 --> 00:17:40,040

Okay, bullets loaded.

300

00:17:40,040 --> 00:17:43,040

And three, two, one.

301

00:17:43,040 --> 00:17:44,040

Fire!

302

00:17:46,040 --> 00:17:50,040

Well, that bounced right off of him.

303

00:17:50,040 --> 00:17:55,040

The high speed confirms that the bullet was traveling at about the right speed.

304

00:17:55,040 --> 00:18:00,040

This bullet was traveling at 165, 166 feet per second.

305

00:18:00,040 --> 00:18:04,040

Just slightly over what its terminal velocity would be, slightly faster.

306

00:18:04,040 --> 00:18:06,040

Still didn't even really break the skin.

307

00:18:06,040 --> 00:18:08,040

That would have been a real owie.

308

00:18:08,040 --> 00:18:11,040

It definitely would have been nasty, but that's not a lethal hit.

309

00:18:11,040 --> 00:18:16,040

So once more into the breach, this time with a larger 30 caliber round.

310

00:18:16,040 --> 00:18:21,040

30 out of 6 bullets in three, two, one.

311

00:18:25,040 --> 00:18:26,040

Now!

312

00:18:29,040 --> 00:18:37,040

Here's where it hit, and it really definitely pierced the skin, but bounced right off.

313

00:18:38,040 --> 00:18:42,040

One small dent in the skull, one giant ding in the myth.

314

00:18:42,040 --> 00:18:50,040

I'm starting to suspect that 150 feet per second of bullets terminal velocity just isn't fast enough to be lethal.

315

00:18:50,040 --> 00:18:52,040

Yeah, it's a little confusing.

316

00:18:52,040 --> 00:18:59,040

I mean, I've seen news footage where people have been killed by falling bullets, but our data doesn't show it.

317

00:18:59,040 --> 00:19:01,040

Well, I've got a great thing here.

318

00:19:01,040 --> 00:19:03,040

The researchers have found us an expert.

319

00:19:03,040 --> 00:19:09,040

He's a doctor at Stanford University, and he's also an international expert on falling bullets.

320

00:19:09,040 --> 00:19:13,040

I think we should go talk to him and see if he can resolve some of our conflicting data for us.

321

00:19:13,040 --> 00:19:14,040

Let's do it.

322

00:19:15,040 --> 00:19:19,040

It seems almost too good to be true, but true it is.

323

00:19:19,040 --> 00:19:24,040

An international authority on falling bullets right on the Mythbusters doorstep.

324

00:19:24,040 --> 00:19:26,040

Well, Dr. Muller, I'm Adam Savage.

325

00:19:26,040 --> 00:19:28,040

Good to meet you. Why don't you come back to my clinic?

326

00:19:28,040 --> 00:19:36,040

So, Dr. Muller, are you familiar with the myth that if you fire a bullet straight up in the air when it comes down, it'll kill you?

327

00:19:36,040 --> 00:19:46,040

I actually have right here in the Bay Area two unique cases, one of which involves the shooter actually having been caught.

328

00:19:46,040 --> 00:19:57,040

In one case, a woman watching the 4th of July celebrations from her launch air was struck in the thigh by a 30-caliber bullet fired into the air over a mile away.

329

00:19:57,040 --> 00:20:05,040

We did a bullet recovery from her leg, and the ballistics match was achieved, and we were able to actually prosecute and send that guy to jail.

330

00:20:05,040 --> 00:20:09,040

The other Bay Area case involved an elderly man from Alameda.

331

00:20:09,040 --> 00:20:15,040

A gentleman who was standing under his plastic corrugated, roofed carport talking to his wife.

332

00:20:15,040 --> 00:20:21,040

He had his eyes roll up in his head and fell to the ground, and she thought he was having a stroke.

333

00:20:21,040 --> 00:20:27,040

She called the paramedics, they took him to the hospital, x-rays were done, and he was found to have a bullet in his brain.

334

00:20:27,040 --> 00:20:30,040

This time, the victim did not survive.

335

00:20:30,040 --> 00:20:39,040

So, Dr., based on your experience of these cases, do you think that you would call this myth true, that the bullets falling from the sky will kill you?

336

00:20:39,040 --> 00:20:47,040

I know for a fact that bullets fired at a distance, returning to Earth with terminal velocity, have the ability to kill people.

337

00:20:47,040 --> 00:20:53,040

It's a real conundrum. On the one hand, Dr. Moller has proof that falling bullets do kill.

338

00:20:53,040 --> 00:20:57,040

On the other, the mythbusters have proof that they don't.

339

00:20:57,040 --> 00:21:01,040

It definitely would have been nasty, but that's not a lethal hit.

340

00:21:01,040 --> 00:21:05,040

Getting to the bottom of this one will test Adam and Jamie to the limit.

341

00:21:08,040 --> 00:21:11,040

It's happy hour with another vodka myth.

342

00:21:11,040 --> 00:21:17,040

I got a vodka myth for you guys. Apparently, you can remove plastic bandages painlessly.

343

00:21:17,040 --> 00:21:20,040

So, is this vodka taken internally?

344

00:21:20,040 --> 00:21:23,040

No such luck, Byron. It goes on the outside.

345

00:21:23,040 --> 00:21:27,040

The vodka acts as a solvent, dissolving the adhesive.

346

00:21:27,040 --> 00:21:33,040

Grant puts his masculinity on the line by proffering his legs for the experiment.

347

00:21:34,040 --> 00:21:41,040

That's gonna suck taking it off.

348

00:21:41,040 --> 00:21:48,040

The plan is to soak one bandage in vodka. The other will be the control. Pain will be the judge.

349

00:21:48,040 --> 00:21:50,040

Oh, it's cold.

350

00:21:50,040 --> 00:21:54,040

Iron Man Imahara grits his teeth.

351

00:21:54,040 --> 00:21:58,040

Maybe the vodka will act as a local anesthetic.

352

00:21:58,040 --> 00:22:02,040

There are girls at Swiss finishing schools rougher and tougher than Grant.

353

00:22:02,040 --> 00:22:06,040

How do you want to do this? Do you want to just go quick or should we go slow?

354

00:22:06,040 --> 00:22:11,040

I don't know. What is traditionally more painless, quick, huh?

355

00:22:11,040 --> 00:22:13,040

You ready?

356

00:22:13,040 --> 00:22:15,040

Okay, go for it.

357

00:22:15,040 --> 00:22:16,040

It's best.

358

00:22:16,040 --> 00:22:19,040

Ready? One, two, three.

359

00:22:19,040 --> 00:22:22,040

If you wear a hearing aid, remove it now.

360

00:22:33,040 --> 00:22:35,040

Look at your little bald spot there.

361

00:22:35,040 --> 00:22:38,040

Scale of one to ten. Pain on the rip off.

362

00:22:38,040 --> 00:22:42,040

That was a good six or seven.

363

00:22:42,040 --> 00:22:44,040

Really? Yeah.

364

00:22:44,040 --> 00:22:48,040

Which makes trapping your finger in your handbag a nine or ten.

365

00:22:48,040 --> 00:22:50,040

But will vodka help?

366

00:22:50,040 --> 00:22:51,040

Ready?

367

00:22:51,040 --> 00:22:52,040

Oh!

368

00:22:52,040 --> 00:22:55,040

Look, there's no hair.

369

00:22:58,040 --> 00:23:00,040

So what's the verdict?

370

00:23:00,040 --> 00:23:06,040

If we had to judge from the standpoint of hair, vodka bandage definitely has less hair.

371

00:23:06,040 --> 00:23:10,040

Did it feel like it dissolved the adhesive? Was it easier to pull off?

372

00:23:10,040 --> 00:23:13,040

Well, it definitely wasn't painless.

373

00:23:13,040 --> 00:23:15,040

Oh.

374

00:23:15,040 --> 00:23:18,040

Not painless, but not busted.

375

00:23:18,040 --> 00:23:20,040

Scale of one to ten.

376

00:23:20,040 --> 00:23:22,040

It's hard to tell. I would say maybe a four.

377

00:23:23,040 --> 00:23:27,040

Coming up on Myth Busters.

378

00:23:27,040 --> 00:23:30,040

What goes up must come down.

379

00:23:30,040 --> 00:23:32,040

So where the heck are those bullets?

380

00:23:32,040 --> 00:23:36,040

I'm searching across the desert for a pencil-sized hole.

381

00:23:36,040 --> 00:23:38,040

And Carrie's on the job.

382

00:23:38,040 --> 00:23:40,040

Drink at work? Sure.

383

00:23:40,040 --> 00:23:43,040

Knockin' them back for science.

384

00:23:44,040 --> 00:23:47,040

Don't try what you're about to see at home.

385

00:23:48,040 --> 00:23:58,040

The Myth Busters are investigating the myth that celebratory gunfire can kill when the bullets fall back to Earth.

386

00:23:58,040 --> 00:24:05,040

A doctor at Stanford showed Adam cases that seemed to confirm the myth.

387

00:24:05,040 --> 00:24:11,040

But shop tests showed bullets fall on their sides too slow to kill.

388

00:24:11,040 --> 00:24:13,040

So, where next?

389

00:24:13,040 --> 00:24:17,040

The dollar actually came up with some pretty compelling evidence that contradicts our results.

390

00:24:17,040 --> 00:24:21,040

Now, he showed me X-rays of people with bullets in their head and their legs,

391

00:24:21,040 --> 00:24:26,040

and proved that those bullets had been fired by guns during 4th of July celebrations.

392

00:24:26,040 --> 00:24:32,040

But here's the thing. Those bullets had been fired from guns over a mile away from where they landed.

393

00:24:32,040 --> 00:24:35,040

That means they were not fired straight up in the air.

394

00:24:35,040 --> 00:24:39,040

They were fired at an angle, and they were maintaining their ballistic trajectory.

395

00:24:39,040 --> 00:24:44,040

According to the medical evidence, the most lethal falling bullets aren't exactly falling.

396

00:24:44,040 --> 00:24:50,040

A bullet fired up at an angle stays spin-stabilized and on a ballistic trajectory,

397

00:24:50,040 --> 00:24:55,040

returning to Earth, point down at a high terminal velocity.

398

00:24:56,040 --> 00:24:59,040

But what about bullets that are fired straight up?

399

00:24:59,040 --> 00:25:01,040

That's the question.

400

00:25:01,040 --> 00:25:06,040

Even though it's going to be really hard, I think it's time to do this for real and go out to the desert.

401

00:25:06,040 --> 00:25:11,040

Then we get to see if what we find out there matches the tests we did in the shop.

402

00:25:11,040 --> 00:25:13,040

Road trip!

403

00:25:13,040 --> 00:25:20,040

It's sunrise on bullets fired up day, and the Mythbusters lead a convoy into the middle of the Mojave Desert.

404

00:25:22,040 --> 00:25:26,040

If this isn't the middle of nowhere, you can certainly see it from here.

405

00:25:26,040 --> 00:25:29,040

It's the perfect location for today's experiment.

406

00:25:29,040 --> 00:25:34,040

Well, the desert suits our purposes in this myth in that it's completely desolate.

407

00:25:34,040 --> 00:25:41,040

We've got like two and a half miles around us in every direction of empty, perfectly flat lakebed.

408

00:25:41,040 --> 00:25:45,040

It's the ideal location to find a bullet if one can be found.

409

00:25:46,040 --> 00:25:51,040

To improve the odds, Adam and Jamie have borrowed several pairs of eyes and ears.

410

00:25:51,040 --> 00:25:56,040

Their crew will be stationed in a ring of bullet-proof listening posts around the firearm.

411

00:25:56,040 --> 00:26:03,040

Jamie has turned a tripod into a straight-up, 90-degree gun-holding bullet-firing rig.

412

00:26:03,040 --> 00:26:07,040

That's pretty good. It's pretty much 90-90.

413

00:26:07,040 --> 00:26:12,040

And finally, with bullets flying everywhere, they're joined by Armorer Torrance Hall.

414

00:26:12,040 --> 00:26:19,040

We're not hoping for fantastic odds, but all we really need to do is find a single bullet, and we're going to know a lot about what's going on here.

415

00:26:19,040 --> 00:26:22,040

The win will be the crucial factor.

416

00:26:22,040 --> 00:26:29,040

It's calm at ground level, but with the 30-caliber bullets likely to reach altitudes of 10,000 feet,

417

00:26:29,040 --> 00:26:32,040

they decide to test what's going on higher up.

418

00:26:32,040 --> 00:26:34,040

For science!

419

00:26:38,040 --> 00:26:40,040

It's going that way.

420

00:26:41,040 --> 00:26:43,040

You're a budding meteorologist, Jamie.

421

00:26:43,040 --> 00:26:51,040

Before they start firing straight up, they need to fire straight down to see how deep into the lakebed various bullets go.

422

00:26:52,040 --> 00:27:04,040

Now, this isn't an absolute test. This is a relative test that will give us a comparison point between the bullet right at its muzzle velocity into the ground as compared to a falling bullet.

423

00:27:04,040 --> 00:27:10,040

First, a BB gun, which in rare cases can be lethal, but will usually just pierce the skin.

424

00:27:10,040 --> 00:27:12,040

Okay.

425

00:27:12,040 --> 00:27:15,040

Next, the 9-millimeter pistol.

426

00:27:15,040 --> 00:27:19,040

And three, two, one.

427

00:27:19,040 --> 00:27:22,040

And finally, the 30-ought 6.

428

00:27:22,040 --> 00:27:24,040

One.

429

00:27:25,040 --> 00:27:28,040

So, how deep did the bullets go?

430

00:27:28,040 --> 00:27:30,040

First, the BB.

431

00:27:30,040 --> 00:27:31,040

It's about three inches.

432

00:27:31,040 --> 00:27:34,040

Next, the 9-millimeter.

433

00:27:34,040 --> 00:27:38,040

That one's about five or six inches.

434

00:27:38,040 --> 00:27:40,040

And finally, the 30-caliber.

435

00:27:40,040 --> 00:27:42,040

Wow.

436

00:27:42,040 --> 00:27:43,040

That's about a foot.

437

00:27:43,040 --> 00:27:51,040

By using the desert floor as a surrogate ballistics material, they now have a yardstick for measuring the lethality of falling bullets.

438

00:27:51,040 --> 00:27:53,040

If they can find any, that is.

439

00:27:53,040 --> 00:27:55,040

Okay, eight rounds.

440

00:27:55,040 --> 00:27:56,040

Eight rounds, everybody.

441

00:27:56,040 --> 00:28:02,040

Alright, firing in three, two, one.

442

00:28:09,040 --> 00:28:10,040

One clip on its way up.

443

00:28:10,040 --> 00:28:11,040

Here's that.

444

00:28:13,040 --> 00:28:16,040

And 39 seconds later, touchdown.

445

00:28:16,040 --> 00:28:17,040

One.

446

00:28:17,040 --> 00:28:18,040

Two.

447

00:28:18,040 --> 00:28:19,040

Hit.

448

00:28:20,040 --> 00:28:22,040

You heard one that way, Jamie?

449

00:28:22,040 --> 00:28:24,040

Yeah, I heard like two or three out there.

450

00:28:24,040 --> 00:28:27,040

Now, all they have to do is find them.

451

00:28:27,040 --> 00:28:29,040

So, you guys heard several out this way.

452

00:28:29,040 --> 00:28:31,040

We heard a couple out this way.

453

00:28:31,040 --> 00:28:33,040

Why don't you take your camera crew that way?

454

00:28:33,040 --> 00:28:35,040

We'll take our camera crew this way.

455

00:28:35,040 --> 00:28:38,040

So, that makes a half a lake bed each.

456

00:28:38,040 --> 00:28:41,040

This could be harder than they thought.

457

00:28:41,040 --> 00:28:44,040

I'm searching across the desert for a pencil-sized hole.

458

00:28:47,040 --> 00:28:53,040

Coming up on Mythbusters, can one of these fired straight up in the air kill you on the way back down?

459

00:28:57,040 --> 00:29:00,040

I guess I'm a cheap date.

460

00:29:03,040 --> 00:29:09,040

Back in the Mojave Desert, the Mythbusters have fired on nine millimeter clips straight up in the air,

461

00:29:09,040 --> 00:29:14,040

and they're scouring several square miles of lake bed for the fallen bullets.

462

00:29:15,040 --> 00:29:20,040

It's a tall order, made even taller by the holes which pockmark the desert floor.

463

00:29:20,040 --> 00:29:22,040

Bullet-sized holes.

464

00:29:24,040 --> 00:29:26,040

Even though it looks disturbed, it's not actually a hit.

465

00:29:27,040 --> 00:29:32,040

This could take a month of Sundays, and they've only got until sundown.

466

00:29:32,040 --> 00:29:36,040

With the fat lady warming up, Adam spots something.

467

00:29:37,040 --> 00:29:38,040

Hey, I found one!

468

00:29:39,040 --> 00:29:41,040

I got broken salt crust.

469

00:29:41,040 --> 00:29:44,040

You know, the other thing I notice is the hole is oblong.

470

00:29:44,040 --> 00:29:46,040

Not perfectly round.

471

00:29:46,040 --> 00:29:47,040

It hit sideways.

472

00:29:47,040 --> 00:29:51,040

It means it was falling sideways, or tumbling when it fell.

473

00:29:51,040 --> 00:29:54,040

Early indications are that it would not have been a lethal hit.

474

00:29:54,040 --> 00:29:55,040

Alright.

475

00:29:55,040 --> 00:29:58,040

For confirmation, Adam measures how deep it went.

476

00:29:58,040 --> 00:30:00,040

Not that far at all.

477

00:30:02,040 --> 00:30:04,040

Remember, a BB went three inches.

478

00:30:06,040 --> 00:30:08,040

That's two inches exactly.

479

00:30:08,040 --> 00:30:11,040

That means it probably wouldn't even pierce your skin.

480

00:30:11,040 --> 00:30:14,040

It's another nail in this myth's coffin.

481

00:30:14,040 --> 00:30:17,040

There she blows. That's nine millimeter round.

482

00:30:20,040 --> 00:30:21,040

Woo! He found it!

483

00:30:22,040 --> 00:30:27,040

Using GPS, Torrance pinpoints how far away from the gun the bullet hit.

484

00:30:27,040 --> 00:30:29,040

Looks like about 330 feet.

485

00:30:29,040 --> 00:30:31,040

And it was fired straight up.

486

00:30:31,040 --> 00:30:34,040

That was fired dead straight up, 330 feet off.

487

00:30:34,040 --> 00:30:36,040

It just shows you what the wind does.

488

00:30:36,040 --> 00:30:37,040

That's amazing.

489

00:30:38,040 --> 00:30:40,040

And with other bullets out here somewhere,

490

00:30:40,040 --> 00:30:43,040

they now know exactly what they're looking for.

491

00:30:43,040 --> 00:30:47,040

There's a crap load of bullet hole shaped holes around here.

492

00:30:47,040 --> 00:30:49,040

So it was hard to know what to look for,

493

00:30:49,040 --> 00:30:52,040

but it pretty much matched exactly what one would think.

494

00:30:52,040 --> 00:30:54,040

It was a nice, clean black hole.

495

00:30:54,040 --> 00:30:55,040

Adam!

496

00:30:55,040 --> 00:30:56,040

What?

497

00:30:56,040 --> 00:30:58,040

Adam, check it out.

498

00:30:58,040 --> 00:30:59,040

You got another one?

499

00:30:59,040 --> 00:31:00,040

Yep.

500

00:31:01,040 --> 00:31:02,040

Same depth.

501

00:31:02,040 --> 00:31:03,040

Same depth?

502

00:31:03,040 --> 00:31:05,040

And it's an oblong hole.

503

00:31:05,040 --> 00:31:06,040

Oh my God.

504

00:31:06,040 --> 00:31:09,040

Can we just go home? This is fantastic.

505

00:31:09,040 --> 00:31:13,040

Both bullets were found on their sides, two inches down,

506

00:31:13,040 --> 00:31:15,040

confirming their shop test results.

507

00:31:16,040 --> 00:31:18,040

Nothing could be sweeter.

508

00:31:18,040 --> 00:31:21,040

This is science in action.

509

00:31:26,040 --> 00:31:29,040

One for the road, a final vodka myth.

510

00:31:29,040 --> 00:31:32,040

What's going on? You got vodka? I see water filters.

511

00:31:32,040 --> 00:31:34,040

What are you making, Grant?

512

00:31:34,040 --> 00:31:39,040

Well, the myth is you can turn low-end vodka into top shelf vodka

513

00:31:39,040 --> 00:31:44,040

with six filtrations of a domestic charcoal water filter.

514

00:31:44,040 --> 00:31:45,040

Here we go.

515

00:31:45,040 --> 00:31:47,040

Dude, if this works out, you might be able to start a little company

516

00:31:47,040 --> 00:31:49,040

of vodka producing.

517

00:31:49,040 --> 00:31:51,040

Huh? Grant vodka.

518

00:31:51,040 --> 00:31:53,040

Grant vodka. I'd buy it.

519

00:31:53,040 --> 00:31:54,040

Sweet.

520

00:31:55,040 --> 00:31:58,040

So, is the only difference between a top shelf vodka

521

00:31:58,040 --> 00:32:01,040

and a bottle of rodgat really just filtration?

522

00:32:01,040 --> 00:32:06,040

To find out, they're planning a taste test and some laboratory analysis.

523

00:32:06,040 --> 00:32:09,040

Okay, here's the sixth and final filtration.

524

00:32:09,040 --> 00:32:11,040

Now for a double-blind test,

525

00:32:11,040 --> 00:32:14,040

and Grant's assembled a panel of top shelf tasters.

526

00:32:16,040 --> 00:32:19,040

Expert number one, Anthony Dias Blue,

527

00:32:19,040 --> 00:32:23,040

executive director, San Francisco World Spirits Competition.

528

00:32:24,040 --> 00:32:30,040

The characteristics of a good vodka are clarity, purity, and texture.

529

00:32:31,040 --> 00:32:34,040

Expert number two, Jamie Heidemann,

530

00:32:34,040 --> 00:32:37,040

degree in Russian literature.

531

00:32:37,040 --> 00:32:40,040

Expert number three, Carrie Byron,

532

00:32:40,040 --> 00:32:44,040

former undercover martini tester.

533

00:32:44,040 --> 00:32:45,040

The rules are simple.

534

00:32:45,040 --> 00:32:48,040

Each judge gets eight shots of vodka,

535

00:32:48,040 --> 00:32:51,040

one from each of the six filtration stages,

536

00:32:51,040 --> 00:32:54,040

and an expensive top shelf brand.

537

00:32:54,040 --> 00:32:57,040

The cheap, unfiltered vodka will be the control.

538

00:32:58,040 --> 00:33:02,040

Their task is to rate them from worst to best.

539

00:33:04,040 --> 00:33:06,040

Anthony Dias Blue, are you ready?

540

00:33:08,040 --> 00:33:09,040

I'm ready.

541

00:33:11,040 --> 00:33:14,040

These samples have been prepared and randomized.

542

00:33:14,040 --> 00:33:17,040

Even I won't know which is which until the very end.

543

00:33:18,040 --> 00:33:22,040

Anthony's reputation as a professional taster is at stake,

544

00:33:22,040 --> 00:33:24,040

and he's got to be on top of his game.

545

00:33:24,040 --> 00:33:27,040

It tasted like gasoline, it was kind of hot.

546

00:33:29,040 --> 00:33:31,040

That one's pretty nice.

547

00:33:31,040 --> 00:33:33,040

Eight straight vodkas later,

548

00:33:33,040 --> 00:33:37,040

and not surprisingly, Anthony's brimming with confidence.

549

00:33:37,040 --> 00:33:40,040

Anthony Dias Blue, is that your final answer?

550

00:33:40,040 --> 00:33:42,040

That is my final answer.

551

00:33:42,040 --> 00:33:44,040

Jamie Heidemann, you may begin.

552

00:33:44,040 --> 00:33:45,040

All right.

553

00:33:45,040 --> 00:33:49,040

Tasting a spirit that's produced to be odorless and flavorless

554

00:33:49,040 --> 00:33:53,040

is a tall order, just the way Jamie likes it.

555

00:33:53,040 --> 00:33:56,040

Okay, well, I guess it's time to start tasting.

556

00:33:57,040 --> 00:33:59,040

He's nothing if not methodical.

557

00:34:00,040 --> 00:34:03,040

Just before the other judges lose their will to live,

558

00:34:03,040 --> 00:34:06,040

Jamie makes his final line up.

559

00:34:07,040 --> 00:34:09,040

Are you happy with your selections, Jamie?

560

00:34:12,040 --> 00:34:13,040

Yes.

561

00:34:13,040 --> 00:34:16,040

I'm wondering if you might have contaminated your experiment

562

00:34:16,040 --> 00:34:18,040

by mixing on the mustache.

563

00:34:18,040 --> 00:34:20,040

Either that or they're actually very sensitive

564

00:34:20,040 --> 00:34:22,040

and able to pick up on subtle variations

565

00:34:22,040 --> 00:34:24,040

in the chemistry in the vodka.

566

00:34:24,040 --> 00:34:25,040

To Shay.

567

00:34:25,040 --> 00:34:27,040

Carrie Byron, are you ready?

568

00:34:27,040 --> 00:34:28,040

To drink at work?

569

00:34:28,040 --> 00:34:29,040

Sure.

570

00:34:30,040 --> 00:34:34,040

If the myth is true, there should be no discernible difference

571

00:34:34,040 --> 00:34:38,040

between the top shelf brand and the fully filtered rotgut.

572

00:34:45,040 --> 00:34:46,040

I think I could go with this.

573

00:34:46,040 --> 00:34:47,040

Okay, you're sure about this?

574

00:34:47,040 --> 00:34:49,040

No, not at all, but I'm going with it.

575

00:34:49,040 --> 00:34:50,040

All right.

576

00:34:50,040 --> 00:34:52,040

So, what are the results?

577

00:34:52,040 --> 00:34:54,040

Carrie's worst.

578

00:34:54,040 --> 00:34:55,040

What's the top shelf?

579

00:34:57,040 --> 00:34:58,040

Third filtration.

580

00:34:58,040 --> 00:35:00,040

Not the best of starts.

581

00:35:01,040 --> 00:35:02,040

Carrie's second worst.

582

00:35:03,040 --> 00:35:04,040

The top shelf?

583

00:35:06,040 --> 00:35:08,040

And she flunks out in two.

584

00:35:09,040 --> 00:35:11,040

Third to best, the control.

585

00:35:12,040 --> 00:35:13,040

I guess I'm a cheap date.

586

00:35:15,040 --> 00:35:17,040

Now we know what Carrie likes.

587

00:35:18,040 --> 00:35:21,040

With cheap and cheerful Carrie eliminated,

588

00:35:21,040 --> 00:35:23,040

it's over to the myth buster with the mustache.

589

00:35:23,040 --> 00:35:25,040

Mr. Heineman, are you ready?

590

00:35:25,040 --> 00:35:26,040

Ready as I'll ever be.

591

00:35:26,040 --> 00:35:27,040

Here I go.

592

00:35:28,040 --> 00:35:29,040

Jamie's second worst.

593

00:35:30,040 --> 00:35:31,040

The control.

594

00:35:31,040 --> 00:35:32,040

It's not bad.

595

00:35:32,040 --> 00:35:33,040

That's very good.

596

00:35:33,040 --> 00:35:34,040

Well done.

597

00:35:34,040 --> 00:35:37,040

Second best of the fifth filtration,

598

00:35:37,040 --> 00:35:39,040

leaving the top shelf.

599

00:35:39,040 --> 00:35:41,040

You did really good.

600

00:35:41,040 --> 00:35:42,040

I guess I did good.

601

00:35:42,040 --> 00:35:43,040

Cool.

602

00:35:43,040 --> 00:35:45,040

Jamie pretty much nailed it.

603

00:35:45,040 --> 00:35:48,040

So finally, it's over to the pro.

604

00:35:49,040 --> 00:35:50,040

Anthony's worst.

605

00:35:50,040 --> 00:35:51,040

The control.

606

00:35:51,040 --> 00:35:52,040

Lower shelf vodka.

607

00:35:52,040 --> 00:35:53,040

Perfect guess.

608

00:35:53,040 --> 00:35:55,040

Second best, spot on.

609

00:35:55,040 --> 00:35:57,040

Sixth round filtration.

610

00:35:59,040 --> 00:36:02,040

And first place, the top shelf vodka.

611

00:36:02,040 --> 00:36:04,040

You did good.

612

00:36:06,040 --> 00:36:07,040

Very good.

613

00:36:07,040 --> 00:36:08,040

Thank you.

614

00:36:08,040 --> 00:36:09,040

Not bad.

615

00:36:09,040 --> 00:36:11,040

In fact, Anthony called it exactly right.

616

00:36:11,040 --> 00:36:13,040

Well congratulations, Anthony.

617

00:36:13,040 --> 00:36:15,040

Looks like we got the right man for the job.

618

00:36:15,040 --> 00:36:17,040

Your reputation is intact.

619

00:36:17,040 --> 00:36:19,040

Well, I'm relieved.

620

00:36:19,040 --> 00:36:21,040

I mean, as you say, I can keep my job now.

621

00:36:21,040 --> 00:36:26,040

So how about the myth, still standing or slumped over the bar?

622

00:36:26,040 --> 00:36:31,040

Passing a low end vodka through a filter will make it better,

623

00:36:31,040 --> 00:36:33,040

but it won't make it a top shelf vodka.

624

00:36:34,040 --> 00:36:36,040

Let's give the last word to science.

625

00:36:36,040 --> 00:36:41,040

Can filtration turn a cheap and cheerful vodka into a top shelf drop?

626

00:36:41,040 --> 00:36:44,040

Dr. Byron has the laboratory data.

627

00:36:44,040 --> 00:36:49,040

So, Doctor, were you able to turn cheap vodka into good vodka by filtering it?

628

00:36:49,040 --> 00:36:52,040

Well, actually, I just got the lab results and the gas chromatographs

629

00:36:52,040 --> 00:36:57,040

showed that there are really absolutely no difference in chemical composition

630

00:36:57,040 --> 00:37:02,040

between the filtered vodka and the low end non-filtered control vodka.

631

00:37:02,040 --> 00:37:04,040

So it's probably cheaper just to buy the good vodka

632

00:37:04,040 --> 00:37:07,040

than actually going and get water filters and filtering the crap vodka?

633

00:37:07,040 --> 00:37:08,040

Yeah.

634

00:37:08,040 --> 00:37:10,040

So I'm calling this busted.

635

00:37:10,040 --> 00:37:11,040

Good job, Doctor.

636

00:37:15,040 --> 00:37:22,040

After the break, Adam solves the wind problem in bullets fired up.

637

00:37:22,040 --> 00:37:26,040

And another myth is laid to rest.

638

00:37:26,040 --> 00:37:27,040

Dude!

639

00:37:29,040 --> 00:37:34,040

Alright, firing in three, two, one.

640

00:37:34,040 --> 00:37:37,040

Back in the Mojave Desert, the mythbusters have been firing

641

00:37:37,040 --> 00:37:41,040

nine-millimeter bullets straight up in the air to see if they're lethal

642

00:37:41,040 --> 00:37:43,040

when they fall back to earth.

643

00:37:43,040 --> 00:37:48,040

Both the bullets they found fell sideways at a non-lethal velocity,

644

00:37:48,040 --> 00:37:51,040

confirming Adam's wind tunnel shop tests.

645

00:37:51,040 --> 00:37:55,040

Now it's time for the .30-06 assault rifle.

646

00:37:55,040 --> 00:37:56,040

Next safety's going off.

647

00:37:56,040 --> 00:37:58,040

Weapon is hot.

648

00:38:02,040 --> 00:38:06,040

They fire off eight rounds, but nobody hears anything land.

649

00:38:07,040 --> 00:38:08,040

Here's off.

650

00:38:08,040 --> 00:38:10,040

Did anybody hear anything?

651

00:38:10,040 --> 00:38:11,040

No.

652

00:38:12,040 --> 00:38:17,040

To counter the wind, they tilt the gun at a slight angle and try again.

653

00:38:22,040 --> 00:38:25,040

Forty rounds later and they're still drawing a blank.

654

00:38:25,040 --> 00:38:27,040

Alright, did anybody hear anything?

655

00:38:27,040 --> 00:38:28,040

Nope.

656

00:38:28,040 --> 00:38:29,040

No.

657

00:38:29,040 --> 00:38:30,040

Damn it.

658

00:38:31,040 --> 00:38:35,040

With no clues as to the landing spot, the search proves fruitless.

659

00:38:36,040 --> 00:38:39,040

Adam, have you had any luck firing .30-06?

660

00:38:39,040 --> 00:38:40,040

No.

661

00:38:40,040 --> 00:38:43,040

I think we got super-crazy lucky on the nine-millimeter.

662

00:38:43,040 --> 00:38:47,040

The clustering was incredible and the crew has just been astounding,

663

00:38:47,040 --> 00:38:50,040

but the .30-06 is flying more than twice as high,

664

00:38:50,040 --> 00:38:53,040

almost 10,000 feet in the air before it comes down.

665

00:38:53,040 --> 00:38:56,040

It's like it's in the jet stream and it's headed for the Pacific Ocean or something.

666

00:38:56,040 --> 00:39:01,040

In the absence of a .30-caliber bullet, this myth has an annoying loose end.

667

00:39:01,040 --> 00:39:04,040

Luckily, Adam has a planned B.

668

00:39:06,040 --> 00:39:09,040

It's all about beating the wind.

669

00:39:17,040 --> 00:39:21,040

He's built a rig that will simulate bullets falling at their terminal velocity

670

00:39:21,040 --> 00:39:23,040

after being fired straight up.

671

00:39:25,040 --> 00:39:30,040

A remote-controlled device will drop the bullets from a balloon flying at 400 feet.

672

00:39:31,040 --> 00:39:36,040

How do I know that if I drop my bullets from my balloon at 400 feet

673

00:39:36,040 --> 00:39:39,040

that they'll be falling at their terminal velocity?

674

00:39:39,040 --> 00:39:41,040

It's really simple math.

675

00:39:41,040 --> 00:39:46,040

Gravity pulls everything towards the Earth at an increasing rate of 32 feet per second per second.

676

00:39:46,040 --> 00:39:52,040

That means that every second an object falls, it's increasing in its speed by 32 feet every second.

677

00:39:52,040 --> 00:39:57,040

From 400 feet, they'll hit their maximum speed of 150 feet per second

678

00:39:57,040 --> 00:39:59,040

just before they hit the ground.

679

00:39:59,040 --> 00:40:04,040

And this time, the guys will know exactly where they've landed.

680

00:40:04,040 --> 00:40:07,040

Alright, I think this is pretty good.

681

00:40:07,040 --> 00:40:16,040

Yeah, the altimeter says we're at a beautiful height, about 140 meters, which is just about 400 feet.

682

00:40:16,040 --> 00:40:19,040

Okay, well the EMTs are standing by in case we get hurt.

683

00:40:19,040 --> 00:40:22,040

Alright, everyone's got their hard hats on?

684

00:40:22,040 --> 00:40:23,040

Alright.

685

00:40:23,040 --> 00:40:24,040

Give us a countdown.

686

00:40:24,040 --> 00:40:29,040

Three, two, one.

687

00:40:29,040 --> 00:40:31,040

Oh, they dropped beautifully.

688

00:40:35,040 --> 00:40:39,040

That was perfect!

689

00:40:39,040 --> 00:40:42,040

Alright, I'm going to power down the camera here.

690

00:40:42,040 --> 00:40:43,040

Okay.

691

00:40:43,040 --> 00:40:45,040

Oh, that was excellent.

692

00:40:45,040 --> 00:40:51,040

To match the shop tests, the 30-caliber bullets should match the profile of the 9mm.

693

00:40:51,040 --> 00:40:57,040

In other words, they should be found on their sides two inches down.

694

00:40:57,040 --> 00:40:59,040

That looks like a 30-odd 6-hole.

695

00:40:59,040 --> 00:41:00,040

There's some over there.

696

00:41:00,040 --> 00:41:02,040

Look at that, we got them all.

697

00:41:02,040 --> 00:41:08,040

Alright, 30-odd 6 and terminal velocity.

698

00:41:08,040 --> 00:41:12,040

Ha ha ha ha, about two inches.

699

00:41:12,040 --> 00:41:13,040

Okay.

700

00:41:13,040 --> 00:41:14,040

It doesn't get better than that.

701

00:41:14,040 --> 00:41:15,040

Let's find some more.

702

00:41:15,040 --> 00:41:19,040

Oh, here's a 9mm.

703

00:41:19,040 --> 00:41:21,040

This is the real test.

704

00:41:21,040 --> 00:41:26,040

Since we found 9mm bullets falling from their absolute height,

705

00:41:26,040 --> 00:41:30,040

if this matches, this rig is perfectly calibrated.

706

00:41:33,040 --> 00:41:34,040

There you go.

707

00:41:34,040 --> 00:41:35,040

Dude!

708

00:41:35,040 --> 00:41:39,040

It's the terminal piece of the falling bullet puzzle.

709

00:41:39,040 --> 00:41:42,040

We can confirm that vertically in the air,

710

00:41:42,040 --> 00:41:48,040

neither a 9mm nor a 30-odd 6 is coming to the earth with a lethal velocity.

711

00:41:48,040 --> 00:41:50,040

It couldn't be any clearer than that.

712

00:41:50,040 --> 00:41:51,040

No.

713

00:41:51,040 --> 00:41:53,040

We've covered it with a real gun,

714

00:41:53,040 --> 00:41:56,040

we've covered it with our artificial test here with the drop.

715

00:41:56,040 --> 00:41:58,040

We've covered it with the wind tunnel tests,

716

00:41:58,040 --> 00:42:02,040

we've covered it with the pigs' heads.

717

00:42:02,040 --> 00:42:04,040

I think we got this one down.

718

00:42:04,040 --> 00:42:06,040

So where does this mint leave us?

719

00:42:06,040 --> 00:42:08,040

Busted, plausible, or confirmed?

720

00:42:08,040 --> 00:42:10,040

All of the above.

721

00:42:10,040 --> 00:42:13,040

I don't think we've ever done that before.

722

00:42:13,040 --> 00:42:14,040

Explain.

723

00:42:14,040 --> 00:42:18,040

Well, all of our tests showed that a bullet fired straight up in the air,

724

00:42:18,040 --> 00:42:22,040

dead straight, is not going to come down with a lethal force.

725

00:42:22,040 --> 00:42:27,040

Right, but we've also seen that it's very difficult and unnatural

726

00:42:27,040 --> 00:42:29,040

to hold a gun perfectly vertically,

727

00:42:29,040 --> 00:42:32,040

and that if you're off by even a few degrees,

728

00:42:32,040 --> 00:42:34,040

that bullet can maintain its ballistic trajectory

729

00:42:34,040 --> 00:42:37,040

and come back to earth with potentially lethal force.

730

00:42:37,040 --> 00:42:39,040

We've got a doctor who's seen the deaths,

731

00:42:39,040 --> 00:42:41,040

he's looked at a bunch of the cases,

732

00:42:41,040 --> 00:42:43,040

and those prove that it's confirmed.

733

00:42:43,040 --> 00:42:45,040

Yeah, so it's all of the above.

734

00:42:45,040 --> 00:42:50,040

And in any case, you should never, ever fire a weapon straight up in the air.

735

00:42:50,040 --> 00:42:54,040

No, it's stupid and it's illegal almost everywhere.

736

00:42:54,040 --> 00:42:56,040

Could be lethal.

737

00:42:56,040 --> 00:42:57,040

Let's go home.

738

00:42:57,040 --> 00:42:58,040

Okay.