

1

00:00:00,000 --> 00:00:16,744

This series presents information based in part on theory and conjecture.

2

00:00:16,744 --> 00:00:21,267

The producer's purpose is to suggest some possible explanations but not necessarily

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00:00:21,267 --> 00:00:29,993

the only ones to the mysteries we will examine.

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00:00:29,993 --> 00:00:39,520

Wired to 14 channels of body function and experimental subject practices biofeedback.

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00:00:39,520 --> 00:00:45,165

Using biofeedback, people reduce muscular tension, redirect blood flow and perform

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00:00:45,165 --> 00:00:50,168

feats previously thought impossible.

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00:00:50,168 --> 00:00:54,011

Might we someday create super athletes?

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00:00:54,011 --> 00:01:06,300

Could biofeedback bring about a revolution in human health?

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00:01:06,300 --> 00:01:10,303

The human body is nature's most remarkable invention.

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00:01:10,303 --> 00:01:19,030

A self-maintaining system which treated properly can run flawlessly for decades.

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00:01:19,030 --> 00:01:23,553

Some people have taught themselves to perform acts bordering on the miraculous,

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00:01:23,553 --> 00:01:34,841

such as those who practice fire walking.

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00:01:34,841 --> 00:01:39,845

These demonstrations challenge everyday assumptions about the mind and the body.

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00:01:39,845 --> 00:01:44,929

But for centuries, devotees of esoteric disciplines have demonstrated surprising

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00:01:44,929 --> 00:01:49,812

control of some body functions.

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00:01:49,812 --> 00:01:54,776

With the development of biofeedback, science and medicine have begun exploring the mind-body

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00:01:54,776 --> 00:01:58,179

connection in exciting new ways.

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00:01:58,179 --> 00:02:04,743

Recently, people with chronic medical problems have been referred to a biofeedback therapist.

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00:02:04,743 --> 00:02:07,145

How does this new healing method work?

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00:02:07,145 --> 00:02:11,528

The case histories you're about to see may seem miraculous, but they're becoming a part

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00:02:11,528 --> 00:02:20,135

of modern health care, the treatment of the mind-body system as a whole.

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00:02:20,135 --> 00:02:25,859

At the Biofeedback Institute of San Francisco, therapist Suzanne Sampson works with Ted,

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00:02:25,859 --> 00:02:27,740

who has high blood pressure.

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00:02:27,740 --> 00:02:32,424

We're working with three sets of instruments, three different systems of the body, mainly

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00:02:32,424 --> 00:02:37,548

EMG right now because Ted's only had four sessions and we want to just zero in on one

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00:02:37,548 --> 00:02:42,992

particular skill at first and then dovetail the other skills in together with it.

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00:02:42,992 --> 00:02:48,956

So the EMG is on his forehead here, picking up all the electrical activity, all the muscular

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00:02:48,956 --> 00:02:54,800

contraction from there all the way down to through his neck down to his chest here.

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00:02:54,800 --> 00:03:00,405

And so any kind of extra muscle tension will show up on this dial right here.

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00:03:00,405 --> 00:03:05,408

Okay Ted, I want to try to have you keep this noise off.

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00:03:05,408 --> 00:03:07,129

Now I'm going to make a new threshold for you.

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00:03:07,129 --> 00:03:11,573

It might be a little bit harder and you have to make as calm as you can be and just keep

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00:03:11,573 --> 00:03:12,574

that noise off.

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00:03:12,574 --> 00:03:16,576

Remember when you hear the noise just to pay attention to where it's coming from in your

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00:03:16,576 --> 00:03:22,101

face or your neck and attend to it and let it go.

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00:03:22,101 --> 00:03:23,261

Don't try too hard though.

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00:03:23,261 --> 00:03:28,105

Just step back and let it happen.

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00:03:28,105 --> 00:03:36,431

Go as low as you can.

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00:03:36,431 --> 00:03:39,273

Let everything be loose.

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00:03:39,273 --> 00:03:40,274

Fine.

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00:03:40,274 --> 00:03:42,676

That's quite a low level.

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00:03:42,676 --> 00:03:43,676

Good.

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00:03:43,676 --> 00:03:47,639

Now see here, back to the old mode rather quickly.

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00:03:47,639 --> 00:03:51,082

So it's not that you're never going to be able to do that again, but you're going to

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00:03:51,082 --> 00:03:59,008

be able to do it with kind of a layer of slowness, calmness, less physiological arousal so that

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00:03:59,008 --> 00:04:05,052

you'll feel more paced, less intense.

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00:04:05,052 --> 00:04:10,576

I've already noticed some changes just in the face muscles, how I clench my jaw and

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00:04:10,576 --> 00:04:13,298

how that creates tension throughout my body.

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00:04:13,298 --> 00:04:18,302

Just learning how to watch the machine learn to relax the jaw and the eyes and I think

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00:04:18,302 --> 00:04:21,745

it will increase my well-being.

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00:04:21,745 --> 00:04:27,309

What Biofeedback does is allow the person to find out that they're making profound changes

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00:04:27,309 --> 00:04:30,511

in their system.

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00:04:30,511 --> 00:04:36,395

Biofeedback experimenter Dr. George Fuller von Bozze explains how people learn to use

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00:04:36,395 --> 00:04:37,396

the system.

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00:04:37,396 --> 00:04:40,278

Some of it's just trial and error.

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00:04:40,278 --> 00:04:45,202

Just by fooling around and practicing one thing and then another, the person finds,

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00:04:45,202 --> 00:04:49,605

hey, this works or this doesn't seem to do anything.

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00:04:49,605 --> 00:04:54,048

And by doing that, eventually the person finds ways in which they're able to control the

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00:04:54,048 --> 00:04:55,049

instrument.

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00:04:55,049 --> 00:05:00,333

Since the instrument doesn't control them, they're able to see effectively what they

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00:05:00,333 --> 00:05:04,576

have done to produce a physiologic change in their bodies.

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00:05:04,576 --> 00:05:10,701

Millions of Americans suffer from agonizing tension or migraine headaches.

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00:05:10,701 --> 00:05:15,544

Americans have no alternative to taking drugs, prescription medicines that often have severe

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00:05:15,544 --> 00:05:22,269

side effects.

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00:05:22,269 --> 00:05:25,872

Jill has been suffering from almost constant tension headaches.

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00:05:25,872 --> 00:05:30,515

I get to start out that painful but I got more and more painful a couple times.

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00:05:30,515 --> 00:05:37,360

I fainted from it, you know, in class or something and I just, it was starting to interfere with

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00:05:37,360 --> 00:05:38,361

everything.

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00:05:38,361 --> 00:05:43,685

Okay, Jill, I'd like you to try the exercise we've worked on before where you tighten your

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00:05:43,685 --> 00:05:49,449

forehead up as tight as you can up to the 10 on a scale of 0 to 10.

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00:05:49,449 --> 00:05:56,775

And then I want you to experience the tension, hold it for a moment and then let it go.

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00:05:56,775 --> 00:05:58,776

Good.

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00:05:58,776 --> 00:06:01,859

Hold the tension.

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00:06:01,859 --> 00:06:04,861

Feel the tension.

75

00:06:04,861 --> 00:06:11,866

Okay, now cut it in half.

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00:06:11,866 --> 00:06:16,870

Now cut it in half again.

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00:06:16,870 --> 00:06:22,874

And now let it go.

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00:06:22,874 --> 00:06:30,880

Very good.

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00:06:30,880 --> 00:06:35,924

Jill has been taking eight courses in school instead of the usual five, including physics

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00:06:35,924 --> 00:06:41,768

and pre-calculus.

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00:06:41,768 --> 00:06:47,492

She's holding down two jobs, one maintaining tanks at the Steinhard Aquarium where she swims

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00:06:47,492 --> 00:06:50,615

with seven-four sharks.

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00:06:50,615 --> 00:06:52,296

Jill is very competitive.

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00:06:52,296 --> 00:06:54,257

She's an overachiever.

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00:06:54,257 --> 00:06:58,741

Her headaches are her body's reaction to excessive stress and tension.

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00:06:58,741 --> 00:07:00,822

This way of telling her to slow down.

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00:07:00,822 --> 00:07:05,746

For Jill, the effects of biofeedback training have been dramatic.

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00:07:05,746 --> 00:07:09,468

When I started out, I had these headaches were very painful.

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00:07:09,468 --> 00:07:15,033

Ever since I've been coming here, I've brought them down from about eights and nines on a

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00:07:15,033 --> 00:07:18,315

scale of one to ten, two like ones and twos.

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00:07:18,315 --> 00:07:23,399

Jill's learning to change some of her behaviors so that they don't stimulate these nervous

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00:07:23,399 --> 00:07:27,322

system changes that lead to her headache.

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00:07:27,322 --> 00:07:32,045

People with migraine headaches can practice temperature biofeedback.

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00:07:32,045 --> 00:07:37,089

Using metal imagery, they try to warm their hands, redirecting blood flow from head to

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00:07:37,089 --> 00:07:44,654

fingers and relieving excessive stretching of blood vessels in their head.

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00:07:44,654 --> 00:07:49,338

The ultimate goal of all biofeedback training is to get the person off the machine and into

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00:07:49,338 --> 00:07:53,781

some form of relaxation, practice, or meditation.

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00:07:53,781 --> 00:07:58,545

There are a number of inexpensive biofeedback devices people can carry with them to check

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00:07:58,545 --> 00:08:03,949

that their relaxation practice really works.

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00:08:03,949 --> 00:08:09,753

At the Biofeedback and Family Therapy Institute in Berkeley, California, Aura Krug works with

101

00:08:09,753 --> 00:08:12,075

asthmatic children.

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00:08:12,075 --> 00:08:16,958

What Ben has been learning since he's been coming here for biofeedback is to control

103

00:08:16,958 --> 00:08:20,361

the wheezing and he does that by learning how to relax.

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00:08:20,361 --> 00:08:25,044

Okay Ben, now I want you to plop like a raggedy endow.

105

00:08:25,044 --> 00:08:26,045

Good.

106

00:08:26,045 --> 00:08:27,046

Okay.

107

00:08:27,046 --> 00:08:30,048

I want you to wheeze.

108

00:08:30,048 --> 00:08:31,049

Good.

109

00:08:31,049 --> 00:08:32,049

Again.

110

00:08:32,049 --> 00:08:38,774

When Ben wheezes, the tone goes up and then when he plops like a raggedy endow, the tone

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00:08:38,774 --> 00:08:41,056

goes down which shows that he's relaxing.

112

00:08:41,056 --> 00:08:44,138

Ben, we've got a new machine today.

113

00:08:44,138 --> 00:08:48,782

It's this temperature unit here and we're going to work a little bit with this today,

114

00:08:48,782 --> 00:08:49,783

okay?

115

00:08:50,183 --> 00:08:51,184

Okay, good.

116

00:08:51,184 --> 00:09:00,831

Okay, then I want you to imagine that you're at the beach and that you feel the warm sun.

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00:09:00,831 --> 00:09:13,640

Researchers have found that children learn biofeedback response more quickly than adults.

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00:09:13,640 --> 00:09:18,684

At the Drake Institute of Behavioral Medicine in Los Angeles, medical director Dr. David

119

00:09:18,684 --> 00:09:22,647

Velkoff works with Gloria.

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00:09:22,647 --> 00:09:27,971

After the recent death of her husband, Gloria developed a peptic ulcer.

121

00:09:27,971 --> 00:09:34,015

Part of her biofeedback training is for relaxation.

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00:09:34,015 --> 00:09:40,740

Okay, Gloria, I need you to swallow this.

123

00:09:40,740 --> 00:09:45,664

During the treatment, she will swallow a tiny radio transmitter to reveal the level of her

124

00:09:45,664 --> 00:09:49,867

stomach acidity.

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00:09:49,867 --> 00:09:53,109

The transmitter passes quickly into Gloria's stomach.

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00:09:53,109 --> 00:09:57,873

Its signals will be picked up by a sensitive radio receiver in the waist belt and read

127

00:09:57,873 --> 00:10:01,075

out by a meter registering antacid capability.

128

00:10:01,075 --> 00:10:08,441

Gloria, I want you to close your eyes now and I want you to think of some unpleasant thoughts,

129

00:10:08,441 --> 00:10:14,885

thoughts about events or people that upset you.

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00:10:14,885 --> 00:10:19,569

Gloria's anxious thoughts cause an increase in her stomach acidity, which is reflected

131

00:10:19,569 --> 00:10:22,851

by a small drop on the pH meter.

132

00:10:22,851 --> 00:10:24,372

Watch closely.

133

00:10:24,372 --> 00:10:34,500

Now, I want you to think about pleasant thoughts and feelings that make you feel good.

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00:10:34,500 --> 00:10:40,785

Since Gloria has undergone biofeedback treatment, her physical symptoms have significantly improved

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00:10:40,785 --> 00:10:45,228

and she is able to experience her life more fully again.

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00:10:45,228 --> 00:10:48,871

The Drake Institute is also doing research with pregnant women.

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00:10:48,871 --> 00:10:54,315

By giving expectant mothers biofeedback training, Dr. Velkoff hopes to improve the health of

138

00:10:54,315 --> 00:10:55,315

their babies.

139

00:10:55,315 --> 00:11:01,360

We want our patients to learn how to optimally react to stress and not to let stress over-stimulate

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00:11:01,360 --> 00:11:07,684

their systems because their child probably is learning right then from them how to react

141

00:11:07,684 --> 00:11:10,046

to the world.

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00:11:10,046 --> 00:11:15,730

As part of this special research program, Dr. Velkoff takes blood samples at weekly intervals.

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00:11:15,730 --> 00:11:20,254

He is trying to measure the mother's stress hormones.

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00:11:20,254 --> 00:11:25,097

He will sample blood from the newborn babies to compare their hormones with those of a

145

00:11:25,097 --> 00:11:31,782

control group that did not receive biofeedback training.

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00:11:31,782 --> 00:11:39,748

The unborn child's heartbeat will also be measured during labor to monitor fetal stress.

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00:11:39,748 --> 00:11:44,712

If what we believe to be true turns out to be the case, then we're going to have to help

148

00:11:44,712 --> 00:11:50,276

mothers redirect their attention and energy into becoming much more aware of how they

149

00:11:50,276 --> 00:11:56,280

live their everyday experiences because how they're experiencing their life every day during

150

00:11:56,280 --> 00:12:03,726

pregnancy is going to have tremendous impact on the health and personality of their infant.

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00:12:03,726 --> 00:12:08,049

Using biofeedback to reduce stress, we may affect the physical and mental well-being

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00:12:08,049 --> 00:12:11,732

of future generations.

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00:12:11,732 --> 00:12:17,376

What will life be like for tomorrow's children when people are no longer helpless victims

154

00:12:17,376 --> 00:12:26,182

of their own stress?

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00:12:26,182 --> 00:12:32,667

Athletes are subject to extraordinary stress, both physical and psychological.

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00:12:32,667 --> 00:12:37,631

At California State University in Hayward, counselor Betty Wenz helps them prepare for

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00:12:37,631 --> 00:12:38,632

competition.

158

00:12:38,632 --> 00:12:42,635

Okay, Jan, I want you to come in, up into a valley of lakes, as you normally do.

159

00:12:42,635 --> 00:12:46,637

We'll give you some feedback in terms of how you drop that lake back down to a bent knee.

160

00:12:46,637 --> 00:12:47,638

Just come on up.

161

00:12:47,638 --> 00:12:49,640

Do the sound go up now?

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00:12:49,640 --> 00:12:50,640

Good.

163

00:12:50,640 --> 00:12:52,642

Pull that tight because you want that nice and straight.

164

00:12:52,642 --> 00:12:53,643

Up.

165

00:12:53,643 --> 00:12:54,643

Further over.

166

00:12:54,643 --> 00:12:55,644

Good.

167

00:12:55,644 --> 00:12:56,645

Pull.

168

00:12:56,645 --> 00:12:58,646

Now, drop by keeping this down.

169

00:12:58,646 --> 00:13:00,648

Keep the sound down.

170

00:13:01,609 --> 00:13:03,610

Keep the sound down.

171

00:13:03,610 --> 00:13:04,611

Very nice.

172

00:13:04,611 --> 00:13:05,612

Very nice.

173

00:13:05,612 --> 00:13:06,612

Beautiful.

174

00:13:06,612 --> 00:13:07,613

Whoops, that's it.

175

00:13:07,613 --> 00:13:08,614

Keep that under control.

176

00:13:08,614 --> 00:13:09,614

Relax more.

177

00:13:09,614 --> 00:13:10,615

Relax.

178

00:13:10,615 --> 00:13:13,617

The top, relax the top.

179

00:13:13,617 --> 00:13:16,620

Should I use the bottom?

180

00:13:16,620 --> 00:13:17,620

Good.

181

00:13:17,620 --> 00:13:22,624

Much better.

182

00:13:22,624 --> 00:13:27,628

Since Jan started biofeedback training, she has risen to the ranks of national competition

183

00:13:27,628 --> 00:13:32,591

in synchronized swimming.

184

00:13:32,591 --> 00:13:36,594

Glenda has had problems with her form and with performance anxiety.

185

00:13:36,594 --> 00:13:44,600

Okay, we're going to have you come around so that after the hip punch, you're going to

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00:13:44,600 --> 00:13:45,601

make the sound come up.

187

00:13:45,601 --> 00:13:48,603

You don't want the arm to come in until after the hip punch.

188

00:13:48,603 --> 00:13:49,604

Okay?

189

00:13:49,604 --> 00:13:50,605

Okay, let's give it a try.

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00:13:50,605 --> 00:13:51,605

You can hear the sound.

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00:13:51,605 --> 00:13:54,608

Let's try it one more time.

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00:13:54,608 --> 00:13:55,608

Remember?

193

00:13:55,608 --> 00:13:57,610

Punch, then swing it around.

194

00:13:58,571 --> 00:14:00,572

That's the way to do it.

195

00:14:00,572 --> 00:14:02,574

That's it.

196

00:14:02,574 --> 00:14:07,577

This year, Glenda is competing at the championship level in California.

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00:14:07,577 --> 00:14:12,581

Stephanie specializes in the 3,000 and 5,000 meter runs.

198

00:14:12,581 --> 00:14:16,584

I'd get into a race and my shoulders would start coming up and I have problems when I

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00:14:16,584 --> 00:14:17,585

run.

200

00:14:17,585 --> 00:14:18,585

My arms crossed anyway like this.

201

00:14:18,585 --> 00:14:22,588

It looked really funny and my lungs tightened up.

202

00:14:22,588 --> 00:14:23,589

I couldn't breathe.

203

00:14:23,589 --> 00:14:25,591

So my times were terrible.

204

00:14:25,591 --> 00:14:28,553

Okay, see if you can bring that sound down by forcing the shoulders down a little bit

205

00:14:28,553 --> 00:14:29,553

good.

206

00:14:29,553 --> 00:14:30,554

What does it feel like?

207

00:14:30,554 --> 00:14:33,556

If I can breathe a lot better, it's a lot more relaxed.

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00:14:33,556 --> 00:14:37,559

You know, when I realized where the tension was, I brought my shoulders down and this

209

00:14:37,559 --> 00:14:40,562

year, my times have come down two minutes in races.

210

00:14:40,562 --> 00:14:45,565

But the thing that's most valuable of all is that it's a new form of information.

211

00:14:45,565 --> 00:14:49,568

It's a very powerful form of information and it's the athlete's information.

212

00:14:49,568 --> 00:14:52,570

It's not ours or the coaches or anyone else's.

213

00:14:52,570 --> 00:14:57,574

It is the athletes and they are very much in control.

214

00:14:57,574 --> 00:15:03,579

Engineer Ned Weed suffered a stroke which severely hampered his mobility.

215

00:15:03,579 --> 00:15:08,582

Suzanne places biofeedback electrodes on Ned's calf muscle.

216

00:15:08,582 --> 00:15:13,586

She teaches him to relax his muscle when his heel touches the ground and to tense it

217

00:15:13,586 --> 00:15:19,590

when he pushes off.

218

00:15:19,590 --> 00:15:21,592

Okay, stop for a minute, Ned.

219

00:15:21,592 --> 00:15:24,594

What I would like to hear is an arm and an off.

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00:15:24,594 --> 00:15:26,596

All right, I'll try to do it.

221

00:15:26,596 --> 00:15:27,596

I know how I get it.

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00:15:27,596 --> 00:15:30,599

The way you get it is to put your weight through it as you step on it.

223

00:15:30,599 --> 00:15:31,599

I know.

224

00:15:31,599 --> 00:15:32,600

That brings the off.

225

00:15:32,600 --> 00:15:33,601

Yeah, I know.

226

00:15:33,601 --> 00:15:35,602

Then you get the arm as you lift your leg and swing it forward.

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00:15:35,602 --> 00:15:37,604

I know exactly how it works.

228

00:15:37,604 --> 00:15:39,605

Let's try it again.

229

00:15:39,605 --> 00:15:40,606

Good.

230

00:15:40,606 --> 00:15:50,613

The biofeedback therapy has tremendously relieved me of the frustrations that I was confronted

231

00:15:50,613 --> 00:15:52,615

with all the time.

232

00:15:52,615 --> 00:15:55,617

I'm now able to get around quite ably.

233

00:15:55,617 --> 00:16:00,621

The muscles in my left leg have returned considerably.

234

00:16:00,621 --> 00:16:04,624

And I'm even beginning to use my left hand.

235

00:16:04,624 --> 00:16:10,628

And that is my next hope is that I can recover more and more of the use of that left hand.

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00:16:10,628 --> 00:16:14,631

When I've done that, I will consider myself almost totally recovered.

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00:16:14,631 --> 00:16:18,634

Nearly 2% of the population suffers from epilepsy,

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00:16:18,634 --> 00:16:25,639

a mysterious disease in which uncontrolled nerve firings deep within the brain cause crippling seizures.

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00:16:25,639 --> 00:16:30,643

In Santa Rosa, California, researcher Donna Andrews works with Debbie,

240

00:16:30,643 --> 00:16:33,645

who's had seizures since she was 6 years old.

241

00:16:33,645 --> 00:16:38,649

I become apart from everything around me.

242

00:16:38,649 --> 00:16:41,651

And it's like a tunnel that I'm in.

243

00:16:41,651 --> 00:16:45,654

And I'm just seeing straight ahead and nothing around me.

244

00:16:45,654 --> 00:16:47,655

And I pass out.

245

00:16:47,655 --> 00:16:52,659

So last year in the beginning of the year, I was getting seizures much more often.

246

00:16:52,659 --> 00:16:54,661

It was like one every other week.

247

00:16:54,661 --> 00:16:56,662

I was under a lot of stress.

248

00:16:56,662 --> 00:16:59,664

A lot of things were happening in my life at that time.

249

00:16:59,664 --> 00:17:06,670

Okay, Debbie, I'd like you to take a couple of deep breaths, hold them, and let them go very slowly.

250

00:17:06,670 --> 00:17:10,672

Debbie tries to reach a state of deep relaxation.

251

00:17:10,672 --> 00:17:16,677

She listens to tones derived from her brainwaves and tries to keep them on continuously.

252

00:17:17,678 --> 00:17:26,684

People with epilepsy seem to be prisoners of a certain type of brainwave functioning.

253

00:17:26,684 --> 00:17:31,688

My goal is to give them a state that they can go to and gather their thoughts.

254

00:17:31,688 --> 00:17:36,692

I've been on medication ever since I've been 6 years old.

255

00:17:36,692 --> 00:17:39,694

And I take these pills, which are downers.

256

00:17:39,694 --> 00:17:43,697

If I am supposedly down now and I feel good.

257

00:17:43,697 --> 00:17:47,700

I wonder how it must feel if I don't take them.

258

00:17:47,700 --> 00:17:52,704

Well, I've worked with a machine and I've learned to control my brainwaves.

259

00:17:52,704 --> 00:17:56,706

And ever since I've done that, I have no seizures.

260

00:18:00,709 --> 00:18:07,715

Epileptics who use biofeedback may eventually be able to control their seizures and reduce their medication.

261

00:18:07,715 --> 00:18:12,718

At the Langley Porter Institute of the University of California, San Francisco,

262

00:18:12,718 --> 00:18:20,724

scientists conduct research with brainwave biofeedback that goes far beyond its current clinical uses.

263

00:18:20,724 --> 00:18:25,728

They monitor multiple channels of brainwaves from various parts of the scalp

264

00:18:25,728 --> 00:18:31,732

to discover connections between brainwaves and the inner workings of the human mind.

265

00:18:31,732 --> 00:18:35,735

Dr. James Hart is assistant professor of medical psychology.

266

00:18:35,735 --> 00:18:40,739

My assistant is in the chamber doing alpha brainwave biofeedback.

267

00:18:40,739 --> 00:18:44,742

We have coming out on the polygraph 8 channels of brainwaves.

268

00:18:44,742 --> 00:18:50,746

We have one channel of muscle tension from the forehead, the EKG or heart function.

269

00:18:50,746 --> 00:18:53,749

And we have two channels of respiration.

270

00:18:53,749 --> 00:19:00,754

When he produces alpha activity, large bursts are seen on the polygraph, these large dark patches of ink.

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00:19:00,754 --> 00:19:06,758

And in addition, the tones become louder so that he knows when he's making alpha.

272

00:19:07,759 --> 00:19:14,764

The experimental subject sits in almost total darkness in an acoustically isolated chamber.

273

00:19:14,764 --> 00:19:23,771

He tries to stay in a state of deep relaxation, maximizing the energy his brain puts out as waves of a type called alpha.

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00:19:23,771 --> 00:19:32,777

The computer keeps a record of his alpha wave energy and turns off the tones every two minutes so he can see his scores.

275

00:19:33,778 --> 00:19:44,786

People who substantially increase their alpha brainwaves have experienced reduction in things like schizophrenia, paranoia and anxiety.

276

00:19:44,786 --> 00:19:51,791

There are also physical health benefits such as reduction of high blood pressure, which follow alpha feedback training.

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00:19:51,791 --> 00:19:59,797

We would hope that people would be able, through the use of biofeedback, to attain some of the most profound states like Samadhi,

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00:20:00,798 --> 00:20:10,806

as the yogis call it, or Satori as it's referred to in Zen, which is a state of enlightenment out of which the greatest forms of creativity could emerge.

279

00:20:12,807 --> 00:20:21,814

Alpha feedback has been characterized as involving feelings of flying, floating, lightness and space.

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00:20:21,814 --> 00:20:27,818

And in profound enhancement of alpha, you actually feel that you lift out of the chair.

281

00:20:30,820 --> 00:20:40,828

Dr. Hart also experiments with shared feedback in which he tries to synchronize his brainwaves with those of another experimental subject.

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00:20:41,828 --> 00:20:50,835

Sharing feedback, sitting in the same chamber with someone else, hearing their tones and your tones blending, seeing their scores working together,

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00:20:50,835 --> 00:20:57,840

attaining the same brainwave state brings about a profound enhancement of interpersonal rapport.

284

00:21:00,842 --> 00:21:09,849

In the future, there will be implantable computer systems so that you could have sensory experiences about things going on in your brain and body,

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00:21:09,849 --> 00:21:21,858

which now you have no sensory apparatus for. When people can adopt the state of consciousness that they wish, at the moment they wish it, we will have an entirely new culture.

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00:21:22,859 --> 00:21:32,866

Biofeedback is only beginning to be widely practiced. Ultimately, it could usher in a new era of human healthcare.

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00:21:32,866 --> 00:21:39,871

The most exciting thing to me personally is that biofeedback will become the major aspect of the medicine of the future,

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00:21:39,871 --> 00:21:48,878

a behavioral medicine in which people learn to become an active participant rather than a passive recipient of drugs and surgery.

289

00:21:52,881 --> 00:22:00,887

Coming up next on FBI The Untold Stories, the agency's behavioral science unit creates a profile of a brutal killer.

290

00:22:00,887 --> 00:22:08,893

Then histories, crimes and trials, tracks the crime and punishment of Chicago's notorious kidnapers and killers.

291

00:22:08,893 --> 00:22:10,894

Leopold and Loeb.

292

00:22:21,902 --> 00:22:26,906

The Untold Stories