



Shape Up SF PE Advocates brought Dr. John Ratey to San Francisco August 10-11, 2011, to keynote a PE Forum at the school district and to present to a variety of audiences about how physical education and physical activity benefit the brain. During his visit, we were fortunate to schedule an interview with Carol Kocivar, California PTA president, and host of KALW's *Looking at Education*, that airs the second and fourth Tuesday of each month at 6pm, before the SFUSD Board of Education meetings. What follows is a transcript of the interview that was aired on 8/23/11.

KOCIVAR: This is Carol Kocivar, *Looking at Education* on KALW, and joining me is Dr. John Ratey, who is obviously a doctor, but an associate clinical professor of psychiatry at Harvard Medical School. And the reason we're talking with him is he has written a book called *Spark: The Revolutionary New Science of Exercise and the Brain* with some serious implications for what we do in our schools. So Dr. Ratey, what are some things that we should be looking at to improve student achievement and improve instruction?

RATEY: I think the biggest thing that's happened over the past 15 years is what we've learned about what exercise and play does to the brain. In my way of thinking, exercise is the best way to optimize brain function in a variety of different areas, but all of them relating to improving student learning. And I've been spending the past four years on a mission around the country and around the world to help change the educational systems. I think we've given short shrift to physical education and physical activity in general. What we know from our work in the neuroscience is that exercise is a very potent energizer of the brain, it stimulates much brain function, stimulates brain growth and it affects the learner in 3 key ways.

First, it affects brain systems. It makes the attention system better. It makes the memory system better it improves motivation.

It decreases impulsivity. It decreases discipline problems. It makes the student more a participant and motivated in the classroom. As well, it makes our brains, our 100 billion nerve cells, more ready to do what they need to do if they're going to learn anything- which is to grow.

And then the 3rd big point is that it helps better than anything else we know, boost the development of brand new nerve cells every day.

KOCIVAR: Well that's what I'd like - I'm going to run around during this interview because I would like some brand new nerve cells. But you said something that sort of triggered a question and it has to do with activity and attention. A lot of times, teachers may do something that is counterintuitive. Because if they have a student, for example, who is highly active in class and needs physical exercise, they tell them to slow down and stop, don't do anything. Right or wrong?

RATEY: That's very, very right. And there's a new finding or a new strategy called "time in" rather than "time out." And the "time in" is getting the kid moving - sending them out to run around the school, run up and down the stairs. One principal in Fort Collins, Colorado came up with this years ago where he got an old exercise bike, put it in a closet, and had the child go in there for 5 minutes if he was having a hard time, or if she was having a hard time, managing her behavior in the classroom and then come



back and rejoin the class – without ever going to the principal’s office. This is an effective way to work for many students, and it’s not about burning off energy. It really does turn the brain on, because a lot of times the discipline problems within the classroom has to do with the child not being able to inhibit their impulses as they are getting bored, fidgety or nudgy. And they want to have to move around. Well they have to move around because they have to turn their brain on. That’s what’s happening. Now we know this because when we exercise, we involve a lot more of our brain cells than when we are sitting and just trying to pay attention. But by doing that, you effectively make the child much more able to regulate their own emotions and their own impulses, so they become better citizens in the classroom.

KOCIVAR: So you’re really talking about a culture change. You’re talking about how do teachers and parents respond to the physical needs of youngsters in terms of academic performance and engagement. And what would be the things that if you were going into a school to say to the teachers or to say to the principal about “We have this research. And we’d like to make sure that children benefit from it.” What should we be doing in our schools to make this happen?

RATEY: The best thing is to just change the ideology, the culture, the paradigms that all of us have, unfortunately, which is that the best way for children to learn is to sit there and drill, drill, drill. What I call the horrors of “no child helped at all”, to teach to the test and to be guided by that, has left us without the arts, without music, and certainly without PE or recess. And on the physical side, we know that by engaging in physical activity, that it not only improves this emotional regulation, which me as a psychiatrist is very, very interested in, because we know that it improves our attention system; exercise and play can help manage our impulses, improve our mood, decrease our anxiety and help us better to deal with stress. All those things are very important for the learner, as well as a direct effect on our cognitive abilities. For instance, I would share with them this startling research that is coming out all the time.

One school in Canada began a vigorous exercise program in a group of their 25 most difficult students, and in the previous 3 months, there were 95 days of suspension in this group. After they began this exercise regimen every day, they dropped to 5 days of suspension, as well, they saw a huge increase in student participation and improvement in credits earned, classes completed. And this is what we see all over the place when we begin to have the kids moving. You see almost an immediate drop in discipline referrals, an improvement in attendance, improvement in motivation and improvement in test scores and improvement in school performance.

KOCIVAR: Let me just remind you, this is Carol Kocivar, *Looking at Education* on KALW, and I’m speaking with Dr. John Ratey, who is an Associate Clinical Professor of Psychiatry at Harvard Medical School. And the author of *Spark: The Revolutionary New Science of Exercise and the Brain*. And Dr. Ratey, you’ve not only written this book, but you’ve actually started a not for profit to actually take what you’ve learned from this research and put it into action in schools.

RATEY: That’s right, and we’re very much involved in that right now. We’ve started in 10-12 schools in Los Angeles with - it’s not a program per se, with the support and knowledge of my team to really help the schools change, adding exercise in the morning especially is key, 20 min of vigorous exercise for all



the children, and then to have what we call “brain breaks” during the day. 4-5 min period of exercise by their desks – dancing, moving, calisthenics, depending on the age group, different activities, that gets their heart rate up. And once you get your heart rate up, that means you are pumping away not only your muscles and your blood system, but you’re also making your brain work harder, but in a very different way than trying to memorize French or struggle with a math problem. And what we see is a vast improvement in attention, ability to regulate after these brain breaks.

KOCIVAR: You know, what you’re saying is quite fascinating because a lot of times when we think about what are some reforms that we need to address in terms of to improve academic performance of youngsters. We think of extra resources or more money on this or a new program on that. But what I hear you saying is using the time in the school more efficiently and more effectively.

RATEY: Absolutely, and I think it’s always nice to have very effective PE teachers involved in setting up programs but what the big currency that we’re dealing with, and what I tell teachers and principals and superintendents is that it’s not - the currency isn’t money. The currency is time. To set up some time to get physical activity going.

There’s another school. There’s two 6th grades. One 6th grade, their teacher took them out for about a 2.5 mile run each morning. The other 6th grade didn’t. The difference between the two was remarkable. They were absolutely parallel demographics. The one 6th grade that was running every morning, they saw much fewer discipline problems, no days of suspension and fewer absences as well as their academic performance was 15% better than that 6th grade that didn’t run. It’s not a great scientific study, but it is really an empirical event and one that I think has been repeated again and again throughout the country and throughout the world now.

KOCIVAR: Now if you’ve been an adult and you like to exercise, there’s always something that happens when you’re doing it. I’ve thought – oh my gosh, I’ve thought of something that try as hard as I could while I’m sitting at my computer, when I’m out for a run, all of a sudden something happens.

RATEY: Right, that something that happens is when you’re using your brain, you’re using more of your 100 billion neurons - nerve cells. You are spilling a lot of your neuro transmitters. Dopamine, serotonin, norepinephrine – things that we’re mainly familiar with from the media. As well as you’re creating the endorphins , creating these endocannabinoids, all these other new bits of stuff that we’re becoming aware of that are important for our brains to function optimally. So you’re setting up then, a better brain for you to be using. When you’re out running, yes you are going to be better able to focus on things that, decreasing the stress of everyday life, and then bingo up comes the new idea. I have a slide I use of Einstein riding a bicycle who was quoted and of course I’m not sure the truthfulness of the quote, but it said that he thought of the theory of relativity while he was riding his bike. So I always use that to parallel just what you were saying.

KOCIVAR: I’d really like to thank Dr. John Ratey who is the author of *Spark: The Revolutionary New Science of Exercise and the Brain* and also the founder of a not for profit, Sparking Life which is at, guess what, Sparkinglife.org. This is Carol Kocivar, *Looking at Education*, on KALW.