

**The 2008 Physical Activity Guidelines for Americans:
Development and Dissemination of New Federal Evidence-
Informed Recommendations
George Washington University
December 9, 2008**

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JOSEF REUM, Ph.D.: Good afternoon and welcome to the George Washington University School of Public Health and Health Services Grand Rounds for December. We're very proud to host this series, which is sponsored by Pfizer, Inc. and the theme this year is Moments in Leadership.

We are delighted today to actually talk about a topic that well, the speaker said to me well, it's not the most exciting title that I could have hoped for but what I can tell you is that here in Washington, whenever you offer a guideline, there are 10,000 people standing ready to fight about that.

Here in Washington, the epidemiology is such that for every elected official, there are 371 registered lobbyists whose only job is to prevent change. Those folks fight about guidelines. They fight about what the right thing is and what the wrong thing is or whether their product is included.

Today, we're going to here about not a buy-out but a buy-in. the person to introduce our speaker today is someone who we're thrilled bought in with the George Washington University, Dr. Loretta Di Pietro joined us this year coming to us from Yale University School of Medicine where she was an Associate Professor of Epidemiology and a Fellow at the John B. Pierce Laboratory.

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Dr. Di Pietro, in her short time here, has built bridges with the Department of Epidemiology, Children's National Medical Center, the School of Medicine, the Departments of Basic Science. She is coaching one of our club athletic sports in our undergraduate program and they're starting to win.

I'm worried we might lose her as the next athletic director for the university but I'm actually thrilled to introduce her as probably one of the pre-eminent researchers in the School of Public Health and Health Services and probably our proudest accomplishment and achievement in 2008. Dr. Di Pietro [applause].

DR. LORETTA DIPIETRO: Flattery will get you everywhere Dean Reum. Well as you're all aware, disuse and poor nutritional intake now account for the majority of chronic disease burden and public health spending in the United States. Sadly, much of the disease-related morbidity previously experienced by middle-aged and older-aged people, those things such as insulin resistance, hypertension, and type II diabetes can now be observed among children.

That physical activity is beneficial to health and human function has been recognized for thousands of years. It is only most recently, however, that scientists have determined

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just how inextricably linked energy expenditure is with energy intake in the careful interplay of metabolic control.

As our social milieu has shifted from that of our hunter-gatherer ancestors, the lifestyle for which our metabolism was precisely engineered to that of modern labor saving, Internet and cell phone and unlimited food supply-dependent culture, a major disruption of the feast/famine physical activity or hunting cycle has occurred.

Thus similar to tobacco regulation, safe automobile design and control of toxic substances, we have reached the point at which physical activity recommendations and guidelines must be an integral part of effective public health practice from the local levels to that of the federal level.

I am very pleased to introduce our speaker for today, Captain Rick Troiano. Dr. Troiano received his masters and doctoral degrees in nutrition from Cornell University. In 1993, he entered the government service and the commission corps of the U.S. public health service as an epidemic intelligence service officer.

He joined the division of the Health Examination Statistics of the CDC's National Center for Health Statistics where he helped designed the body composition, physical activity, and physical fitness components of the National Health and Examinations Survey, also known as NHANES. These

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components included DEXA scans to measure body composition and expanded physical activity questionnaire to capture physical activity from transportation, occupation, and household tasks in addition to those from recreation. He also instituted a sub-maximal treadmill test for cardiovascular fitness.

Since moving to the National Cancer Institute in 1997, Dr. Troiano has extended his work with the NHANES by implementing the use of physical activity monitors in the survey to obtain objective measures of participant's physical activity levels.

He continues to promote objective monitoring and the assessment of physical activity from transportation and other non-recreation context in other national surveys.

In September of 2006, Dr. Troiano began a detail to the Health and Human Service Office of Disease Prevention and Health Promotion to serve as the coordinator for the development of the first physical activity guidelines for Americans.

The title of Captain Troiano's talk for today is "The 2008 Physical Activity Guidelines for Americans: Development and Dissemination of These New Federal Evidence-Based Recommendations." Thank you [applause].

RICHARD TROIANO, Ph.D.: Good afternoon. It's really a pleasure to be here and I want to thank the School of Public

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Health and Health Services and Dr. Di Pietro for inviting me to be a part of this public health grand rounds series. When I look back, look on the website and see the names of some of the other folks that are part of this, it's pretty prestigious groups. So it's really an honor to be a part of that. Thank you very much.

When I mentioned to Dean Reum my concern about gee, this is a pretty dry title I have, basically going to talk about how bureaucracy works, I had sort of forgotten I am in Washington, D.C. So it is a little more exciting here but as Dr. Di Pietro noted from my biography, this is not my usual shtick. My focus is on assessment of physical activity and measuring other health behaviors as well with my background in nutrition but it was a real opportunity to be a part of this process to develop the first-ever federal physical activity guidelines.

So I hope in discussing this describing the process and talking about the whole thing from the beginning, the conceptualization to some of the ideas we have for disseminating and helping promote these ideas, there's some information here that'll be useful to you as public health practitioners as well as clinicians because some of the issues that we face in communicating from where people are in their behavior to where we really think the science shows they need

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to be requires a little nuance. We ran across that in this process. So hopefully you'll get some ideas from that as well.

What I'm going to talk about today is how the development of the guidelines occurred. I'm going to spend a couple of minutes talking about one feature of it, which is related to the whole evidence-informed aspect. As I'm sure you're all aware, medicine in general and public health practice as well, is moving towards a science-based, evidence-based paradigm so that we don't just kind of do what we think is good but we really have a strong evidentiary base to support it.

When you look at behavioral aspects, it's a little more complicated. Randomized, controlled trials are pretty hard to accumulate. So we did do our best and that's why, my title actually I switched it at the last moment to "evidence-informed," which the chair of the advisory committee is one of his nuances.

I'll actually go over the guidelines themselves and then talk about what I think is one of the really exciting and innovative aspects of this process, which is how we've developed a public/private partnership and a tool to promote that to help disseminate the guidelines.

So this is basically where we were prior to the beginning of this process. It's been 12 to 13 years really

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since we had major statements on the amount of physical activity that promotes health. So '95, really it got started with where we moved away from exercise recommendation to public health recommendations for physical activity.

It started with the CDC/ACSM recommendations, which were then reinforced by the Surgeon General's report on physical activity in health. Then at about the same time, the NIH had a consensus conference on cardiovascular and all of these, as I'm sure you're aware, came up basically with the 30 minutes or more of moderate intensity physical activity accumulating that on most, if not all, days of the week. That got operationalized into five or more days per week of physical activity.

Now that wasn't the total end of it until just now because both the dietary guidelines for Americans, which I have to say in regard to Dean Reum's statement about the lobbyists, the dietary guidelines get a lot of attention because they're talking about salt and sugar and dairy and eggs and food groups that have really large and very focused lobbying groups.

The physical activity guidelines, we were blessed, because nobody had anything to complain about with us, even the TV/video game generation people are now, we now have WII fit. So we had a very smooth process. We really didn't have anybody who said I don't like what you're doing because it's counter to

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my product but the dietary guidelines in both 2000 and 2005 included statements about physical activity.

Now the thing is, as Dr. Di Pietro referred, it was really on the energy balance side. They were focusing on aerobic activity, cardiorespiratory activity and as a component of energy balance. I think in 2000 or maybe before that, the statement was balance the food you eat with physical activity.

This administration, we were able to move forward with physical activity for a number of reasons. It was promoted by the director of the Office of Disease Prevention and Health Promotion, Rear Admiral Penelope Slade-Sawyer, and it was a good opportunity because as you, I'm sure all know, the President really is a physically active man. He supports being physically active.

So the physical activity guidelines were actually one of the pillars of Secretary Levitt's prevention priority that was announced in May of 2006 and those prevention priorities were based upon the President's Healthy U.S. initiative. You see that the four pillars are up there as bullet points.

In about July or August of 2006, a federal steering committee was formed to move this forward to consider and then move forward the development of physical activity guidelines. Then it was led by Admiral Slade-Sawyer, who's actually the Deputy Assistant Secretary for Health, myself, Melissa Johnson,

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who's the Executive Director of the President's Council on Physical Fitness and Sports, and Bill Cole and Janet Fulton from the CDC.

I forgot to mention I don't know if you noticed on my title slide there was just a whole raft of icons marching across the bottom. That represented the various organizations that participated in this process. I think for those of you who are interested in Washington and how the government works, this was another really positive aspect of this process. We had involvement of multiple organizations within the department and everybody played really nice together in the sand box. That always doesn't happen.

So given the background that we hadn't had any real statements, a real review of the science, and comprehensive statement since the mid-90s, we had these statements in the dietary guidelines, we wanted to come up and develop comprehensive, evidence-based physical activity guidelines that covered not only aerobic activity, cardiorespiratory, but also elevated strength and strengthening exercises.

If you looked at the dietary guidelines, there's even the CDC/ACSM guidelines, there was all this talk about what's moderate, what's vigorous, how do you accumulate it, what counts, and then there was generally a statement or maybe a brief paragraph that said oh by the way, you should do

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strengthening activities a few times a week as well. So we hope to elevate that a little more.

We also were considering the aging of the population and recognizing the importance of balance-improving activities. There'd been a lot of organizational or disease-focused recommendations out there, we hoped kind of harmonized across that so everybody could point to one thing.

We also wanted to focus and address some subpopulations including older adults and persons with disabilities who had really been left out of a lot of the other statements.

Before we really got started, given that this was a government activity, there was a desire to make sure it was justified. So the first activity was to sponsor an Institute of Medicine workshop, which was held in October of 2006 that was titled "Adequacy of Evidence for Physical Activity Guidelines Development."

It was, I think, a two-and-a-half day workshop. We had six sessions and discussions. This was not a comprehensive review of the evidence. We brought in experts in particular areas and we asked them, from their knowledge, talk about the state of the science for these various outcomes.

As you can see, we addressed not only particular disease outcomes or health outcomes but population groups and the report is available on the National Academy's website.

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One of the statements that I think is relevant and really focused the ensuing efforts in the guidelines development was made by someone who was a speaker in this series back in January, Dr. Russ Pate. As we finished up the meeting and we're trying to summarize the whole situation, he said there is a lot of low hanging fruit here.

We don't have to go crazy looking at what is the effect of physical activity on chronic fatigue syndrome because there's just a ton of evidence about cardiovascular disease, cancer, metabolic disorders. We can justify these guidelines just on the stuff that's really clear out there. I think that really helped make the process more efficient, which as you'll see in a few minutes, was really important because they didn't have a lot of time.

So as I mentioned, an important aspect of this was to be evidence-based. That was our first concept that evolved into what we called evidence-informed but we certainly wanted to have a systematic literature review. I mean that is a critical aspect of any kind of evidence-based process.

We didn't have a lot of time. We didn't have a lot of money and so given that we had had these efforts and documents from the mid '90s, we focused the— made the decision to focus on research that had occurred since the Surgeon General's

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report. They went back to January, '95 and looked from that point forward.

The literature review was stratified by the age groups that you see here. The goal was to develop and implement a systematic review of physical activity in health for maximal benefit to the Federal Budget Committee. Now let me orient you here.

We had to start developing the literature database before we knew who it was for. The Federal Advisory Committee was not yet named. This process started about the end of 2006. The solicitation for the Committee went out in January and they weren't named until May.

However, we had a pretty good idea of what, this was led by the Physical Activity and Health branch in CDC, so we had a pretty good idea of what kind of questions needed to be asked. This literature review provided initial database for them to work with and then worked with a committee ongoing as it proceeded.

This is probably impossible to see but what it shows you is how the database and the literature review was structured. So on the left, you see what our aspects of the physical activity exposure. So they looked at intensity, frequency, duration, patterns of physical activity, different types of physical activity as well as just energy expenditure.

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That was crossed with, you see here, nine outcomes, cardiorespiratory health in the top boxes and then the very bottom, cardiorespiratory health, metabolic health, which then got split out and I'll show you why, musculoskeletal cancer, functional health, which is really focused on older adults, mental health, all-cause mortality, and at the bottom, adverse events, and risks related to physical activity.

The boxes in the middle, which are totally impossible to read what's in them were mediating factors. That was a second phase of the literature review as the committee was formed to say if you don't have enough hard outcomes to look at, what are some of the biomarkers or risk factors that you might want to look at as more proximal indicators of the benefits or risks to physical activity.

This literature review was structured around these questions. So is physical activity associated with, fill in the outcome, and then looking at the dose of it, what does is, can you talk about a dose? What dose of physical activity is associated with the outcome? Does the outcome vary by factors such as different intensities? Can you accumulate it? Is there a specific pattern? Are there different types of physical activity that do or do not contribute to it?

We also, as I noted, looked at risks of physical activity. This is, I think, one of the strong statements that

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came out of it that looks at the benefit risk ratio. Then because we had this dozen years or so of the message out there of 30 minutes five times a week or on most days, is there any particular reason that that needs to be changed? That was a specific question that we tried to look at.

Again, impossible to read but this just gives you an idea of the evidence tables that were developed and they included all kinds of factors about study design, populations, population characteristics, the samples, the exposure characteristics, the outcomes. It was multiple pages of information that were distilled out of each of the articles that was selected to be abstracted.

The CDC had about 50, a little over 50, abstracters around the country, this was all done with an online database, who were reading the studies, taking all this information and boiling it down to evidence tables.

Another feature that was highly useful and highly used by the committee was the fact that each article in the database was linked to its PDF. So if they wanted to read the actual article or if they weren't sure that all the information they needed was in the data tables, they could just click on it and download the PDF.

Now one of the things and I have the website, I think it's on your one page handout if you picked it up as well as on

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one of the slides here, this database is now available to the public. The PDFs aren't there. You can't download PDFs because of copyright restrictions but you can go in and query the database for looking at articles related to a particular age group, particular kind of study design, particular kind of exposure and outcome and get the abstracted data for the studies on those features. There's the website at the bottom.

This is an overview of the entire database so they searched the database, the Medline, from '95 until the end of 2007, which has a lot of articles. There are close to 15,000 articles that met the search criteria. I don't know if any of you have done this kind of a metanalysis or literature review but you basically have to at least scan the titles and the abstracts of all those to see if they fit and roughly ten to 11-percent are really what you're looking for.

So what we ended up with is out of that nearly 15,000, about 1,600 articles that were relevant to the features we were looking for and then these were sent to the abstracters and there are data tables on that website for them.

So looking at how the number of articles kind of shook out, out of these roughly 1,600 articles or so, this is the number of studies that had the outcomes that you see on the slide. You can see the predominant number of them were related

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adiposity or really anything that had to do with body composition were in this adiposity group.

So if you remember back on that busy slide with all the boxes, we had a metabolic health outcome group that included obesity but that got split up so we had metabolic health, which was diabetes and aspects of metabolic syndrome and then a separate group and subcommittee was formed for energy balance. That's a group that Dr. Di Pietro was a consultant to and a very lively group it was indeed.

The other thing, if we just look at those studies, those 560 studies on adiposity, you can see that there's quite a variety of study designs incorporated in that number. This again reflects on why we had to evolve to this evidence-informed concept from an evidence-based concept. So out of the 560 studies, a little less than 200 were experimental but that is both randomized and non-randomized studies.

So if you took the drug trial model and said I'm only going to rely upon randomized control trials, when you're looking at behaviors, you really don't have much that you can go with. So you really need to cast a wider net and realize the tradeoffs when you're looking at observational and cross-sectional studies but they do have information to contribute.

So we finally get to the point where we were able to form an advisory committee and I should say that the whole way

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we developed this process was modeled on the dietary guidelines process. The dietary guidelines had been doing this for 20 or so years. The dietary guidelines are mandated by law. There's a statute that says they have to be reconsidered every five years and the advisory committee is formed to look at the existing guidelines and determine whether there's a need to update them. It never said no. Then that advisory committee goes on to evaluate the literature and update the guidelines.

For those of you who are interested in the way Washington works, it used to be that the advisory committee actually wrote the guidelines. As of 2000, the departments, in this case it's jointly done between the Department of Agriculture and Health and Human Services, made a distinction that the advisory committees evaluated the science and wrote a report but then the departments, the government wrote the guidelines themselves.

We did that same thing here as I'll describe. The advisory committee reviewed the science and then the department actually wrote the guidelines.

So in January 2007, the announcement of the intent to do the guidelines was posted in the federal register and disseminated along with a solicitation for nominations to the committees. By April, we were able to announce the choice of these 13 scientists who certainly the folks in exercise

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science, I'm sure recognized a lot of these names, we had some of the top leaders in the field across a variety of areas. Not surprisingly, those areas lined up with the outcomes that we were looking at.

So Rod Dishman is a psychologist who looks at physical activity and mental health. Wendy Cort does a lot of work with bone and musculoskeletal. Bill Krause is a cardiovascular disease scientist, etc., really great people and really fun to work with.

Now that's only 13 people. that was just the core of this effort. They held three public meetings in June and December of 2007 and February of 2008 but most of the work that led to their report was done in subcommittees. They added over 30 consultants to their various subcommittees including, as I mentioned, Dr. Di Pietro for the energy balance group.

The chapters, there were 11 chapters. There were eight boxes that I named for you, nine if we split out energy balance. Then there were two other groups that were population, one for youth and one for understudied populations. Those ultimately ended up resulting in the 11 content chapters of the guidelines committee's report.

So here is the photo of the advisory committee and they're all smiling here, which means they hadn't really started their work yet because none of them had any idea what

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we were going to put them through. If you look at the calendar on those meetings, it was about June and May actually that they completed this over 650-page report and their first meeting was June in 2007. So they did a tremendous amount of work over just a one-year period.

To give you some context, the dietary guidelines, the 2010 Dietary Guidelines Advisory Committee was just constituted and had their first meeting about a month or so ago. They have two years to do this and they're starting with something. They have a long history of guidelines. They can look at it and say well we need to tweak up this aspect or that aspect. This group is starting from scratch. They had nothing to go on. They had a lot of work to do.

As I noted, we made a distinction between the committee report, which by the way, is available from the website, health.gov/paguidelines. The committee report is there. You can download pieces of it or read it on screen. We will have printed copies, hopefully, in the next month or so that will be available for purchase through the government printing office. It's an excellent, excellent resource on the relationship between physical activity and a lot of different outcomes.

The writing group had that in draft as they were finishing it up. So the writing group was constituted around the spring, April/May. We started working with the drafts of

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the committee report. The group was chaired by Dr. David Buckner who, at that time, was the Chief of the Physical Activity and Health Branch at the Centers for Disease Control and Prevention. He's since moved on back to academia.

Representing that march of icons on my title slide, the writing group members came from the Office of Disease Prevention and Health Promotion, CDC, NIH, President's Council, as well as the Office of the Assistant Secretary for Planning and Evaluation.

We also had not only physical activity scientists involved in the writing group but communication scientists. We were really trying to make sure that we could end up with a product that people could understand and could use.

Let me just point out there's a series of products out of this process. So we've got the advisory committee report, which is really an excellent tool for researchers. As I said, it reviews the science beautifully. There's also an entire chapter on gaps in the research.

My day job, my real job is back at NCI and NIH is already looking at that chapter and saying how are we going to formulate research proposals, stimulus for research grants based on these gaps in the research.

The guidelines themselves, the target is policy makers, educated public but really targeted toward policy makers and

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folks that want to implement physical activity programs. There's also, in the toolkit that I'll talk about toward the end of this talk, of consumer targeted brochure that has way less detail and it's really about motivating people to become more physically active.

So here's our writing group, that esteemed group of 20 people. We had this, in our process, was to really make sure anything that ended up in the guidelines document was consistent with and founded on the advisory committee report. So that group of 20 people got split up into pairs. Each pair drafted a chapter.

We came together when that picture was taken in D.C. for two-and-a-half days thinking oh we'll be able to pull this together with a face-to-face meeting. Nowhere near. The amount of different perspectives even in a small group is astounding. A lot of people have their own thoughts about what's important, what to emphasize. So we continued to work online and with teleconferences for quite some time.

The document received extensive review because it's what's considered in government speak, an influential document, it has mandatory peer review and then it had to go through departmental clearance. So we ended up with over 900 individual comments that were each considered and addressed before we finalized that document.

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We finally got to October seventh, which was a glorious day in Washington. This is the day that we launched the Physical Activity Guidelines. We had a lot of fun.

Because of the connections with the President's Council and other people, we were able to actually participate in the day when the President welcomed all the Olympians and the para-Olympians to the White House and the President, that morning, actually announced the launch of the Physical Activity Guidelines.

We got to hang out in the White House as we were waiting to go on the south lawn. So we got some pictures of our leaders. This is Bill Haskell and Ben Nelson who were the chair and the vice-chair of the advisory committee and some other leaders from our country.

Then Melissa Johnson, who was our host, was able to get us there as part of the President's Council and we brought a special friend, flat Stanley who also joined us at the White House.

In the afternoon, we had an event at the Hubert Humphrey Building, the HHS launch event, which was really interesting because it led the protocol people to kind of get confused because everybody wanted to participate in this. We had, speaking in this picture, is the Assistant Secretary for Health. We had the Secretary there and we had the Surgeon

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General there. The protocol people get a little confused when they have that much top leadership and how to coordinate it all but they were able to figure it out.

We also had two Olympians there who made very motivational comments and you see Admiral Royal and Melissa Johnson on the stage as well.

So we finally got to this day where we launched the first comprehensive physical activity guidelines for Americans. Now I'm going to tell you a little bit about what's in those guidelines. First of all, what's new about them?

As I showed at the very beginning, we hadn't had a comprehensive review of the science for over a decade. So this represented the first major review of the science. It highlighted the continuum of activity that's necessary. It talks about the fact that we start with a little bit and you get some benefits but the more you do, the more benefits you gain.

Probably the biggest change is rather than focusing on a daily quantity of physical activity, we've gone to a weekly volume. The committee said when you look at the science, there really isn't anything to distinguish between achieving a certain amount of activity, 150 to 300, two-and-a-half to five hours a week. It doesn't really matter if you get it on two

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days or three days or five days at least as far as we can tell from the epidemiology that we have.

So we've gone to a total volume, which we then used to say be active your way. That's the overriding message from this is that there's much more flexibility in how you can obtain health enhancing physical activity. The guidelines address Americans over the age of six and, as I'll show you, talk about some specific subgroups.

So the major conclusions, not surprising to probably this crowd, is that regular physical activity reduces the risk of many adverse outcomes. This second bullet is really critical because, and this is where I want to talk about the piece that can be useful to clinicians.

We included in here and the science clearly supports it, that some activity is better than none. If you look in the report or I think even reproduced it in the guidelines, there's a graph of the risk of all-cause mortality and the amount of physical activity.

As you move from 30 minutes a week, not a day, 30 minutes a week to 90 minutes a week, so adding 60 minutes a week to your physical activity and epidemiological studies, the risk for all-cause mortality is reduced by 20-percent. That's not a lot of physical activity but just moving from essentially

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nothing to something has a tremendous impact on all-cause mortality.

To get the next 20-percent reduction in risk, you have to go up from about 90 minutes a week to seven hours a week. So the biggest bang for the buck is really getting people off the couch, off their butts and moving even a little bit.

Now clearly the science shows that most benefit require a lot more than that, two-and-a-half to even five hours a week but this is where I get into discussions with my colleagues who say well we really need to push people to that five hours a week. That's where they need to be but if you're down there at that 30 minutes a week and somebody says you need to be doing five hours a week, there's a pretty good likelihood you're going to go not going to happen, not going to try.

So what we've tried to do with the information provided as well as the consumer documents is try and move people along that continuum. Highlight the fact that even a little increase is going to give you a big improvement, still put the target out there where we'd like people to be but don't discourage them by just focusing totally on that, what for many people seems unachievable target.

The guidelines also focus, as I hoped, on both muscle strengthening as well as aerobic physical activity and

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highlight the unique benefits of strengthening activities beyond what you get from aerobic activity.

We still have the message that if you do want to improve your fitness and there's a whole discussion about overload and progression that if you really want to improve your fitness, you do need to do aerobic activity at least ten minutes at a time.

Overriding message, everybody has health benefits. The chapter that Dr. Di Pietro worked on, energy balance, you have to address what about weight loss, what about maintenance of weight loss. The message from that group, the first message no matter what your weight and your weight status, first aim for health-enhancing physical activity.

If you want to have physical activity contribute to weight loss, you're going to need to do more. Probably if you really need to lose a substantial amount of weight and need to maintain it, you're probably going to have to not eat as much. you just can't do it all with physical activity.

This is quite a switch from the last dietary guidelines and particularly the DRI report on macronutrients where they came out saying well 30 minutes will give you health but if you want to maintain weight, you really need 60 minutes a day and if you want to lose weight and keep it off, you need 90 minutes a day.

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I don't know if you remember when those came out, a lot of people in the newspaper had a field day with it going who can do 90 minutes a day of physical activity. So this report and this group of scientists has said it can't all be physical activity. If you're really focusing on weight loss and maintenance of weight loss, you've got to look at the input side a lot too.

We talk about persons with disabilities. We talk about the kind of adjustments that might need to be made for persons with disabilities. This is probably the least active subpopulation in the country or the world are persons with disabilities. They're at the same kinds of risks for cardiovascular disease, diabetes, all the other chronic diseases that everyone else is if not more so.

I talked about the risk piece. It's very clear that very rigorous review of injuries and risk of physical activity and point out that the benefits far outweigh the risks, whether you're looking at sudden cardiac events or even musculoskeletal events. The message is if you start slowly and increase gradually, there is very little risk.

For this group, one of the big messages is ACSM and other organizations have been saying well physical activity is great but if you want to start, you'd better go see your doctor first. Well that's a huge barrier to a lot of people. These

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guidelines now point out that if you're symptom-free and you don't have chronic conditions, you can probably start being physically active without asking your doctor if it's okay.

If you have a chronic condition, you should be seeing a physician or a healthcare provider for the condition. Then you might want to ask them about physical activity but we tried to reduce that barrier of a lot of people aren't really eager to start being physically active to begin with. You say well don't do it until you see your doc, you made it a lot easier for them not to do it.

As I mentioned, we've got a continuum of benefits. We start with anything helps. We have a minimum bar of aim for at least two-and-a-half hours a week and that will provide substantial reductions in risk of many chronic diseases but we don't want people to stop there.

That's not the ultimate goal, two-and-a-half hours a week because particular outcomes, I talked about energy balance, cancer risk reduction really require a higher amount of physical activity. So we're hoping to move people along from zero to something to at least 150 minutes a week and then to keep going.

The guidelines focus on that there's differences and I'll talk about some of the main age groups in a minute as well as conditions. Some folks do need to make some accommodations

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but the overriding message was physical activity is beneficial to everyone. In the consumer documents, as I said, the message was be active your way. There's flexibility in how many days you do it upon, what kind of activities you incorporate. There's a lot of ways to increase physical activity.

So just to highlight some of the specific guidelines for kids, up to age 17, it's one hour a day. Here we still do have a daily recommendation. One of the differences between children and adults is kids are active in very short bursts, very episodic physical activity.

So we talk about that ten-minute episode of physical activity to increase fitness for adults, that's not mentioned for kids. Any activity counts. This one hour a day is pretty much the same as what had come out of an earlier review by Strong, et al but where they went a little further was to talk about the fact that it should mostly be aerobic and that's consistent with earlier recommendations but there should be some vigorous intensity physical activity on at least three days a week.

Also on at least three days a week, the children should include some muscle strengthening activities and some bone strengthening activities. The exercise science folks know that oftentimes they're not distinct activities. When kids are

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climbing trees or jumping rope, they're doing strengthening. aerobic, bone enhancing all at the same time.

The subcommittee was very important to stress that these need to be enjoyable and age appropriate activities. When we talk about muscle strengthening and bone strengthening activities especially for younger kids, we're not talking about going to the gym and working out on nautilus equipment. We're talking about things like climbing trees, playing hopscotch. Kids don't do that anymore but anyway whatever the age appropriate, decade appropriate games are. That's what we're talking about for kids.

I've talked a lot already about the adults, the minimum level is two-and-a-half hours a week or we talk about this equivalence between moderate intensity and vigorous intensity. You can combine the two.

What we present in the guidelines as well as in the consumer materials is there is a roughly two-to-one equivalence that 30 minutes of moderate intensity activity is about equivalent to 15 minutes of vigorous intensity. So that gives folks a tool if they want to combine moderate and vigorous intensity.

Muscle strengthening activities talk about seven major muscle groups should be performed on two or more days of the week. Some of those websites that I've provided you, CDC now

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has video clips that help show people how to do muscle strengthening activities, correct form, how to do them. We talked about this, moving on to twice as much to get even more benefits, additional benefits on the things that are already improving as well as new benefits.

Older adults was a new area. The message was to follow the adult guidelines where possible but if not possible to be as active as possible as their conditions allow. For this group, we said they should be doing activities that will improve or maintain balance, this is a funny way to say it. if they're at risk for falling. That's a feature of the way the science works.

If you're going to do an experiment to see if you can reduce the risk of someone falling, you want a group that's at high-risk for falling. Frankly, that's generally people who have already had a fall.

So the science is such that the statement had to be only for those who were at risk of falling. Obviously as a practitioner, you're going to try and encourage any one of an older adult to do some of these kinds of activities.

Here's the statement I talked about that if you don't have conditions already, you probably don't need to see a healthcare provider before starting as long as you start gradually.

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Another feature here is the exercise science folks know this but it kind of sneaks up on the rest of us a lot. When we talk about intensity in physical activity, we're often thinking in terms of an absolute energy expenditure.

So when we talk about the exercise science folks, we'll say well moderate intensity, that's three mets. That's three times your resting metabolic rate. That's a moderate intensity activity but then in my world, we're trying to do survey research and we're trying to explain to people who don't know that what we mean, we'll give them a cue that says something like well when you do moderate intensity activity, that's like a brisk walk. Well that could be or it's something where your heart rate's a little elevated and you're breathing a little hard.

Well now we kind of crossed into another domain because whether your heart rate or breathing rate is elevated depends on your fitness level. That's really talking about relative intensity. In these guidelines for older adults in particular, we talk about they should be using relative intensity.

So rather than talking about a brisk walk, which for an older unfit individual might be vigorous, we talk about if zero is sitting down and ten is as hard as you can work, moderate is a five or six and vigorous is a seven or eight. So that could

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be very different activities than when we're talking about that absolute domain.

This is going to cause nightmares for those of us in survey research and surveillance but I think it's really appropriate when we're trying to deliver the message.

The guidelines address persons with disabilities, women during pregnancy and postpartum period. One of the key messages there is a woman, during pregnancy, should be physically active, talk about the benefits of it and if a woman is already highly physically active, they can probably safely continue that level of activity as long as they're staying in touch with their physician.

Obviously this is a condition you want to be consulting a physician and talking about physical activity not because of the physical activity. We also have examples about persons with diabetes, osteoarthritis, and cancer survivors, which is a huge group who greatly benefit from physical activity.

We've got 16 million cancer survivors in the country now. While the dose of physical activity that's required to reduce the risk of cancer is relatively high, people who are dealing with side effects of cancer treatment gain benefits from very little amounts of physical activity, reduction in fatigue, improved quality of life, improved function. This is a

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group that has a lot of benefits with not a lot of physical activity.

I talked about this a little bit already that we've been saying 30 minutes on five days a week. That's not wrong. The message now is that's one way to meet the guidelines. It's not the only way to meet the guidelines. This is important and it's going to be a bit of a transition over the next year or two to get people used to that.

In fact, we had a tremendous amount of media coverage after the launch. I was really pleased with how the press was getting it right except the Washington Post. About a couple weeks after the launch, they said well still 30 minutes, five days a week. We had to get there with the misfits and try and straighten them out and say that's not the whole message. That's only one way.

So talking now, I'm shifting gears here to talk about dissemination and how we're getting this word out to the world because unlike our usual model in the government, which says we do all this work, we get all this science. We do a report and you put it on your shelf. We're done.

With this project, we are working with partners and right from the beginning, we developed this model to work with organizations who can reach out to their constituents and get the word out. Before the launch, we had what we called pre-

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launch partners. These were organizations. Some examples would be like the American College of Sports Medicine, YMCA, who served as a reaction group to say well what would be useful to you as we want to try and communicate this information?

Some of them were already part of the President's Council, science partners, and they helped us develop the toolkit and the consumer documents that we ultimately ended up with. One of the interesting models that we used was we developed an online workspace for them.

So this was like their own little blogosphere. We were able to put items up there for them to see. There was a discussion board where they could react to them and that allowed us to accumulate information. That's going to expand to include all of the partners, which is now over 1,000.

So here's a picture of the online workspace. I don't know if you could see it there but basically they could put files up there and then they could have discussions. One of the things we anticipate happening from this and we saw it a little bit at the launch is partners can say well here's what I'm doing. Here's what's working for me.

Somebody else can say can I work with you on that? Can I borrow some of our materials? So we hope to see a real symbiosis among the groups that are trying to get the word out here.

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At the launch, after all of the dignitaries did their speeches, we had about 20 or so folks who stood up and talked about how excited they were to have the physical activity guidelines, to have the tools that were provided to them, and how they're going to use them.

A lot of positive energy and as I said, once on October seventh once these things were introduced and made public, we have now over 1,000 partners signed up. I'll show you, in a moment, what kind of organizations there are. One of the things, when you sign up to be a partner, you receive this toolkit, which has a bunch of documents in it, one of each.

So it's got the guidelines themselves. It's got a consumer brochure. It's got some fact sheets and posters and things. All of these materials are available on the website the health.gov/paguidelines website as a PDF. If you sign up to be a partner, you get a CD-ROM, I think, that has little higher quality print-ready materials.

So this is the website that I've been talking about, the PA Guidelines website. Each of the main documents is up there, the guidelines themselves, the toolkit. You can click on that and all those sub-pieces are available. Up in the upper right corner is the "Be Active Your Way" guide for adults, which is a very, I encourage those of you who work with the

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public and patients in trying to change behavior to take a look at it.

It really takes an approach that takes people where they are and tries to move them along a little bit as opposed to just being a prescription sheet that says here's the target you should aim for and good luck getting there. Then on the lower right is the committee report.

So this is what the page looks like if you want to sign up to be a supporter. I mean departments in the school, groups that are working with fitness are welcome to do that. You'll get a copy of the toolkit and you'll be listed as a supporter. These are some of the types of supporters who have already signed up.

We've got both U.S. and foreign organizations, private, public schools, colleges, universities. You can see the fitness clubs, we have a tremendous variety of individuals and organizations who are interested in supporting and disseminating the physical activity guidelines.

This is what's about to happen. For those who have signed up to be supporters, there's going to be a mondo teleconference on January sixth just like we did at the October seventh launch. This will provide an opportunity for people to talk about what kind of successes, what kind of ideas they have

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to link up with others in that group who might be able to help them.

We're also expanding that online community from the 16 or 17 who were pre-launch partners to anyone in that community to be able to share information online.

One of the exciting pieces for me, because communication is not my domain, is that we got a lot of communication scientists involved in this and they are really looking at some innovative ways of reaching out. We're looking at doing pod cast series. We're looking at social media networking to help spread the word and encourage not only the organizations but individuals to increase their physical activity.

These are four of the websites that are on your sheet. The health.gov/paguidelines is the source of a lot of the documents. Health finder is a consumer-oriented website with a lot of information on not just physical activity but other aspects of health and links to other resources.

Fitness.gov is the President's Council's site with a lot of information resources and linked to the adult fitness test, which was launched in the summer. Then CDC, as I said, has a series of videos that they've produced to help people understand what's meant by the physical activity guidelines as well as teach them to do particular types of exercise.

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We talked about all of these pieces. These are the two main websites, the PA Guidelines and the Health Finder for consumers. I wanted to finish up by mentioning, I talked about what Dr. Di Pietro and I have done on this process but this was huge.

There's over 200 individuals that contributed to this activity in a very short period of time. You see here we've got the advisory committee members, the consultants. There were assistants to committee members. There was the management staff for the CDC database. There were 57 abstracters.

There were more management staff for the whole process, the writing committee, over 50 reviewers, as well as the contract staff who never get named or mentioned but this was a tremendous effort. It was really exciting for me to be at the lead of something that was novel and innovative and hopefully we'll not only have an impact directly as part of improving the physical activity but it will, I think, expect serve as a model for the dietary guidelines to hopefully move them along with new ways of getting the word out. I'd be glad to take any questions. Thank you very much [applause].

JOSEF REUM, Ph.D.: We have time for two questions.

FEMALE SPEAKER: Thank you for your talk. I was wondering how you find the monitor for evaluating the national

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implementation or application for this program or the new guidelines?

RICHARD TROIANO, Ph.D.: The question was how do we plan to monitor, evaluate, basically do we make a difference is that the question, how we'll know? Several ways. The CDC has some questions on a survey called health finders I think it is, forget the exact name of it but basically that will allow us to evaluate whether people are even aware of the guidelines, which is something that a lot of people are interested in but is probably less important than are they doing something differently.

On that front, we have several surveillance systems that try and monitor and track people's physical activity. A lot of it is based on self-report and if I had another hour, I could talk to you about self-report and objective monitoring and how self-report is really not so great but we do have these systems out there that try and track at least what people tell us they're doing.

More and more, studies and NHANES did it for four years, are using objective monitors of physical activity. I think that until we really start incorporating that, we won't know what people are doing just to put my other research hat on where 30 to 50-percent of people were meeting the old guidelines based on what they told us they were doing. When we

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looked at the accelerometer data from the NHANES, it looked like three or four-percent were actually getting 30 minutes five days a week. So we've got a long way to go.

As I mentioned, this total volume a week has made the surveillance a little trickier. So we got a lot of work to do on that one. We're trying.

JOSEF REUM, Ph.D.: Any other questions? Yes?

FEMALE SPEAKER: My question is how will these guidelines interact with the public health service objectives for the nation?

RICHARD TROIANO, Ph.D.: Healthy people?

FEMALE SPEAKER: Healthy people, where are we, 2020 now?

RICHARD TROIANO, Ph.D.: We're working on 2020 yes.

FEMALE SPEAKER: 2020, I mean we've never been able to achieve guidelines set, in fact we go the opposite direction. Is that correct?

RICHARD TROIANO, Ph.D.: Well actually as we tweak the questions, more and more people look like they're meeting them. So it does look like we're improving. The weight one is the one we go the opposite direction. I'm sitting in the same office as the Healthy People Organization and I know there's some consideration of kind of a different model for 2020. As you said, there's a lot of resistance to change so where we have

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some several hundred objectives now and they're basically disease-oriented, health condition-oriented,

I don't know if we're going to get far away from that. I hope and expect that physical activity will be incorporated in there one way or another. Given that even though we don't have statutory mandate, the understanding is that these physical activity guidelines set the policy for the government, that any guidance on physical activity that comes out of the government should be consistent with the physical activity guidelines.

So I would be really surprised if there was any kind of tracking of physical activity in healthy people that didn't look exactly like what we're talking about here. So I suspect you'll see some 150 proportion of the population getting at least 150 minutes a week of physical activity and probably a strengthening question as well.

JOSEF REUM, Ph.D.: Now before we finish up, I'm going to ask you to do something that you probably haven't done at grand rounds before and that's everybody stand up.

RICHARD TROIANO, Ph.D.: Yes. Stretch.

JOSEF REUM, Ph.D.: You are going to be led in a stretch by the man who helped write the guidelines for being active your own way.

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RICHARD TROIANO, Ph.D.: Alright. I was told I should stop you guys right in the middle but once I get talking, I can't stop myself. So I'll do this the way somebody else did, there's somebody, reach for the ceiling. How many people can touch the ceiling? Alright get it up there and kind of way over to the right. We've got not many people here? [Inaudible] and over to the left alright. Loretta, you know some other ones. You've got the mic.

DR. LORETTA DI PIETRO: Stand and put your leg up.

RICHARD TROIANO, Ph.D. No sitting. No sitting.

JOSEF REUM, Ph.D.: But while you're standing then, let's also end 2008 with a standing ovation for our presentation [applause].

RICHARD TROIANO, Ph.D.: Thank you very much. Thank you very much.

JOSEF REUM, Ph.D.: On behalf of the George Washington University School of Public Health and Health Services, have good holidays. We look forward to seeing you seven days after the inauguration for our next grand rounds.

[END RECORDING]