

# THE PHYSICAL ACTIVITY VITAL SIGN AND ELECTRONIC HEALTH RECORDS

## THE KAISER PERMANENTE EXPERIENCE

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The physical activity vital sign (PAVS), also known as the exercise vital sign (EVS), was launched in Kaiser Permanente's Southern California region in October of 2009 to make physical activity assessment and exercise prescription a standard of care for all patient visits. Founded in 1945, Kaiser Permanente (KP) is one of the largest health plans in the United States, serving almost 9 million members. As a staff model health maintenance organisation (HMO), Kaiser members pay a monthly premium and in return have all their healthcare provided by KP physicians (and staff) and at KP facilities. For this reason, KP has a tremendous incentive to invest in prevention and keep patients healthy, thereby avoiding the extra cost associated

with caring for more advanced disease. For this reason, getting patients more active is a key priority in our quest to help them achieve total health.

### DESCRIPTION OF THE PAVS

It is custom for patients to have their vital signs measured before seeing a healthcare provider at every visit. Traditional vital signs include blood pressure, pulse, respirations and temperature. These are most often recorded by a medical assistant or licensed vocational nurse at the beginning of each visit and listed in the patient's chart. The KP PAVS was designed to ensure assessment of each patient's physical activity habits was included at every visit and to provide a numerical value for the minutes per week

of moderate or greater exercise that each patient reported<sup>1</sup>.

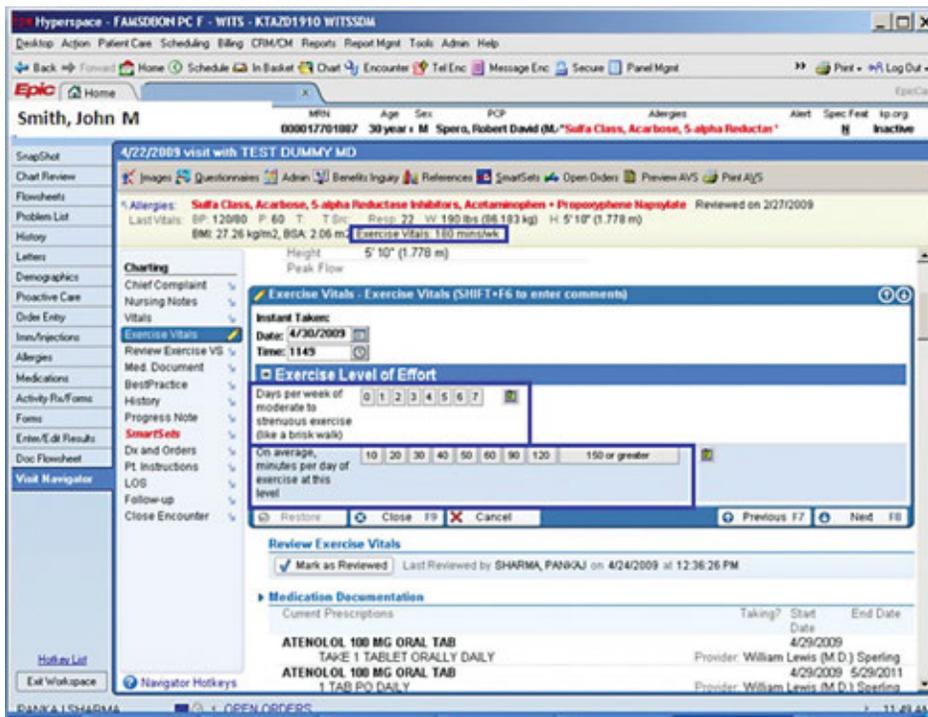
To accomplish this, each patient is asked two questions regarding their typical exercise habits by the medical assistant as they are being put into the exam room. Their responses are then recorded into the KP electronic medical record (Figure 1).

The two questions are:

1. 'On average, how many days each week do you engage in moderate or greater physical activity (like a brisk walk)?'

*Based on the patient's response, a box is clicked to correspond with the number of days reported from 0 to 7 days.*

2. 'On those days, on average, how many minutes do you engage in this physical activity?'



**Figure 1:** Screen shot of the Kaiser Permanente Electronic Medical Record showing the Exercise Vital Sign.

Again, based on the patient's response, a box is clicked to correspond with the number of minutes reported (10, 20, 30, 40, 50, 60 minutes etc.).

The computer then multiplies the two responses together to calculate the minutes per week of moderate or greater physical activity that patient has reported they participate in during a typical week. This figure is then displayed on the patient's chart in the vital sign header, just next to the traditional vital signs (Figure 1). In addition, the patient's body mass index (BMI) and smoking history are also recorded.

The PAVS allows the physician or other healthcare provider to quickly gain insight into how much physical activity their patient may be doing. In keeping with the US Physical Activity Guidelines, adult patients who are doing less than 150 minutes per week of physical activity and children doing less than 420 minutes per week are flagged as not meeting optimal levels of PA. Most physicians will then use this information to segue into a brief discussion about how physical activity can impact health.

#### USING THE PAVS IN THE CLINICAL SETTING

The PAVS allows the healthcare provider to quickly assess each patient's PA habits and offer either brief advice or a more detailed exercise prescription. At a minimum,

providers are requested to offer each patient at least one sentence, saying either:

"Good job! I see you are meeting the PA guidelines of 150 minutes per week of moderate exercise. Keep it up!"

Or if not meeting guidelines, offer advice as follows:

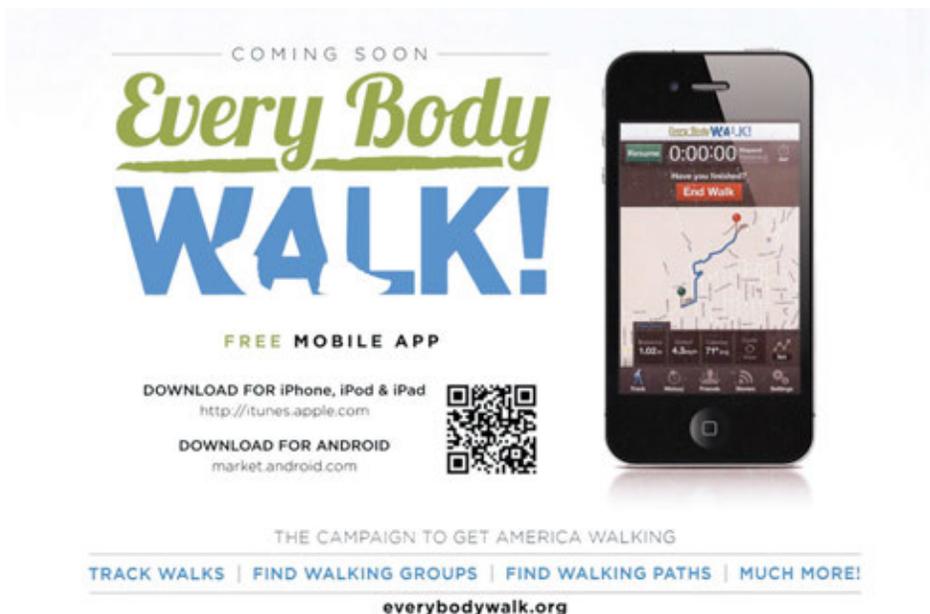
"Today I noticed your blood pressure (or blood sugar or cholesterol etc.) is up and you report you are not doing any exercise. Before I put you on medication (or increase your current medication), why don't you try doing brisk walking for 30 minutes on 5 or more days each week (along with proper diet modifications) and I will have you follow-up to see how that improves your reading?"

I have found that patients are quite happy to try and avoid taking medication and often respond to such simple advice. When I have more time, I find that pointing out how regular exercise can help a specific condition they may have (or be at risk for) often improves compliance with an exercise prescription. The KP PAVS allows us to accurately identify patients who, by self-report, are not meeting these PA guidelines. In addition, Kaiser Permanente was among the first healthcare plans to include fields for tracking PA in their electronic medical record and has shown this can be done with minimal disruption to patient flow.

At the same time, KP has made a big push to encourage physicians and staff to be role models of an active lifestyle for their patients. This started with our long-running marketing campaign called 'Thrive'. The tag line for this campaign is "at Kaiser Permanente, we want you to live well, be well and thrive". This has been both an external and internal campaign and encourages all KP employees to live the brand. In keeping with this message, internal campaigns called 'Thrive Across America' and 'KP Walk' have encouraged staff to join together to get more active and to get out and walk. At the same time, former KP Chairman and CEO George Halvorson launched a campaign called 'Every Body Walk!' (see [www.everybodywalk.org](http://www.everybodywalk.org)) in January of 2011. This is a non-branded campaign designed to get America walking that eventually led the US Surgeon General to issue a Call to Action to get Americans walking. Featuring an interactive website at the hub of the campaign, it contains numerous videos and articles designed to inspire and inform patients about how and why they should start walking. There is also a very helpful Every Body Walk! mobile app that can be downloaded onto smart phones to help people track and personalise their walks (Figure 2).

#### EVIDENCE FOR A PAVS

The evidence base documenting the health benefits of exercise is incontrovertible. It is clear that a linear relationship exists between a patient's activity level and their health and longevity<sup>2,3</sup>. In addition, this relationship exists regardless of the patient's gender, race or age<sup>4</sup>. There is no disputing that the importance of physical activity to health applies to everyone and it is the single most important lifestyle intervention one can make to improve their health. For this reason, I believe that physicians have an ethical (and perhaps medical-legal) obligation to assess the exercise habits of their patients and inform them of the risks of being inactive. There is clear consensus around the world that 150 minutes of



**Figure 2:** The Everybody Walk! mobile app is a useful tool to help patients track and personalise their walking.

moderate or greater intensity physical activity (like a brisk walk) is the amount that every adult should strive for to be healthy<sup>4,5</sup>.

Unfortunately, the evidence suggesting healthcare providers can change the exercise habits of their patients is not as strong. In fact, the US Preventive Services Task Force has previously said that there is insufficient evidence that physicians prescribing exercise in their practice actually causes a sustained increase in the exercise habits of their patients<sup>6</sup>. However, this is an area of research that is woefully under-funded and still in its infancy. I am sure many will recall the same thing was said about the ability of physicians to convince their patients to stop smoking almost 50 years ago, when the American Medical Association (AMA) first spoke out about the dangers of smoking. Certainly, as long as physicians resist the call to actively prescribe exercise to patients, it is unlikely that those who are most at risk from inactivity (i.e. those patients suffering from chronic disease) will ever attempt to change their sedentary ways. For this reason, the KP PAVS is a very important step in proving the concept that physicians can implement exercise assessment and prescription into their routine office visits.

The evidence supporting the positive impact that PA has on health has led the US Surgeon General, the Centers for Disease Control and Prevention and multiple organisations such as American College of Sports Medicine (ACSM) and the American Heart Association to call for all adults to get at least 150 minutes of moderate or

greater physical activity each week<sup>2,7,8</sup>. In addition, the US Federal Government called on all Americans to meet these guidelines for regular PA when it issued the first US Physical Activity Guidelines in 2008<sup>1</sup>.

In fact, the ACSM and AMA have gone so far as to suggest that exercise is similar to a medication that should be prescribed as a first line therapy for the prevention and treatment of disease<sup>9</sup>. In 2007, these organisations launched a campaign called 'Exercise Is Medicine'<sup>®</sup> that calls on all physicians and healthcare personnel to make exercise assessment and prescription a standard part of the disease prevention and treatment paradigm for all patients (see [www.exerciseismedicine.org](http://www.exerciseismedicine.org)). The 'Exercise Is Medicine'<sup>®</sup> initiative has developed widespread support among a range of medical organisations around the world, with most calling on their members to assess and prescribe exercise to all their patients.

It is clear there is broad consensus that achieving these recommended amounts of regular physical activity is important to the health of patients around the world. It is also clear that not achieving these recommended amounts of regular PA is a strong risk factor for chronic disease, poor health and early mortality. It follows then, that every patient should have this risk assessed and that they should be informed and counselled on PA recommendations for health. Therefore, physicians and other medical personnel should make sure all their patients understand the risks posed

by an inactive lifestyle, so that patients can make an informed decision regarding how active they choose to be<sup>10</sup>.

For these reasons, the objectives for the US-led Healthy People 2020 initiative includes two objectives aimed at increasing the proportion of physician office visits that include counselling or education related to the impact of PA on health<sup>4</sup>. Launched in December 2010 by the US Office of Disease Prevention and Health Promotion, Healthy People 2020 provides science-based 10-year national objectives for improving the health of all Americans. It serves as the foundation for prevention efforts across the US Department of Health and Human Services with a goal of improving the nation's health. This series of 10-year plans began in 1979 and the 2020 plan is the first to include physician counselling and education on PA as a core objective.

It is clear that while progress has been made toward increasing the number of physicians and other healthcare professionals recommending exercise or PA to their patients, we still have a long way to go. Data from the National Health Interview Survey in 2000, 2005 and 2010 showed that the percentage of adults receiving advice from their physician or other healthcare professional to exercise increased by almost 10 percent between 2000 and 2010<sup>11</sup>. However, only about a third of adults aged 18 and older who had seen a physician or other health professional in the past year had been advised to begin or continue to do exercise or physical activity. Adults who were

overweight or who suffered from chronic diseases like hypertension, cardiovascular disease, cancer and diabetes were more likely to receive advice on exercise than adults without these conditions. I believe the PAVS is a great tool to help increase the percentage of physicians and other healthcare professionals who counsel their patients on exercise and PA.

#### LESSONS LEARNED ABOUT THE PAVS AT KAISER PERMANENTE

The PAVS began as a pilot in several KP Southern California medical centres in early 2009 to determine its ease of use and effect on patient flow. Key concerns were that it might slow down office staff and/or physicians or that the PAVS may not be looked at as valuable information in caring for patients. To make sure the PAVS could be recorded quickly, the two brief questions were selected and more detailed questioning on intensity of exercise was eliminated. Prior to launch of the PAVS, the author visited every KP medical center in Southern California to provide a lecture on the rationale and importance of assessing and prescribing exercise to patients. This helped set the stage for implementation and was a chance to address physician concerns and encourage them to incorporate exercise prescription into their daily practice.

Another concern was that responses would not accurately reflect each patient's true physical activity level. We wanted to make sure that PA other than traditional exercise, such as vigorous activity or brisk walking done at work or other times in the day, were included in the PAVS recorded on each patient's chart. To ensure this was done, a series of meetings were held with the department administrators of all of the clinical departments at KP in Southern California to provide education on how to properly ask and record the PAVS. The administrators in turn offered training to their personnel on how to properly ask the PAVS questions. In addition, educational handouts, videos and a Wiki page were developed to provide ongoing support and education regarding use of the PAVS. (Figure 3).

The PAVS then went live in October of 2009 for use by every KP provider at every patient visit in Southern California. Since



Helping our members understand the importance of exercise

## Exercise Is Medicine: Documenting Exercise Vitals in POE

### WHAT IS EXERCISE VITALS?

Exercise Vitals is a KP SCAL initiative to record physical activity as a Vital Sign in our members' care plan. Regular physical activity reduces the risk of many adverse health outcomes. Exercise Vitals sends a clear, consistent message that exercise is an essential part of healthy living.

3. On a typical day, how much time do you spend doing physical activities?
4. What counts as exercise? Moderate physical activity done at work provides the same benefits as moderate recreational exercise. Doing three 10-minute bouts of exercise in a day is the same as doing 30 minutes all at one time.

### DOCUMENTING EXERCISE VITALS

Ask two questions:

1. How many days a week of Moderate to Strenuous exercise?
2. On average, how many minutes do you exercise at this level?

### HOW TO ASK PATIENTS ABOUT EXERCISE

1. What physical activities are you doing now?  
Examples are, jogging, running, biking, walking, swimming, dancing, gymnastics, skating, yoga, P.E. class, martial arts, hiking, team sports.
2. How many days do you spend doing physical activity during a typical week?

### ACTIVITY LEVELS

| Activity   | What is it?  |
|--|--|
| Light<br>• not sweating<br>• not breathing hard                    | Slow walking or dancing, yoga, ping pong, bowling                  |
| Moderate<br>• a light sweat<br>• can talk, but can't sing          | Dancing, swimming, walking fast, biking, mowing the lawn           |
| Vigorous<br>• sweating<br>• breathing hard<br>• can't talk or sing | Jogging, high-impact aerobic dancing, biking uphill, swimming laps |



Figure 3: Kaiser Permanente handout on documenting the Exercise Vital Sign in adult patients as part of the Proactive Office Encounter.

exercise has been proven to be of value to virtually every patient, every clinical department within KP was encouraged to use the PAVS, from primary care to specialty care. However, there was no mandate that providers record a PAVS as part of their standard routine.

As expected, there was initially some mild push back from physician and clinic staff regarding our request to add another task to an already busy schedule. In today's healthcare environment and particularly since the advent of the electronic medical record, there has been a significant increase in the number of issues physicians are

asked to discuss with patients at each visit. So while our KP physicians acknowledged the importance of exercise to health, they were leery about adding one more item to their already busy plate. We responded by emphasising to them how important exercise has been proven to be to a patient's health and showing them how easily they could incorporate the PAVS information into normal patient flow.

After the first year and a half of use, a study was done to evaluate the implementation and validity of the PAVS. We found that 86% of adult KP members who had an office visit during that first

Exercise is Medicine; Getting Patients to Take It

year and a half had a PAVS recorded on their chart. This was remarkable, given the fact it was not a requirement to record the PAVS and seemed to reflect its acceptance among physicians and staff. In reviewing the 1,537,798 adult KP patients who had a PAVS recorded in that period, we found that 36.3% of patients were completely inactive (0 minutes of exercise per week), 33.3% were insufficiently active (more than 0 but less than 150 minutes per week) and 30.4% were sufficiently active (150 minutes or more per week). As compared with national population-based surveys, patient reports of PA were lower but followed similar patterns. As hypothesised, patients who were older, obese, of a racial/ethnic minority and had higher disease burdens were more likely to be inactive, suggesting that the PAVS has good discriminant validity<sup>2</sup>.

We also compared our results from the KP PAVS with data from the National Health and Nutrition Examination Survey (NHANES)<sup>5</sup>, which is generally regarded as one of the better data sets reflecting current trends in the health and nutrition status for Americans, including PA. The NHANES survey reports data on PA using both self-report and accelerometers. Typically, the accelerometer reports of PA are much lower than self-reported PA, reflecting a tendency for patients to over-estimate the amount of PA they engage in during a typical week. When compared to the NHANES PA measures, our PAVS provided a more conservative estimate than the NHANES self-report measure, but higher than the accelerometer report. This suggests that the PAVS is in fact, a valid indicator of patient PA levels in our setting. In addition, the NHANES data on PA reports similar trends to the KP PAVS data in terms of self-reported exercise being less in elderly patients, women, ethnic minorities and patients with higher BMI. I believe our results reflect the likelihood that patients are more likely to be truthful about their exercise habits when being questioned by a medical professional than they are when being questioned by a research surveyor. This offers the potential for the KP PAVS to provide information about the relationship between PA and health that has not been previously available at the population level.



Rx: Exercise

Key Messages for Patients

- Every minute counts and no amount of physical activity is insignificant. Look for ways to add activity to your day (park further away, take the stairs, combine exercise with other daily tasks).
- 10 minute at a time is just fine—try for a total of 30 minutes on most days or 150 minutes a week.
- Exercise can improve your health, even if you don't lose weight.
- Exercise benefits everyone: young, old, healthy, sick.
- Greatest health benefits: moving from doing nothing to doing something... anything!

What Can Busy Physicians Do to Encourage Physical Activity?

Evidence indicates that patients are more likely to make a behavior change when their physician makes a statement/recommendation.<sup>1</sup> If you have:

- 0 Minutes:** If you are very busy, running behind, you probably need to do nothing more! Your medical assistant (MA) will have already asked your patient how much exercise they are doing (taken their Exercise Vital Sign). Have your MA provide the patient with a simple handout reminding them of the recommended minutes per week of moderate exercise they should be doing. With the Exercise Vital Sign, the MA will have raised the patient's awareness and offered resources.
- 1 Minute for Advice:** Quickly reinforce and congratulate patients who are getting any physical activity. Advise patients who are getting fewer than 150 minutes of the power and importance of physical activity especially linking to patient's complaints, problems, and diagnoses. For example: "Getting regular exercise is one of the best things you can do to get more energy, improve your mood and take care of your overall health. I strongly encourage you to engage in regular physical activity (at least 150 minutes a week) and maintain a healthy weight. The choice is yours and I am confident that if you decide to make a healthy behavior change, you will find a way to make it happen." Less than a minute!
- 2 Minutes for Referral:** With a bit more time, you can offer a generic Exercise Prescription and you can refer to Telephonic Wellness Coaches, Health Education, Online Health Coach, pharmacy to get a pedometer, chair exercise DVDs and videos, and, if needed, Physical Therapy for patients with significant mobility limitations (see below for referral information). You should also seek out a local fitness professional to whom you can refer patients who are having difficulty starting or maintaining an exercise program. Insure they have respected credentials (such as ACSM certification) and experience.
- 5 Minutes for Brief Counseling:** You may also offer some exercise counseling. For patients doing fewer than 150 minutes of exercise a week, consider asking what they might want to do to be more active. Or you might ask if the patient would like some suggestions: like walking or choose another activity they enjoy, finding a partner/group to exercise with, starting with a small goal (10 minutes a day) and working up

<sup>1</sup> Sardula MK, Kenel Khan L, Dietz WH. Weight loss counseling revisited. JAMA. 2003;289:1747-50.

**Figure 4:** Handout for physicians explaining what they can do during an office visit to promote exercise to their patients.

POPULATIONS SERVED BY THE PAVS

It is well established that the benefits of exercise apply to everyone, regardless of gender, ethnicity or age<sup>1</sup>. Further, there is almost no disease or disability that is not improved by doing regular exercise. In fact, a wide range of established clinical guidelines recommend physical activity promotion as a first-line treatment<sup>20</sup>. From diabetes to fibromyalgia to low back pain, regular physical activity is touted as a first-line treatment that generally should be used before prescribing medications. For that reason, we recommend the PAVS be used on all populations and by all medical

specialties. That is why at KP the PAVS is asked in all clinical departments and by every provider who is interacting with a patient. In keeping with the US Physical Activity guidelines, children aged 6 to 17 are encouraged to do 60 minutes of PA daily and adults aged 18 and older are encourage to do 150 minutes per week.

TIPS AND TOOLS FOR GETTING PATIENTS MORE ACTIVE

The PAVS is a tool for personnel in the healthcare sector to use to help bring the topic of exercise and physical activity into the exam room of all patients. Once a

patient's level of activity has been assessed, there is a need for a discussion about how those not meeting guidelines for exercise can do so. Such a discussion can be made much easier and more effective if physicians and other healthcare professionals are aware of opportunities in their community that are available to support increasing their patient's activity levels. This could include things such as park and recreation sites that encourage hiking or other physical activity, community resources such as bike and walking trails or school-based programmes available to help get children more active. It is important to develop and publicise resources within all communities with an eye toward attracting patients who are most at risk from chronic diseases that are directly attributable to an inactive lifestyle.

#### CONCLUSION

It is clear that exercise is a powerful tool for both the treatment and prevention of chronic disease, to mitigate the harmful effects of obesity and lower mortality rates. In addition, exercise also has a profound effect on functional capacity and quality of life. In effect, exercise is medicine and many experts consider physical inactivity to be the major public health problem of our time. For these reasons, physicians have a responsibility to assess physical activity habits in their patients, inform them of the risk of being inactive and provide a proper exercise prescription. The easiest way to do this is by using a PAVS to assess minutes per week of MVPA each patient is doing. The experience at Kaiser Permanente has proven a PAVS can be implemented in a large healthcare system with minimal disruption to patient flow and productivity.

Based on the PAVS, the physician may either congratulate patients on meeting current physical activity guidelines of 150 minutes or more MVPA each week or encourage inactive patients to try and meet these guidelines. Typically walking is considered to be the default exercise prescription, although the type of exercise patients engage in is not so important. Sports and exercise medicine professionals have the training and background necessary to lead the effort to promote exercise as a medicine and connect fitness with healthcare.

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