Melody Ding – 'Exercise Hacks: How to Exercise and Not Know It'

Moderator: Welcome to the podcast series of *Raising the Bar Sydney*. Raising the Bar in 2016 saw 20 University of Sydney academics take their research out of the lecture theatre and into 20 bars across Sydney, all on one night.

In this podcast, you will hear Melody Ding's talk, *Exercise Hacks: How to Exercise and Not Know It.* Enjoy the talk.

Melody Ding: Good evening everyone. Can you all hear me okay. Yes, fantastic. It's actually quite loud. Is it possible to turn it down a little bit? Fantastic. It's a full house, great. So well, just to follow-up on that instruction, because just now, a word was mentioned and I don't know if that means anything to anyone. It's an epidemiologist. What is that? It's like one of the most jargon job titles in the world. So I think I'm just going to follow-up a little bit on who I am.

So I'm an epidemiologist, which mean I study and research cause and effects at the population level, so we play with big data, and will define the theme of the talk today, that a lot of the, the statistics throughout … the findings are throughout at the population level. So that means I'm not a personal trainer; I'm not an exercise scientist; I cannot give you question about … you know, provide answers about, "This is the ultimate exercise that you … is going to change your life." And you know, you have to be aware of that kind of claim, anyway. Hopefully you'll get that by the end of this talk.

So I'm very excited to be here tonight to share with you my very passionate topic, and that is physical activity. And remember, I didn't say, "exercise;" I said, "physical activity." And you will know why at the end of the talk.

And just before I start, because this is a physical activity talk, don't feel like you're glued to your seat at any time. You're not going to be graded on your sedentary behaviour today, so feel free to stand up anytime. You know, walk around, get a drink, go to the bathroom, do jumping jacks, whatever. And, you know, if you don't do that, I might actually have to impose a few on you so …

All right, so let's get started. Let's talk about physical activity. And before I start, just the data scientist in me always wants to do poll and numbers. So how many of you guys think that physical activity is a serious business that you need to make intentional effort … it's a serious business, okay, good. Ooh, wow, serious exercisers here.

All right. Without telling you whether that's true or false, it's all personal opinion, I think I'm going to start by talking about how we get to understand the benefits of physical activity at a population data level. So it's no-brainer that, you know, we all know physical activity's good for our health. But in terms of public health data, that actually didn't exist until the 1950's.

So in 1953, there was this super smart guy with the name Jerry Morris who was a professor at the … epidemiologist at the London School of Hygiene and Tropical Medicine. And he was studying different disease pattern among different occupational groups in London. And what he found was that … you know those red, iconic double-deckers in London? So what they found was that the bus drivers and bus conductors, even though they tend to find similar socioeconomic background and have similar social circumstances, the bus conductors have almost half the risk for coronary heat disease.

So that's before, you know, we knew anything about physical activity is good for us and things like that.

So he, he just … he was puzzled by it and he tried to form different hypotheses an all of them seems to not explain, with the exception of, "Well they seem to have very different job patterns. The bus conductors go up and down stairs so many times. Sometimes they walk close to 1,000 steps a day, up and down, versus the drivers who are just sitting the whole time.

So in order to prove that, he replicated a study among postal workers and civil servants who just sit around and answer telephones and read documents and things like that. So what he found was that in terms of coronary heart disease risk, the post workers seems to have a similar pattern to conductors, and the civil servant seems to have a similar pattern to the bus drivers. So that further confirmed that it's the physical activity patterns that work, that led to the difference in their risk for heart disease.

So that was 60 l… more than 60 years ago. Today there has been large amount of literatures proving over and over again that physical activity conveys so much benefits in terms of preventing coronary heart disease, stroke, type 2 diabetes, some cancers; promote mental health, promote cognitive functions, promote muscular and skeletal health, and the list goes on.

So do you think those bus, bus conductors and the post, postmen, they were actually exercising or they're just being active? So that's the difference between physical activity and, and exercise. Exercise is something we call a leisure time physical activity, so it's intentional, it's with a purpose of recreation or a purpose of fitness, versus, versus physical activity; it's basically our body moving in space. And that's … when Jerry Morris published that paper, he used the term physical activity, and that has been a term we're using in this field ever since, because now when we think about physical activity – not exercise – it's actually a very liberating thought.

So we scientists classify our, you know, daily life into different categories. We, we give it jargon called domains, okay? So generally speaking, there are four domains of physical activity, so at work, at home, during your leisure time and during transport. So if we start to free our thinking outside of the box, not in terms of thinking just in terms of, "Oh, I have to go to the gym. All right, that's the exercise." So then you start to open up all these opportunities for us to be physically active. You could do that by swapping your drive with public transport so that you can squeeze in 15 minutes of walk on the way to work. It could be instead of sitting in front of the TV at home, you do something active. So there's all kinds of opportunity for us to be physically active without doing exercise.

Okay, so another question for you guys: Which one provides more health benefits, doing one hours of continuous walk or three, 20 minutes walk in different situations? Who thinks that one hour of continuous walk is better. Raise your hand. And who thinks the other one's better? What about those who didn't raise hand? All right, for those who didn't raise your hand, might be actually right this time. So that was a trick question, I'm sorry. Did I tell you there are quizzes, how to spell epidemiology at the end of the talk?

Anyway, so there is the difference between duration and bout. So in physical activity, now the current consensus is that what matters the most is the overall volumes of physical activity. It doesn't matter how you accumulate that, you know, either one hours of solid physical activity time or you just spread it out throughout the day in different domains.

So that is another very liberating thought because when we think about, you know, the barriers for physical activity for a lot of people, they will think, "Oh well, I have to set aside an hour to do something," and perhaps you don't have to and, and just try to find opportunities in different aspects of your life throughout the day, and those hours could potentially add up.

So next question for your guys: Who knows the current physical activity guidelines or recommendations in Australia? Professional people, meaning public health practitioners and researchers are not allowed to answer this question. Does anyone know?

Audience: One hour.

Melody Ding: An hour, an hour a day or a week?

Audience: Day, a day.

Melody Ding: Okay. Oh, that's very good. I mean that's very good it's because it's very ambitious because it … the reality is, and the WHO recommendation is, 150 minutes per week. Not ambitious at all. The Australian guideline is 150 to 300 minutes per week. That's moderate to vigorous intensity. I'll get to that later. And on top of that, you know, strengthening and, you know, other aspects as well.

So when we think about it, these guidelines, they're usually … not usually, always based on evidence, based on the literature, based on decades of research. So that is a threshold that we see very promising, very good health promoting effect of physical activity.

But, for some people, when they think about, you know, trying to squeeze in two and a half hours, or even five hours of physical activity, into their busy weekly life, they might be discouraged and say, "Oh, 150 minutes, 300 minutes, I can't get to it. So if I'm not meeting that threshold for health promoting effects, I might as well just abandon it because I can't do anything."

Okay, do you think that's true? No, okay. Good. Yeah, you're right this time. So there's no threshold. There is a dose … there's something we call dose response. Basically the more you do the, the better. So anything better … anything more than zero is better than zero. And in fact, the fact is that if, if we draw a diagram … unfortunately there's no PowerPoint here, so just imagine. So draw a diagram here. With more physical activity, you get more health benefits. But you're actually seeing most of the benefits towards the lower end, meaning that, you know, if you can't do 150 minutes, even if you do 60 minutes or below 60 minutes, you see quite a dramatic increase when it comes to protection from chronic disease and premature mortality.

So the next thing I want to emphasise here is we need to know the guideline because it's based on science. But let's start from small, start from baby steps. So if I can't get to 150 minutes, doing some is better than doing nothing, and doing more is better than doing less, okay?

So now that we've got a whole new definition around … now I want you to continue to think along that line. We're talking about body movement in space. We're talking about any little incidental bouts that add together throughout your day, so that's your new definition of physical activity, not just exercise.

Now I think it's a good time for a little stretch. Let's all get off on our chair. That's in the disclaimer, there may be some yoga in this. Exactly, right? So let's all take a deep breath, inhale arms up. Interlace your fingers; press your palm towards the ceiling. On the next exhale, let's just drop our shoulder blades down towards your back pocket. Take one more inhale, lengthen through your crown, and exhale, start to lean towards your left side. Stress up the right side of your body. Fantastic. Oh, such good photo opportunity. Inhale, come back to the centre. Lengthen your spine first and then exhaling towards the other side. Isn't that nice to do a little bit of stretch here, some incidental activity? Inhale, come back to the centre, arms stay where they are. Now exhale, gentle twist towards the left. Keep your hips facing forward. Inhale, come back to the centre and exhale, twist to the other side. And inhale come back to the centre, release your hand. You feeling good? Roll your shoulders around. Forward and back and please take your seat.

All right. Now I feel the energy. Now we're talking, right? Okay. The second … I might do a little poll or I might not, but it's just a very common belief that I hear all the time. "I have been doing physical activity. I have been exercise, even, because I've been doing physically activity intentionally. But I'm still not dropping the pounds that I want to lose. I'm so discouraged." Have you guys heard about that? Have some of you experienced that. Yes. Okay, let's talk about that, because I just think that's something a lot of us face.

So the first thing is, our society is obsessed with weight and in terms of the scientific aspect, sometimes when people take physical activity, being very fit and healthy, or when they're trying to lose weight to, to increase their physical activity level, they don't see the change in weight because they simply replace their fat tissue with lean muscle tissue, which weighs a lot more. So often time when people are not actually dropping weight, they might be changing their body composition for a healthier profile. So that's something to keep in mind.

And the other thing … I think the most important thing is, like what I said, society is obsessed with weight and, you know, *The Biggest Loser* thing and every time when you see a physical activity promotion … commercial or something, you always see super lean, health, fit people running already. When you go to the gym, you see these kind of crowds. A lot of people tell me that they feel very discouraged. Go to a yoga class. See the kind of people who usually go.

So I think the society need to change our focus from looking thin and attractive to being healthy. In fact, the long list of benefits that I mentioned earlier in terms of heart disease, stroke, diabetes, whatever, these benefits are independent of body mass index. So in a way, you're exercising, you're not dropping that weight, but tell yourself that you're making investment for our future health, that you're going to lower your risk for, for heart disease, stroke, diabetes, cancers and many things. You're doing the benefits, despite of not losing weight. So that's very important to know.

And in fact, there's this whole area of research called the fit and fat research, which I think will be very interesting to bring up today, because based on a meta-analysis - which means, you know, they pool together data from different countries and try to harmonise the results – what they found is that in terms of all-cause mortality – that's a jargon; basically, in layman's term, just dying from any cause - and cardiovascular disease and mortality, those who are a little bit heavier but have good cardiovascular fitness, have better survival outcome than those who are normal weight and have poor cardiovascular fitness.

So that means that when it comes to all-cause mortality and cardiovascular death, it's actually better to be fit and fat rather than being normal and unfit.

I do have to claim that that doesn't work with diabetes because just with our recent data, we show that with diabetes, it's probably more important that you control the weight. But physical activity could be on the pathway to controlling the weight.

So again, let me some up this point. Physical activity works for everyone, regardless of any, you know, body size. So people in any shapes and sizes should really enjoy and embrace physical activity as a way to prolong their life and improve their health. So let's forget about the scale for this one, okay?

So the next one; there's a poll here. You need to sweat and puff to get the benefits from physical activity. Who thinks it's right? Okay. I'm not saying that I'm raising my hand, I'm just like modelling like raise your hand. How many of you guys have seen any sort of news titles with this, "You have to sweat to get the benefits; you have to sweat to live longer"? All right, so a little introduction here. Just now I talked about physical activity recommendation and how there is this concept of moderate intensity versus vigorous intensity physical activity. Remember that? I said I would get back to that.

So that's how we quantify different levels of physical activity. It's based on the physical exertion. Moderation and vigorous intensity is something that we consider health enhancing physical activity. That's the one we have the most solid evidence on in terms of health benefits. So moderate could be … before moderate there's light intensity physical activity, like what I'm doing right now; I'm not sitting, I'm standing, I move my body around every now and then. So that's light. Moderate would be just someone going for a walk, okay? Moderate would be someone going for a run that you start to significantly increase your heart rate and, and breathing and you start to puff and sweat. That's the vigorous intensity physical activity.

So years ago, because public health … physical activity and public health research used to be the speciality of sports scientists and they're only interested in the vigorous part. So for a long time that, you know, that was the main thing they focussed on. It's actually not until 1995, the Centre of Disease Control and Prevention in the US, in their 1995 version of physical activity recommendation, they talked about both moderate and physical activity.

So when we're quantifying someone's physical activity, one minute of vigorous is counted as two minutes of moderate. So if we do the math, 150 minutes as the guideline, that's 150 minutes of moderate intensity. If you do vigorous, you just need 75. Ooh, so that's efficient, right? That's efficient. But this whole conversion rate of one to two is solely based on energy expenditure, because when you're doing vigorous physical activity, the, the energy expenditure is considered to be twice as much as when you're doing moderate.

But here the question is: If the overall volume of physical activity is the same and you do more of the same volume from vigorous physical activity, do you get additional benefits? So that's something that my colleague and I actually looked at in 2014 and '15, and we published a paper in *JAMA Internal Medicine* and what we found was that when we're … so the first thing we found is that the volume of physical activity, the overall amount you, you do, is the most important predictor of all, all-cause mortality, or death from any causes. And when we're adjusting for that, if you do a little bit of vigorous activity, you get additional benefit. You don't have to do much; you just have to do some.

So that's something that the media got really interested in and have been reporting all over the world and then we woke up the second morning and we were just completely horrified because media start to sensationalise this message in whatever way they want and I start to see headlines like, "Stop Doing Yoga." Some of you might have read my bio, that I'm actually teaching yoga at the Charles Perkins Centre at the University of Sydney. Some of you guys attend my classes like, "Did I just complete deny my own (21:02) here?"

So you know, it's like the headlines were extremely misleading. It's like you have to sweat to the benefits. And *Playboy Magazine* was very interested in that kind of headlines and then they reported on our study very extensively for their interest too. But you know, it help us to reach many men.

So just a little bit kind of sidestep from the exercise thing that I was talking about. Every time when you read things about, "This is the ultimate exercise you need to do; this is the ultimate diet," there's a lot … always be cautious. Take it with a grain of salt because after that experience myself, I start to realise how often our scientists' message and our findings are completely lost in translation. So if you want, you know, suggestions – diet, physical activity, lifestyle, behaviour – go to reputable sources like the Heart Foundation, Cancer Council or the Health Department website, not from these sources or social media who completely report our findings wrong. So that's one of the things I want to mention.

Remember at the beginning I said I'm not going to tell you, I'm not going to tell you the ultimate exercise because there's no ultimate exercise? If they say that, they're really overselling their message here.

Okay, now how many of you have heard about this concept of sitting is the new smoking? Your chair is killing you? That's basically the most trendy topic in physical activity in the last five years. Talking about that, let's take a brief break here, again. Separate from your chair. All right. Let's place our heart … our hands at our heart centre, okay? And then squeeze towards one another, knees together. (23:03) knees and start to sink into an imaginary chair. We're doing a chair pose in yoga, okay? We're really switching on our thigh muscles here. Remember that your body should be upright and your tailbone is point down, not like doing the, the duck thing (23:21) happening. All right. Now we're going to twist our body to the left, inhale, come back to the centre. I know your legs are screaming. Exhale, twist to the right, inhale come back to the centre. See if you can get a little bit lower, your thighs were parallel to the floor. One more breath, keep breathing. And inhale, stand up.

So that is sitting, right? So okay, so just now, you're doing … what you're doing is actually very close to sitting. You're trying to sit on an imaginary chair but you're completely engaging all your major muscles. Imagine when you're doing that pose and somebody actually put a little stool behind you, what would change? What would happen? All of a sudden, all your muscles are relaxed and you're not really engaging anything out there. You're just resting.

So sedentary behaviour is one of the most trendy topics, as I mentioned, and it's also a topic that potentially divides the field. So you ask people from the physical activity research field about what they think about sedentary behaviour, they might give you completely different answers, depending what's their opinion. And lot of people start to advocate for, you know, standing desk at work and think that's the ultimate solution for chronic disease prevention and that's more important than physical activity.

I'm not sure about that and I have to say that I'm very cautious with this, this evidence and calling it new smoking is a bit too premature because we're still accumulating evidence and it's still an emerging risk factor. And I want to share with you, though, is a very kind of masterpiece of work that's part of the, the *Lancet Physical Activity Series*. What we looked at - I mean "we" as a field together – is that when we're actually pulling data from more than a million men and women from around the world and we start to look at the association between sitting time and all-cause mortality, or cardiovascular disease mortality, by different levels of physical activity, what we find is that when people are extremely active, that could actually potentially undo the damage from long-term sitting.

How many "yes"? I see some "yes" sign over there. So how many of you guys have a sedentary job? Oh, it's everyone, right, pretty much. So if you can't change that aspect of job, then you might have to be more active. So in this study, what they found the sweet spot is 60 to 75 minutes per day of moderate to vigorous intensity physical activity. So that's similar to one of the … our friend there who earlier said that the recommendation's an hour a day, that could be actually right in the future, if we consider that the majority of the population are sitting.

So with those who are not being physically activity, yes, their health is damaged by prolonged sitting. But if you're getting to the higher end of the spectrum, you might be able to undone that. So that's the current evidence. I think that's probably the best I can say in terms of sedentary behaviour. So you know, if we can move, move more, sit less and if you have a sedentary job where you have to sit a lot, you might have to move even more. So at the end of the day, physical activity is very important.

Okay, next quiz. Physical activity is for the healthy and fit.

Male Speaker: Yes.

Melody Ding: Yes, right. Yeah, that's … again, it's this public image for us. When we think about physical activity, yes it's healthy and fit. Physical activity plays a very role in disease prevention. But it also plays a very important role in disease management. So it not only prevents you from, from getting sick, so it helps those who are already healthy and fit. It perhaps helps even more those who already have disease. For example, in terms of cancer, there has been growing evidence that physical activity could potentially improve the survival outcome of cancer patients, improve their quality of life and mental health and physical functions. And in terms of diabetes, it's very important for diabetes patients to engage in physical activity to, to prevent deteriorations or the occurrence of comorbidity, such as cardiovascular disease.

And in terms of cardiovascular disease, physical activity is actually a very important component in something we call cardiac rehabilitation. So when someone's had their first cardiac event, often time cardiologists will refer them to a cardiac rehabilitation group with physical activity being a very key component to that. So that has been demonstrated to, to prevent secondary event of cardiovascular disease and promote longer-term survival outcome.

So physical activity is for the young and fit … sorry, healthy and fit, but it's also for those who are currently with a condition. So again, message: Everyone, anyone could benefit from physical activity.

Okay, so I think I've done a lot of quizzing and just try to get, you know, what you know about physical activity. Maybe you learnt something new, I hope. So now comes the action bit. We now have … start to think … started to think outside of the box in terms of what physical activity is and you know, we know that it benefits everyone of different size and shapes, people with different conditions. We know about sedentary behaviour a little bit. So what do we do from here?

So the first thing I want to say is that I'm actually going to quote an old campaign. Some of you guys might recall it. It's about 15 years old. I was not in the country at that time so I can't really say that I recall it. It's called *Physical Activity: You need to Take it Regularly, Not Seriously*. Maybe doesn't ring a bell. Too long ago, especially after that drink. Anyway, anyway, I think that's a message I want you guys to take out of is. So instead of thinking … for those of you who are, you know, perfectly active, fantastic, just keep it going.

For those who are trying to, "Gosh, I need to be more physically active; I need to lose weight, I need to …" blah blah blah, just start to think it differently. Start small. Remember that I said that it's a dose response relationship. There's no threshold. Anything is better than nothing. So start to think outside of the box of exercise. Think about, you know, perhaps taking stairs. I've got a lot of comments today already, all this, all this, you know, energy expenditure, body movement that was happening on the way here. So that could be a good start, you know, if you have to take stairs. If you're, if you're not ground level at home or at work, instead of taking the lift by default, find the stairs to do that.

In fact, in our group, we just had the Steptember at work that we put up signs everywhere, have a group challenge, and guess what? I think the best part out of that is we start to take stairs with colleagues, have good conversations and, you know, we've got a lot of benefits coming out of that. We've got a colleague who just literally got fit in a month from taking stairs, seriously.

And then, you know, when you start to think about any opportunities that get you moving, you know, like what I said, even taking public transport. Don't underestimate that because I know when I take public transport to work, I at least get 16 minutes of walking because then you have to walk to the station, you have to stand on a platform, walk towards the door and then, you know, you walk on the other side. So all these things add up because it is incidental. And you know, think in terms of not only vigorous, but moderate intensity activity, anything that counts. Okay? So move more, sit less, find opportunities to move.

The second advice I have for you guys is that I think, especially for those who are starting to do physical activity … sometimes it's very daunting to find out, you know, what type works for you and a lot of time people end up doing what their friends are doing and then it gets a bit stressful because they think that everyone has to be a runner and then they just … if that doesn't work for you, just find something … try something else. Find something that you really enjoy because studies have shown that you're more likely to stick to this new habit if you actually enjoy that. And physical activity promotes mental health. It, it give you a little post-exercise glow. And that is undeniable.

So find something, or find someone who you can exercise with. Instead of catching up with your friend for that piece of cake, maybe go for a walk together. You know, studies have also shown that when we have more social support, we're more likely to stick to exercise. Maybe get a dog. Dog owners are a lot more active than the non-dog owners, okay? So there are many ways to make you enjoy physical activity more.

The next thing that I want to advocate for here is a little bit larger, because when we start to think about our environment, our modern life has created this world that makes sitting around and being inactive so, inactive so much easier than being active and moving around. So I want you guys to all think yourself as an advocate for change.

How many of you guys have no shower facilities at work? Oh, sort of, yeah. So as a cyclist myself, I know how important it is because of all the sweating clothes and, you know, helmet hair by the time you get to work, you don't want to look like that in front of your colleagues. But all these things are actually very important about our environment, to either facilitate or hinder our exercise, or physical activity.

So start from something like when the next time you receive a letter from your local council about replacing a few street car park with bike path or things like, like that, infrastructure upgrade for pedestrians and cyclists. Please vote your opinions on that and try to advocate for change, because it's through your … the small changes like this, we make our environment more friendly towards physical activity. We create a culture that embrace, embraces physical activity.

So be the agent of change in that and at work, you know, in other locations, when you think there's needs for something that promotes active travel, promotes physical activity at work – perhaps yoga in the workplace or something – let your supervisor know; let the supervisor of the supervisor know. And you can tell them that they can cite my study because, because physical activity is an, is an investment. So by the workplace investing more into getting their employee active, they're reaping the benefits in terms of less absenteeism, less … more, higher productivity and as an economy as a whole, we save money from healthcare bills. So bring the advocate for change on that.

So last things I want you guys to do is to share whatever you learned from today. I hope you get something out of it. Should I do a quiz now and see how much (35:20). All right, I'm going to give you the simplified version. I know I said a lot in the last 30 minutes, so just to summarise: move more and sit less, or just move, okay? That's it, thank you.

Moderator: Thank you for listening to the podcast series of *Raising the Bar Sydney*. If you want to hear more Raising the Bar talks, head to raisingthebarsydney.com.au.

End of Recording.