

Science Behind the Exercise



People don't often realize how much "science" goes into the field of physical exercise science.

After all, science is observation, and continual observation through research by PETM faculty and students yields an ever-evolving understanding of the benefits of a healthy lifestyle for wellness and healing at all ages.

“Everybody knows physical activity is good for them,” says NiCole R. Keith, Ph.D., FACSM, associate professor in the physical education department. “What we’re discovering is people aren’t aware that physical activity and formal exercise aren’t necessarily the same thing.”

Keith defines formal exercise as a planned, purposeful activity, often requiring time, equipment, space and money. Physical activity, on the other hand, is something everyone does every day

– mowing, hauling a laundry basket, walking from your car to the grocery store, etc.

“I tell people, spend less time sitting and more time on your feet doing things,” she says. “They’re always very surprised when I tell them it all counts as the kind of physical activity that is beneficial to your cardiovascular health.”

There is a distinction between cardiovascular health and being toned with firm and/or large muscles – and Keith admits health professionals haven’t always done a good job of explaining that difference to the public. With people who are a bit overweight, but have no other risk factors (e.g. diabetes, hypertension, obesity), a hard physique may not be the goal, but they still benefit from pursuing an active lifestyle.

“It’s less threatening to say, ‘Let’s try not to gain more weight,’ than it is to say, ‘You need to lose 15 pounds,’” says Keith. “If they’ll just eat well and take the stairs instead of the elevator at work, this still provides a good deal of cardiovascular protection.”



Getting that message out is important – and should take cultural differences into consideration. Motivating factors have to do with age and personality, but also social/cultural issues.

“African Americans and Hispanics tend to weigh a little more, and that tends to be socially acceptable,” says Keith. “In body image conversations with African American girls, saying ‘you’re skinny’ is actually an insult. So, when we approach this group, we need to emphasize the point carefully; using words like ‘fit’ rather than ‘skinny.’”

In her research, she finds certain populations – especially minority women – are very motivated to take care of their families, but less motivated to take care of themselves. In a recent paper, she noted these women respond negatively to the idea of taking personal time away from their duties to fit in exercise. “If we can present it more as a way to be fit so they can take better care of their families, it’s more palatable to them,” she says.

It’s one thing to educate the community on how to be active and eat correctly – it’s another thing to get people to sustain good practices. “The uphill challenge is getting people to change their lifestyles without the constant vigilance of an outside professional,” says physical education department lecturer Steve Fallowfield, MS, ACSM, HFS.

He says there are two types of motivation: extrinsic and intrinsic. “People are constantly bombarded with extrinsic motivation,” he says. “You may want to fit into that size two dress for the class reunion or lose weight for a beach vacation, but those are factors which come from the outside to motivate a person to do a behavior. What we know from exercise psychology is that this is only a short term motivator.”

The key is to get people switched from extrinsic to intrinsic motivation; to get people to the point where they truly enjoy the lifestyle and don’t rely on external incentives.

Extrinsic factors may be the stimulus to get started, but the key to the switch is proper progression. Progress is all about starting at a practical level and increasing at a rate that makes sense for your body and your lifestyle.

“People over-exercise or progress too quickly when they begin,” says Fallowfield. “If they haven’t done an activity for a while – or ever – they may become sore and miserable or even hurt by jumping in too intensely. And if they’re told they have to do this for the rest of their life to stay fit, well, you can see why it’s not that appealing.”

As a personal trainer in Los Angeles and Indianapolis for more than twelve years, Fallowfield has seen firsthand the value of prescribing the right amount of activity for the individual.

“A health professional needs to understand exercise psychology, and identify the stage a person is in,” he says. “By using proper progression, you can get them through that initial phase where it’s not really enjoyable into the phase in which they love it. At that point, you don’t have to twist any arms – they’re experiencing the side effects of a healthy lifestyle and enjoying it.”

In addition to cardiovascular activity, resistance training is valuable for the health and wellbeing of the musculoskeletal system, and physical education professor Alan E. Mikesky, Ph.D., is pursuing a new line of research that may make weight training available to a wider population. This new method is known as Kaatsu, which is Japanese meaning ‘additional pressure,’ and it’s been shown to increase muscle strength and size without heavy weights.

With Kaatsu training, a pneumatic band restricts blood flow into the arm or leg when lifting, allowing a light weight to mimic the benefit of a much heavier one.

“This could possibly expand the option of resistance training to osteoarthritis sufferers, help maintain muscle mass for those with partial paralysis, and provide an alternative for older adults who don’t want to lift heavy weights but want to garner some of the benefits,” says Mikesky.

“Right now, we’re one of maybe ten areas in the United States with access to this specialized Kaatsu equipment. We’re in the process of controlled exercise studies where we’re investigating its range of effectiveness.”

Keeping on top of new technologies is a big part of the physical education department’s educational mandate – as is continually seeking out more effective ways to educate people on the positive health impact of exercise and how it can be woven into everyday life.

Educators like Keith, Fallowfield, and Mikesky have important messages, and continually seek to successfully communicate them to various populations within the community. “Exercise is a specific type of physical activity,” Keith says. “But it’s certainly not the only type!”

– Lynnell Nixon-Knight