GE Healthcare

Testimonial

DXA in body composition research: The frontiers of body composition

Achieving research goals with dual-energy x-ray absorptiometry


Donald R. Dengel, Ph.D.

Dr. Donald Dengel, Associate Professor of Exercise Physiology at the University of Minnesota, identified some of the key objectives of body composition research today as, *"measuring body composition as accurately as possible with low radiation exposure"* and, in particular, *"measuring visceral fat."*

He uses dual-energy X-ray absoptiometry (DXA), a method that accurately measures body composition—including visceral fat—with minimal radiation dose.

Comparison of body composition technologies

Dr. Dengel investigated other methods used to assess body composition, which included water and air displacement, magnetic resonance imaging, computed tomography, skinfolds, and circumferences. After his experience with DXA, Dr. Dengel concluded, *"I think that DXA has replaced underwater weighing as the gold standard for accurately determining whole body composition."*

> *"The ability to accurately measure body composition with low radiation exposure has been critical to a number of studies I am involved in."*
>
> *– Donald R. Dengel, Ph.D.*

Dr. Dengel identified a distinguishing set of benefits from the use of DXA in body composition research, including:

- **Low-dose exam:** Dr. Dengel noted how *"the ability to accurately measure body composition with low radiation exposure has been critical to a number of studies I am involved in."* One such study involved cancer survivors. *"Our studies on bone health in cancer survivors allowed us to look at how we treat and prepare them for some of the health issues that may surface following successful treatment of their disease."*
- **Age range:** Dr. Dengel appreciates how "*DXA allows you to do body composition analysis on patients with a wide range of ages*."[1]
- **Bone and body:** Dr. Dengel explained how with DXA's ability to measure bone, lean tissue and fat tissue, he is able *"to investigate both bone related questions as well as fat and muscle questions."*
- **Targeted body composition:** Unlike other body composition methods that assess the whole body in total, he noted how DXA *"allows you to look at regions of interest and the composition in those regions."* Such a targeted regional assessment has developed into a number of Dr. Dengel's research studies about *"why these regions contain more fat than others."*
- **Visceral fat:** Dr. Dengel expressed his *"surprise"* about the innovative use of DXA technology to quantify visceral fat with the CoreScan application.
- **Precision:** The precision Dr. Dengel sees on DXA gives him confidence when reviewing body composition results. *"I probably would not question the accuracy of body composition in a study that uses DXA."* For other studies that use air or water displacement, he said, *"I would have more concern about if they were using the body composition data."* Such methods have been shown to be less precise than DXA, which could be an issue especially with *"repeated studies that take place over a short period of time."*

Research opportunities with DXA

With these benefits, DXA helps Dr. Dengel's research facility to participate in a wide range of research. *"We are using DXA for a number of studies from bone disease studies to metabolic disease studies."*

This research includes evaluation of bone and body composition to study *"the effects of cancer and the associated treatments on bone and body composition"* as well as, *"studies on smokers and individuals involved in drug and behavioral intervention studies."*

Furthermore, DXA's ability to assess bone has helped expand his own research interests. *"Previously I was concerned about muscle and fat, but DXA has opened the area of bone health to a number of my studies."*

Dr. Dengel also described how he uses DXA *"as a recruitment tool"* in a number of studies. He said, *"Giving individuals the results of their body composition and bone health can be attractive for research subjects."*

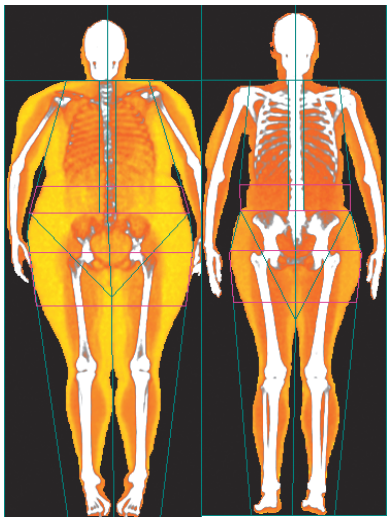
The future of DXA for body composition

Dr. Dengel recognizes the future potential of DXA in body composition research, *"DXA has made significant advancements in regard to image quality and determining visceral fat in that last 5 years. I am hopeful there will be similar advancements in the next 5."*

He also sees the potential for DXA to expand beyond university labs and to be used more in sports medicine. *"In regard to sports performance, I believe DXA could be helpful for athletic teams both colligate and professional to determine body composition and use it to develop more scientific training or injury recovery programs,"* Dr. Dengel said.

DXA: A preferred method to advance body composition research

After experiencing the excellent accuracy and low dose of DXA, Dr. Dengel said, *"DXA is my preferred method to measure body composition."* Dr. Dengel's use of DXA has advanced his own body composition insights and has become an important tool in his understanding human development. Dr. Dengel believes that using DXA to conduct accurate low-dose body composition exams will help keep researchers *"on the frontiers of body composition research."*



DXA body composition assessments generate images of bone, fat, and lean tissue mass.

About Dr. Donald Dengel

Donald Dengel directs the Human Performance Core of the Clinical and Translational Science Institute, an organization that integrates the University of Minnesota's Academic Health Center and other University resources with community partners to create a comprehensive statewide network for clinical and translational science. He is a fellow of the American Heart Association and of the American College of Sports Medicine, from whom he received the prestigious New Investigator Award in 1997.

1. DXA has been cleared for use on patients 5 years and older.

Dr. Dengel is a paid consultant for GE Healthcare. Dr. Dengel's comments represent his views and should not be construed as the views of the University of Minnesota.

imagination at work

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