

Development of a Functional Independence Research Center (FIRe Center) at UKY

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Components of the FIRE Center:

- Voice Center of Excellence
- Frailty Prevention Center

Functional Assessment:

- **Voice, Speech and Language**

Voice - laryngeal structure and function, voice acoustics and aerodynamics, phonation, and audio-perceptual analysis of voice quality.

Speech and Language - language competence, performance, form, content, use, literacy, feeding and swallowing.

- **Musculoskeletal Research Laboratory**

Gait, balance, range-of-motion, size, strength, endurance and speed.



"Happy fortieth. I'll take the muscle tone in your upper arms, the girlish timbre of your voice, your amazing tolerance for caffeine, and your ability to digest French fries. The rest of you can stay."

Research participants:

- **Older Adults**
- **Injured/disabled Adults**
- **Children and Adolescents**
- **Rural Populations**

- Frail
- Hypertensive
- Cognitively Impaired
- OA and OP
- Dysphagic
- Post-Injury/Insult
 - Stroke
 - Traumatic Brain Injury
 - Spinal Cord Injury
 - Orthopedic Injury
 - Prolonged Bed Rest
- Diabetic
- Obese
- Cachexic

Physiologic/Molecular Assessment:

- Lab of Orofacial & Speech Sensorimotor Physiology (LOSSP)
- Gene and protein expression profiling
- Oxidative damage
- Metabolic activity
- Impact of genetic variation
- Analysis of cell-based and animal models to identify mechanisms

Interventions:

- **Exercise**
- **Diet**
- **Manual therapy**
- **Constraint-induced therapy**
- **Stress reduction**

Major goals of the FRe Center:

Develop, implement and disseminate new approaches to preventing, delaying or reversing functional disability

New candidate genes and pathways identified through molecular/physiologic assessment in humans will be the focus of model development to identify underlying mechanisms and ultimately to design novel, more effective interventions/therapies