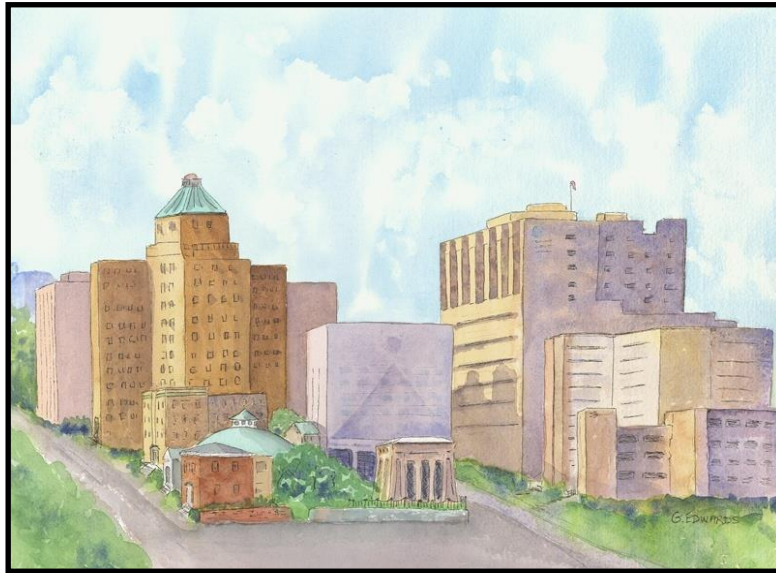


Liver Rehabilitation – An Emerging Construct to Improve Metabolic Health

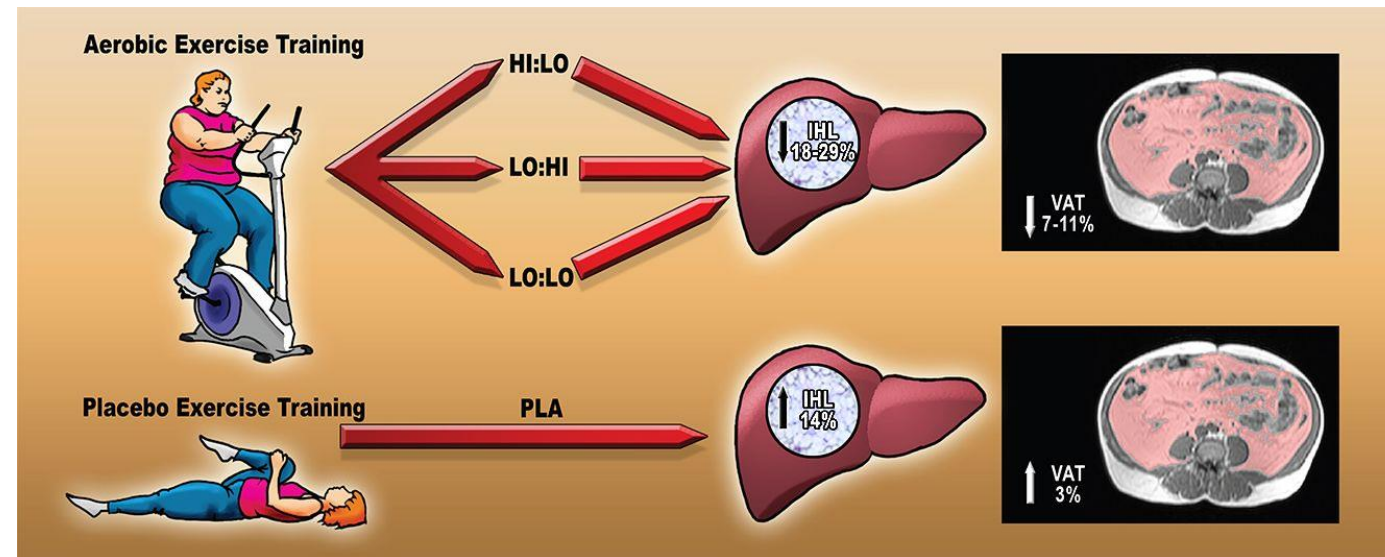
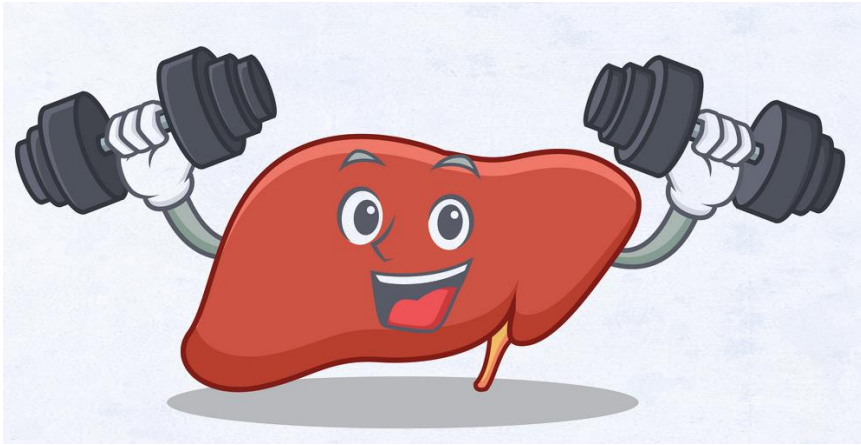


M. Shadab Siddiqui, MD
Professor of Medicine
Virginia Commonwealth University

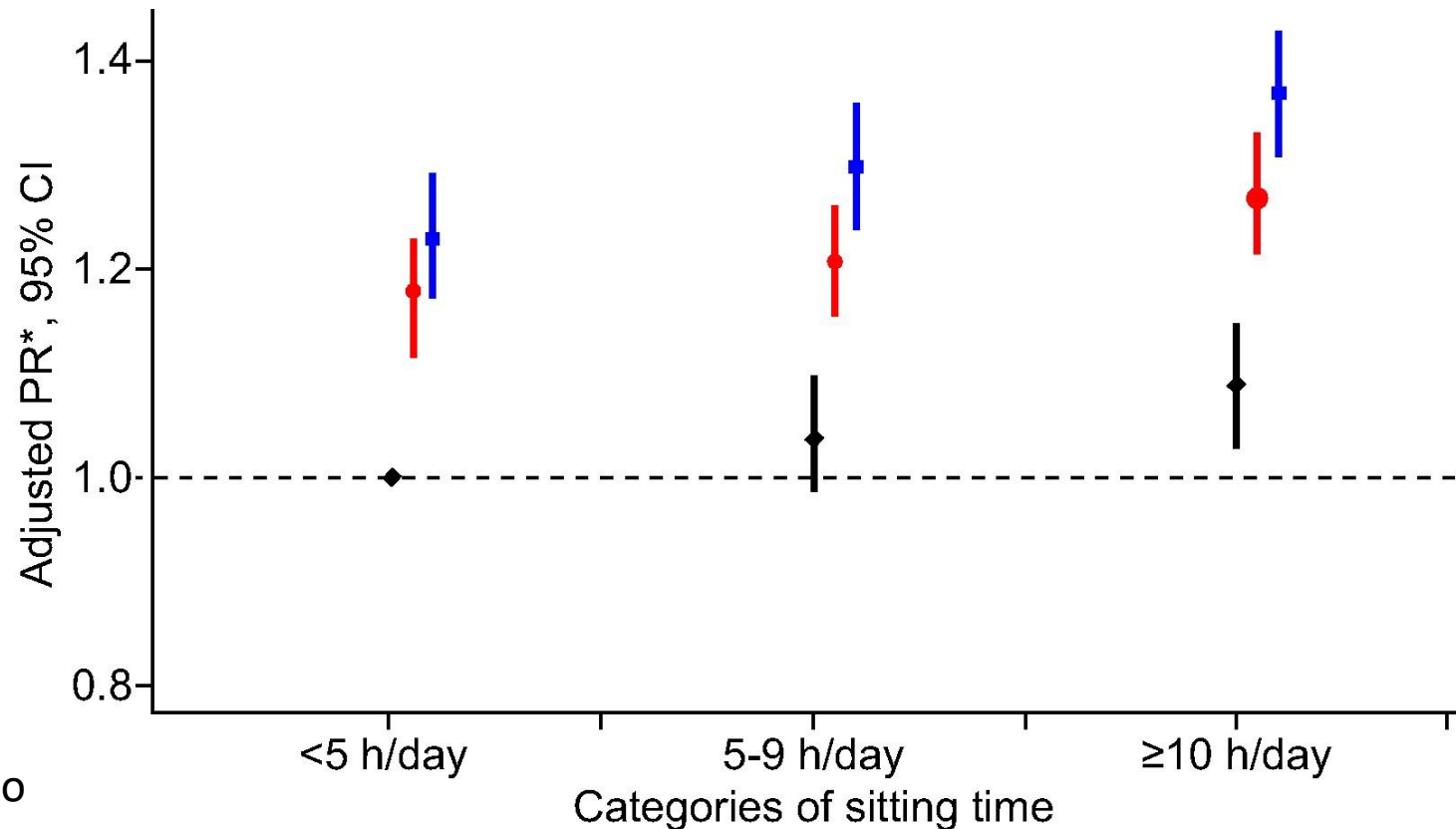


Stravitz-Sanyal Institute for
Liver Disease and Metabolic Health

Should Patients With MASLD Exercise to Improve Metabolic Health?

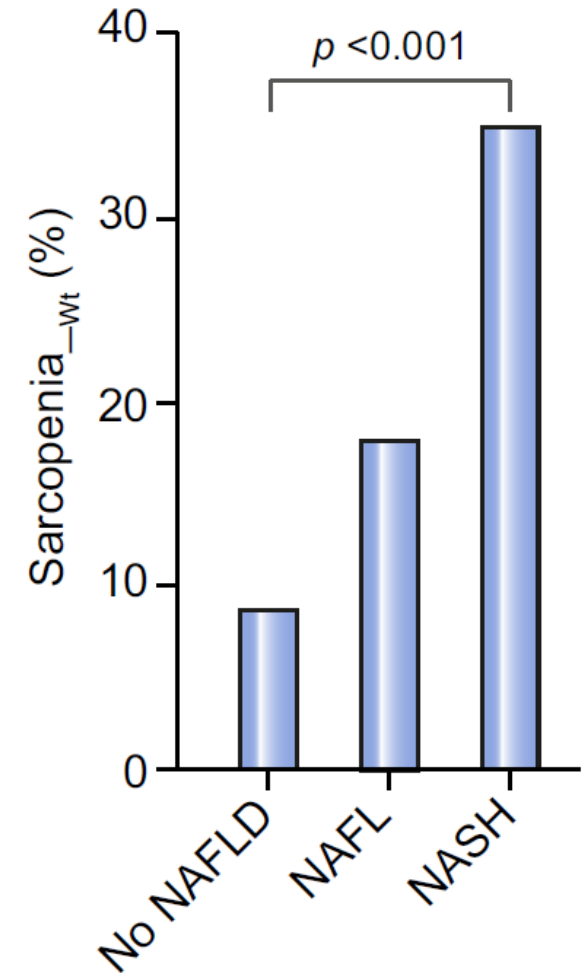
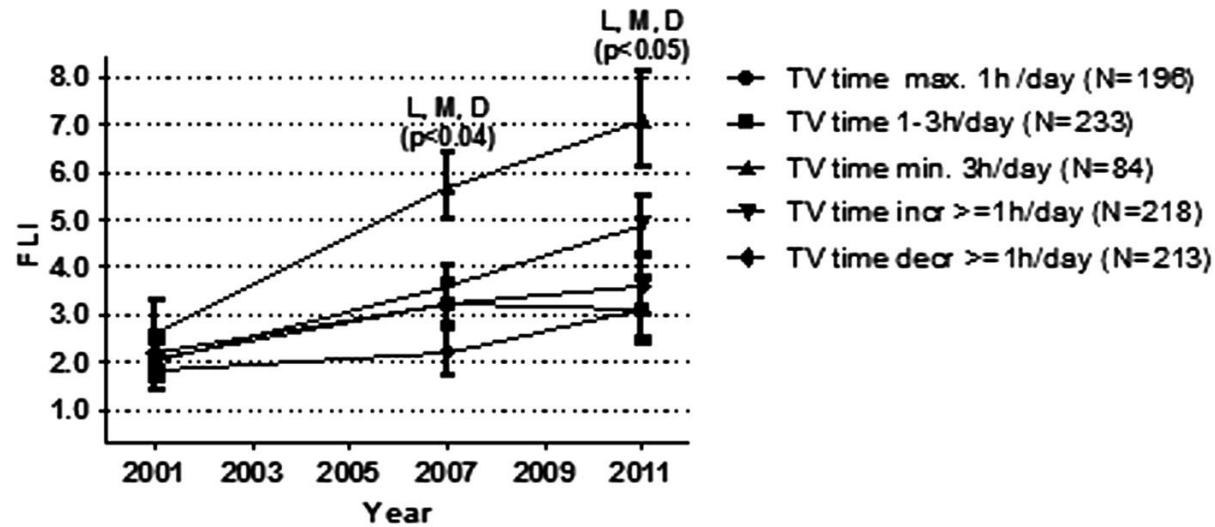


Increased Sedentary Time is Associated with Increased Risk of MASLD



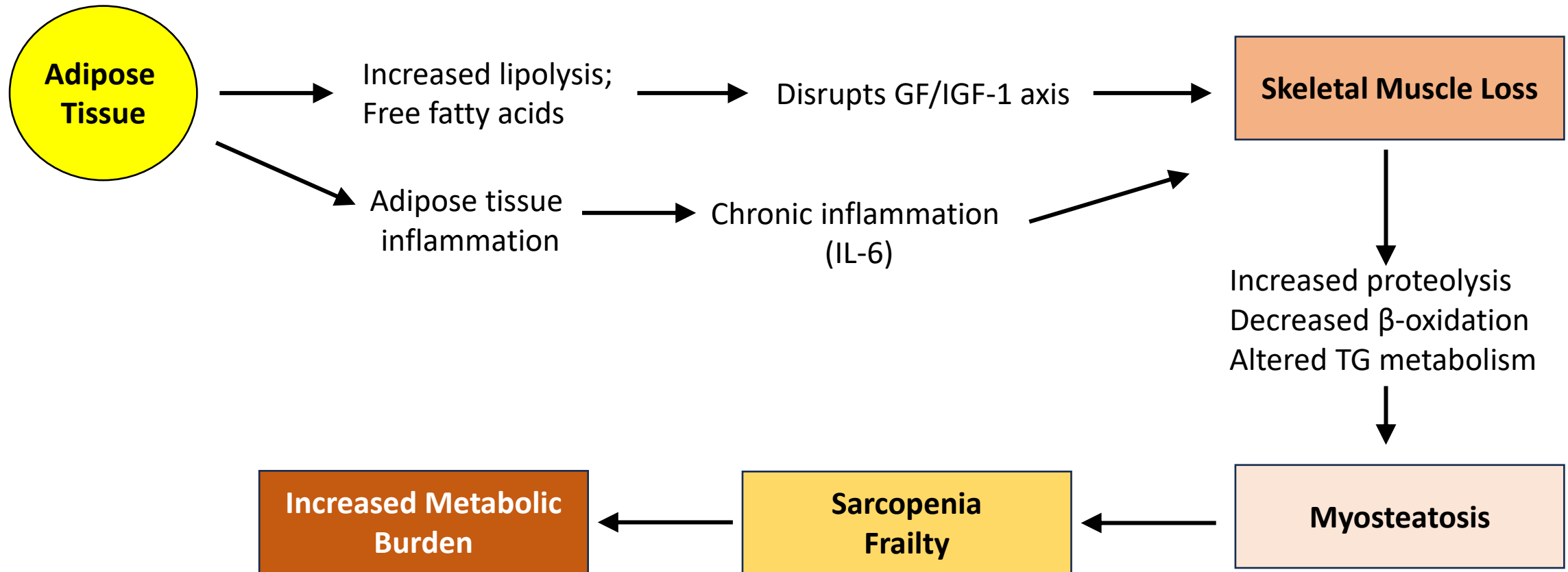
Association Between Screen Time, MASLD and Skeletal Muscle Health

(A) FLI changes, women and men together

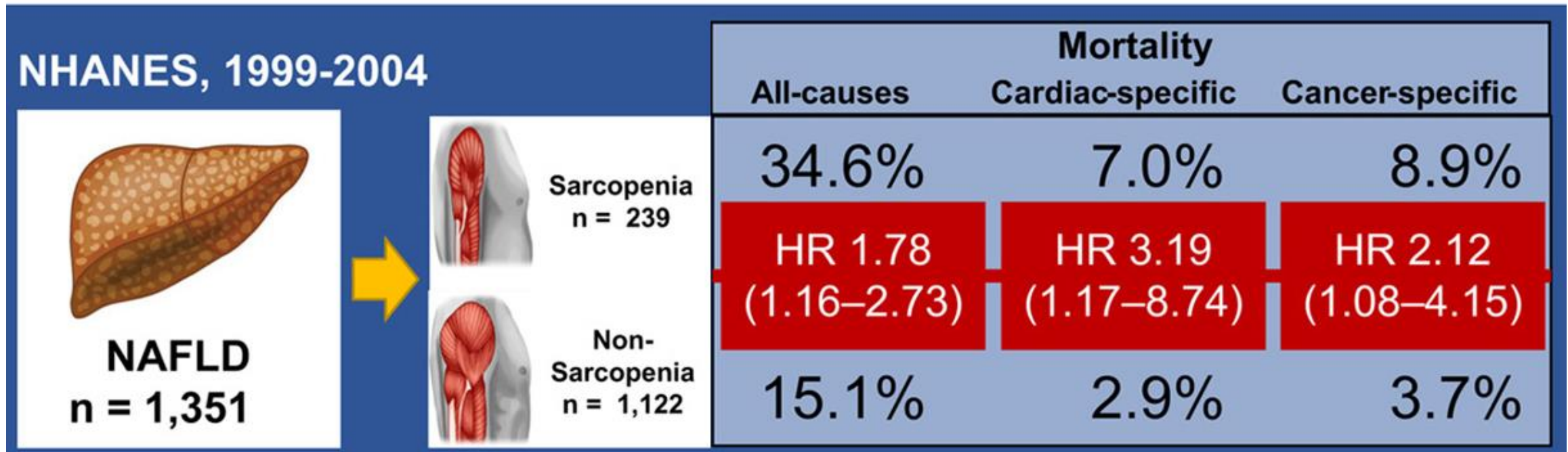


Prevalence of MASLD directly and independently associated with the amount of time spend using **computers or mobile devices**

Potential Mechanisms of Sarcopenia in MASLD



Sarcopenia is Associated with Higher Mortality in Patients with MASLD



Sarcopenia is Associated with Increased Mortality in Patients with MASLD

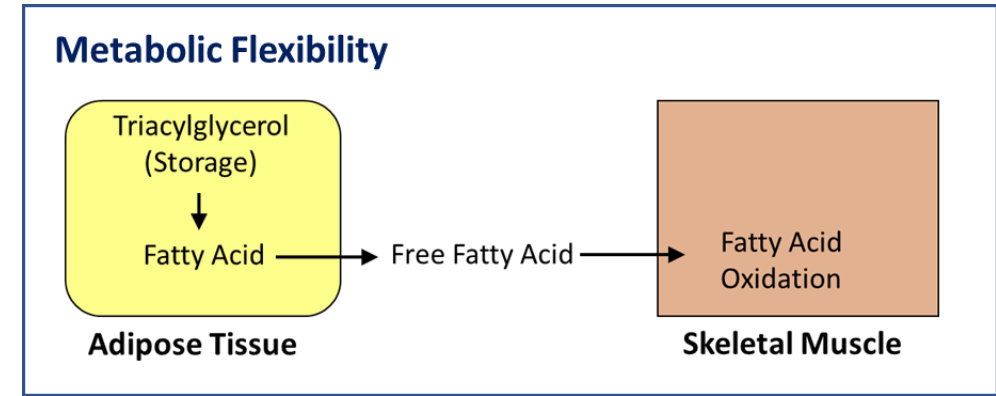
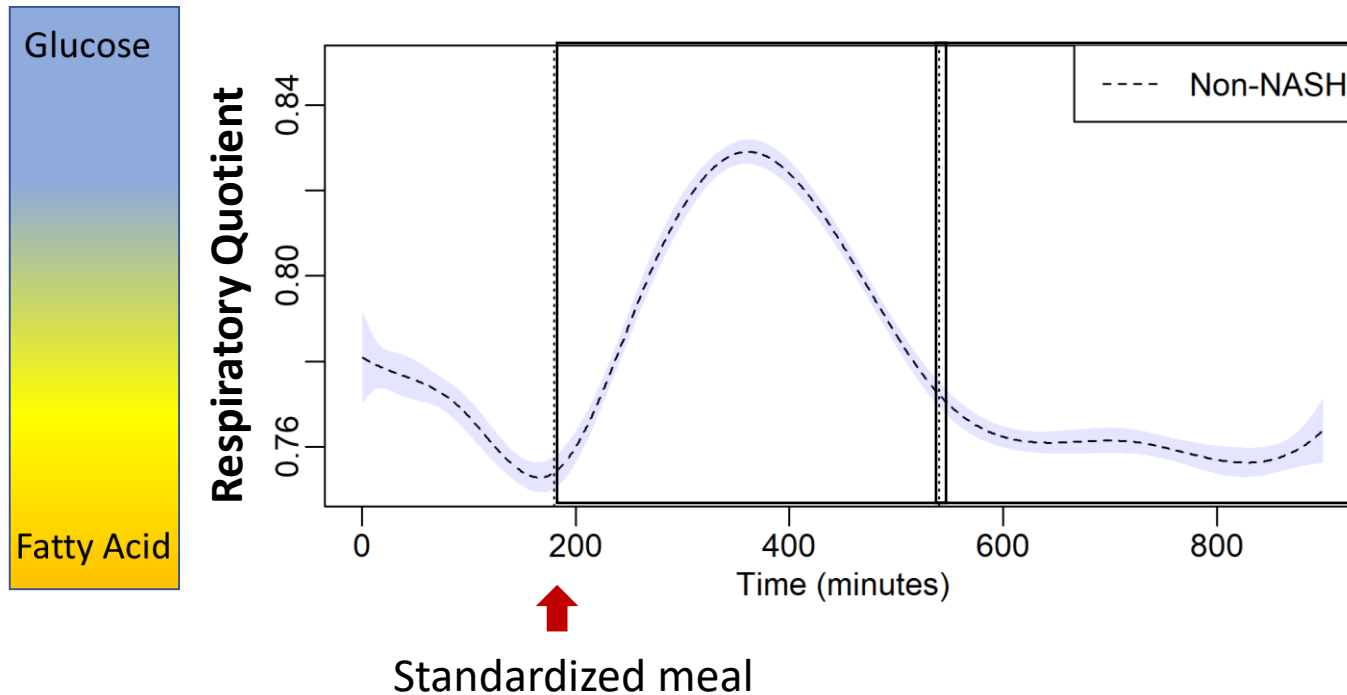
	No NAFLD		NAFLD	
	HR (95% CI)	P-value	HR (95% CI)	P-value
Univariate model				
Sarcopenia (-)	1		1	
Sarcopenia (+)	1.25 (1.08-1.46)	.004	1.44 (1.23-1.69)	<.001
Multivariable model				
Sarcopenia (-)	1		1	
Sarcopenia (+)	1.16 (0.99-1.37)	.07	1.44 (1.16-1.80)	.022

Sarcopenia also associated with increase **Cancer** (HR 1.49, 95% CI 1.01-2.20) and **Diabetes** (HR 4.94, 95% CI 1.70-14.38) mortality.

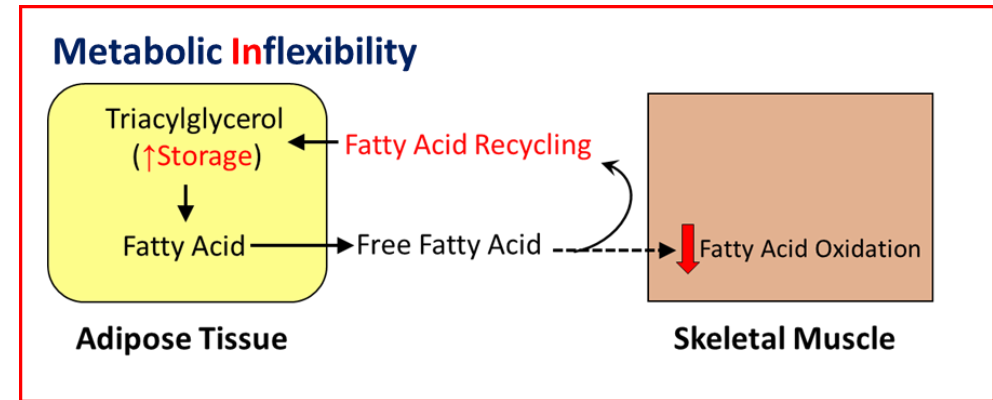
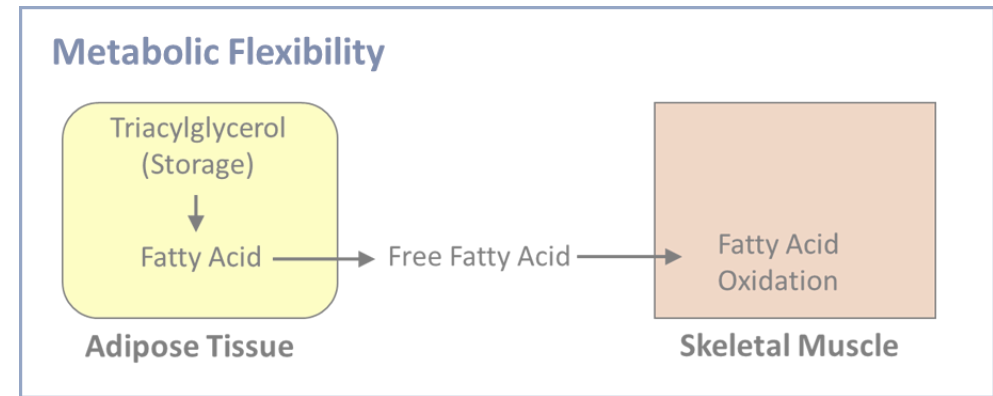
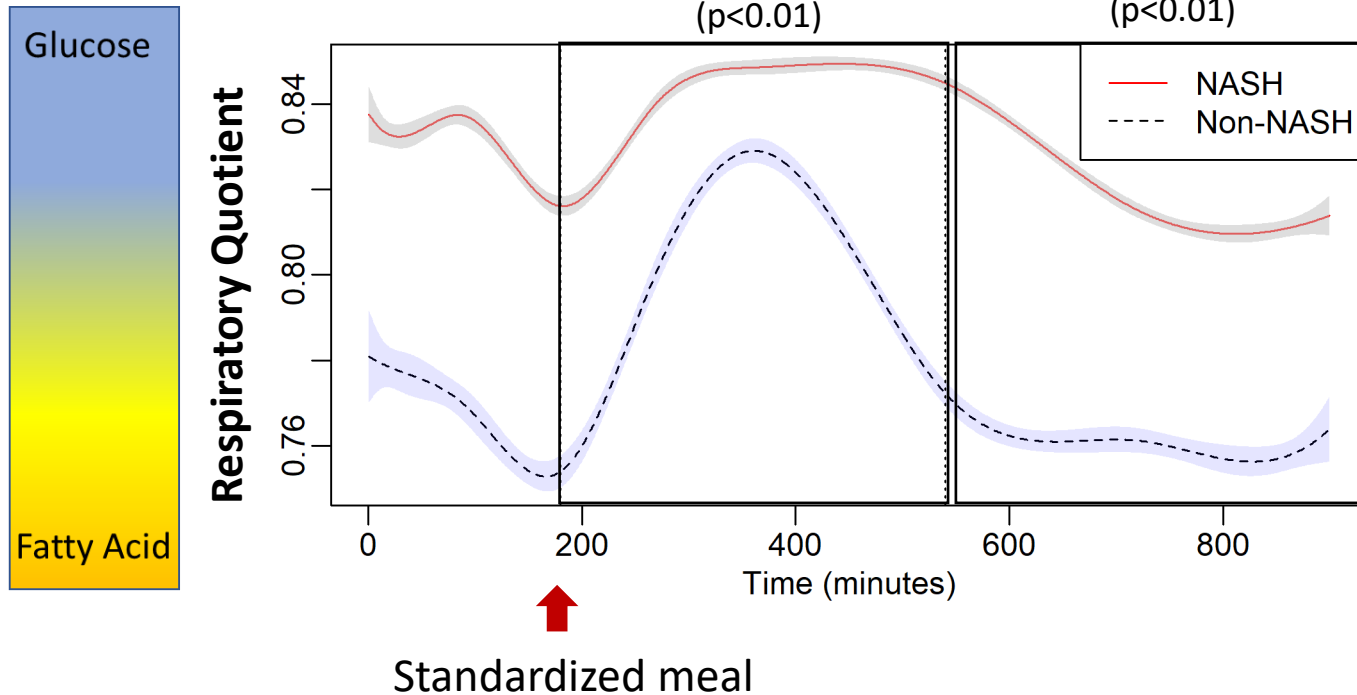
Note: The multivariable model was adjusted for age, gender, race/ethnicity, waist circumference, smoking status, economic status, diabetes, hypertension, alanine aminotransferase, total cholesterol, high-density lipoprotein cholesterol and sedentary lifestyle.

Abbreviations: CI, confidence interval; HR, hazard ratio; NAFLD, nonalcoholic fatty liver disease.

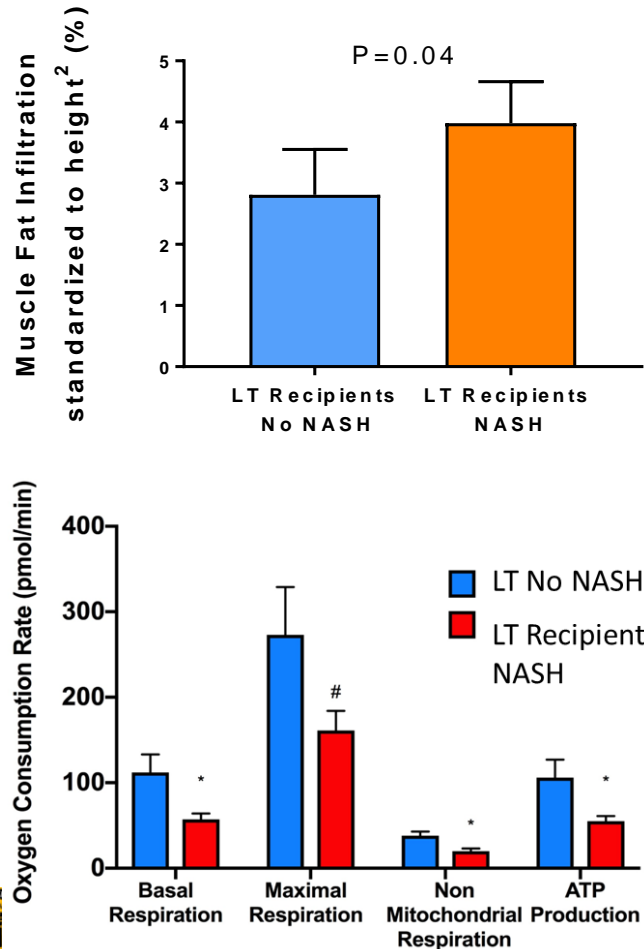
Muscle as A Metabolic Organ: Insights Into Biofuel Utilization



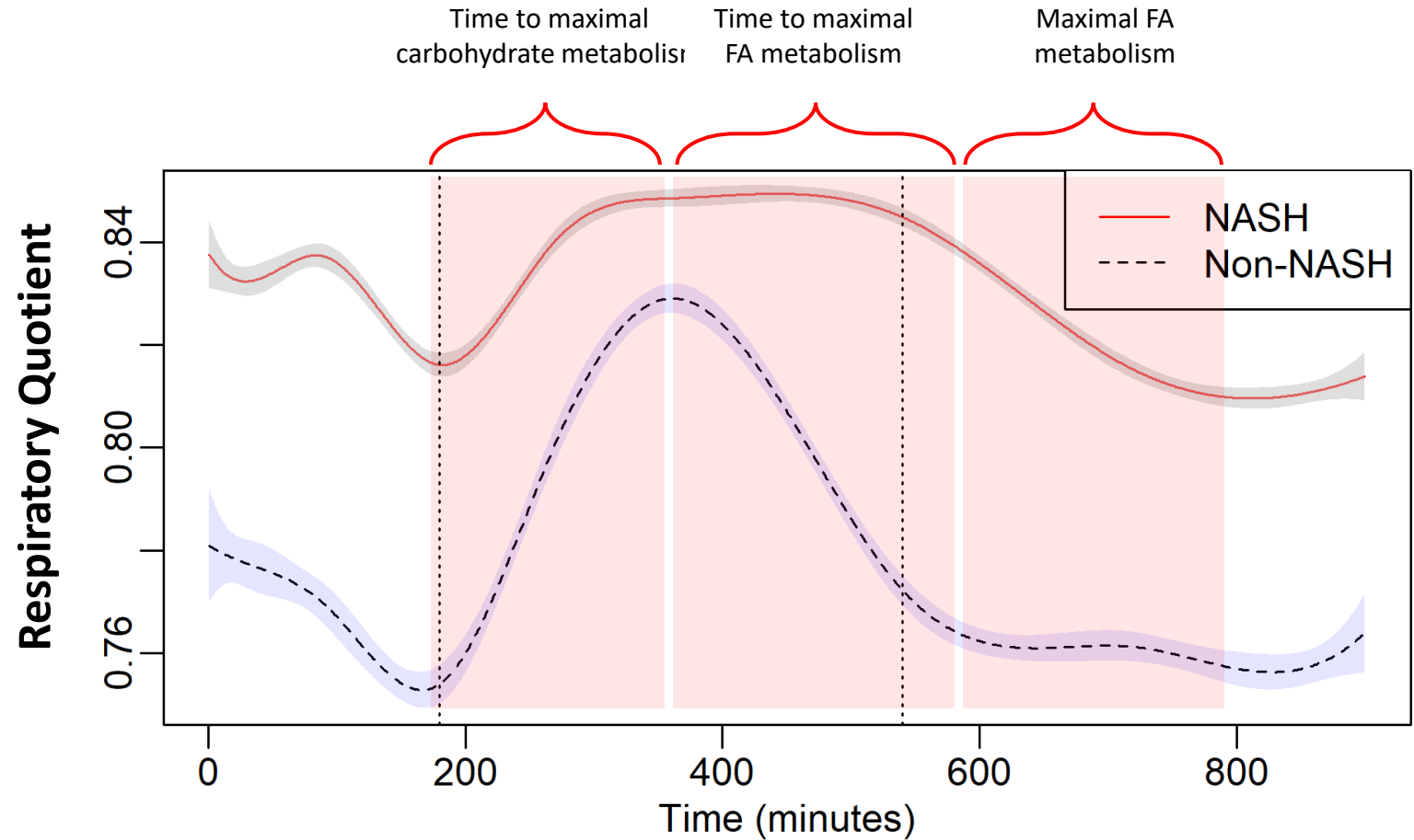
Biology of Weight Gain in MASH



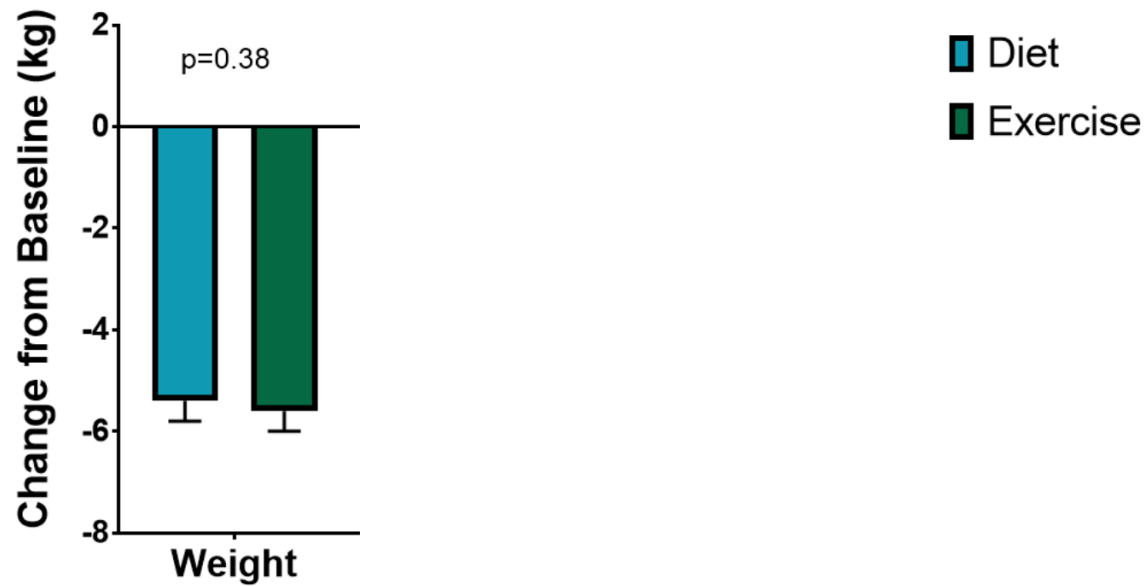
Skeletal Muscle, Metabolic Flexibility & Obesity



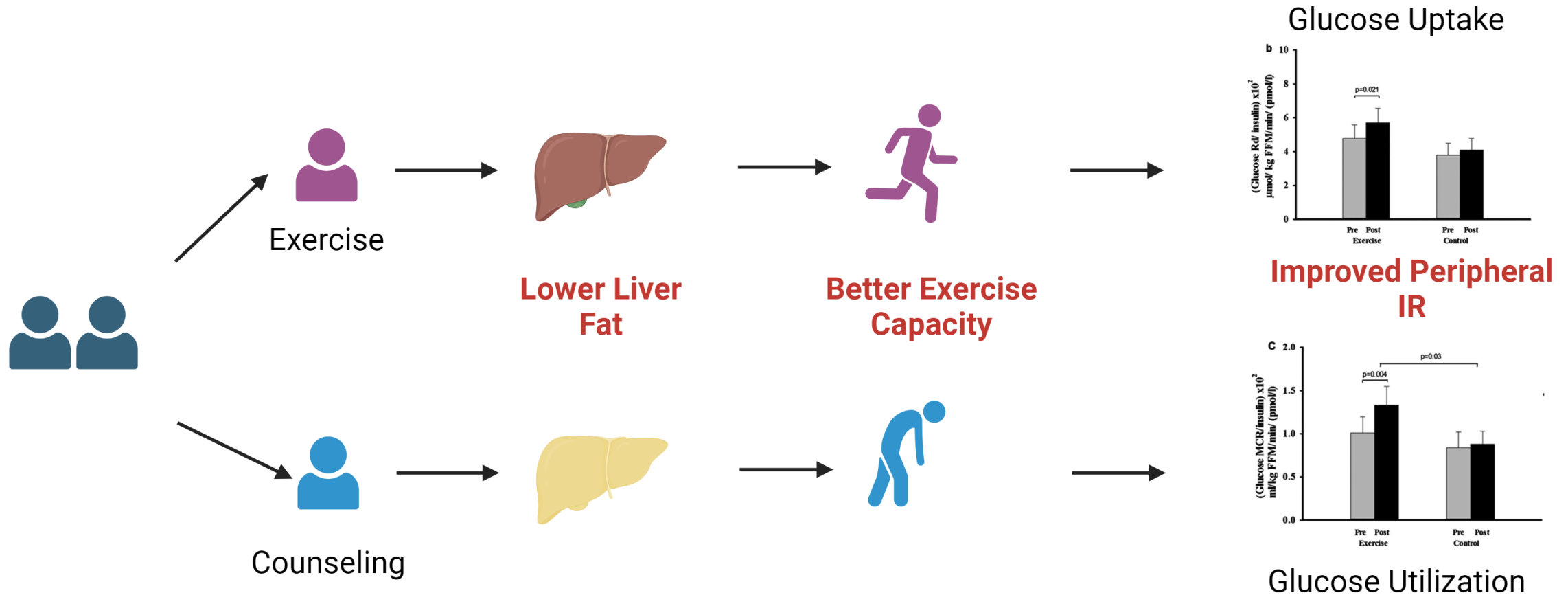
Predictors of Future Weight Gain



Exercise Leads to Weight Loss with Preservation of Skeletal Muscle Mass



Exercise Improves Insulin Resistance in Patients with MASLD



Intensity and Duration of Exercise Improves Dyslipidemia

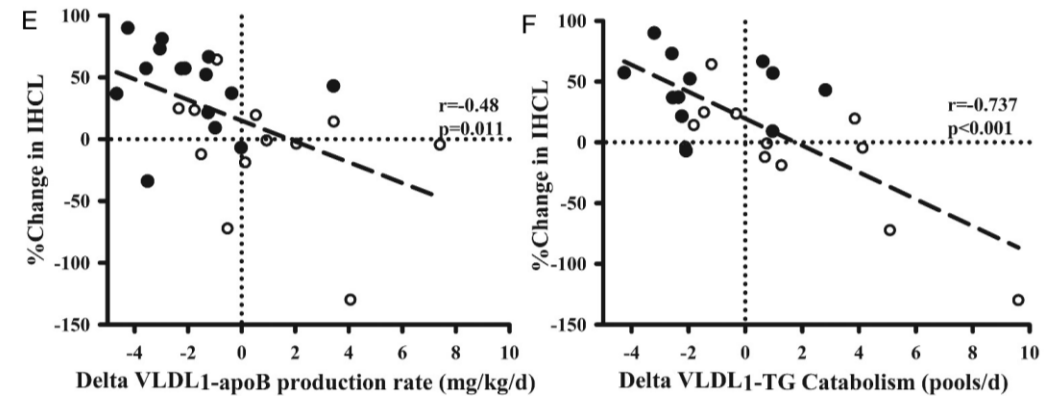


Mild changes:

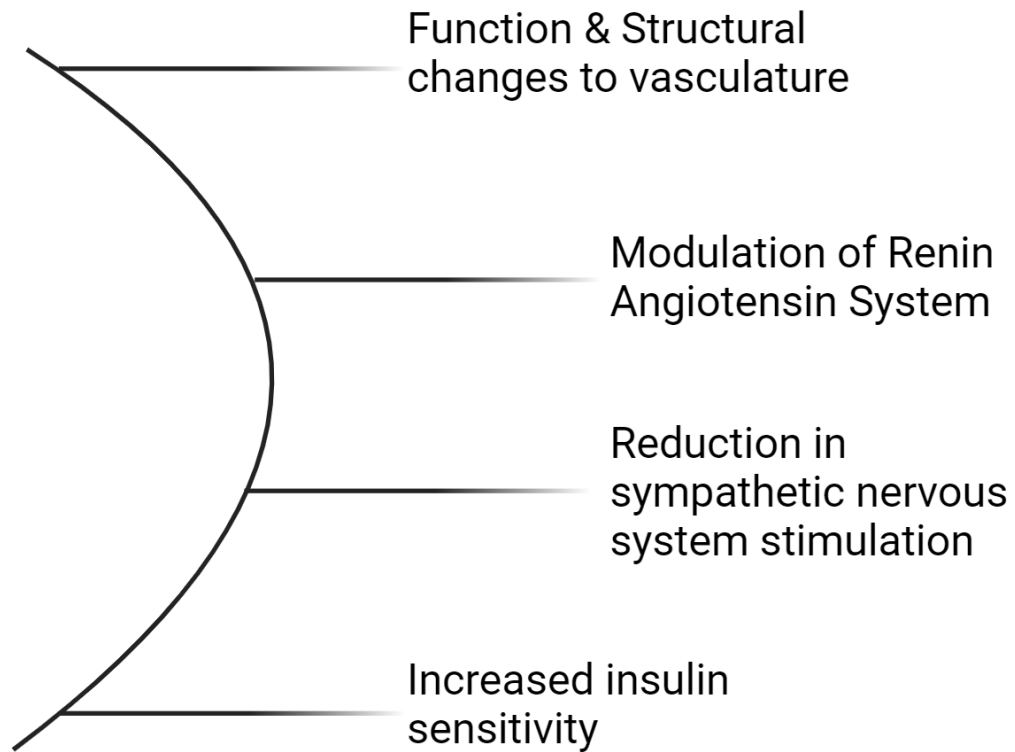
HDL: ↑ 4.6%

LDL: ↓ 5%

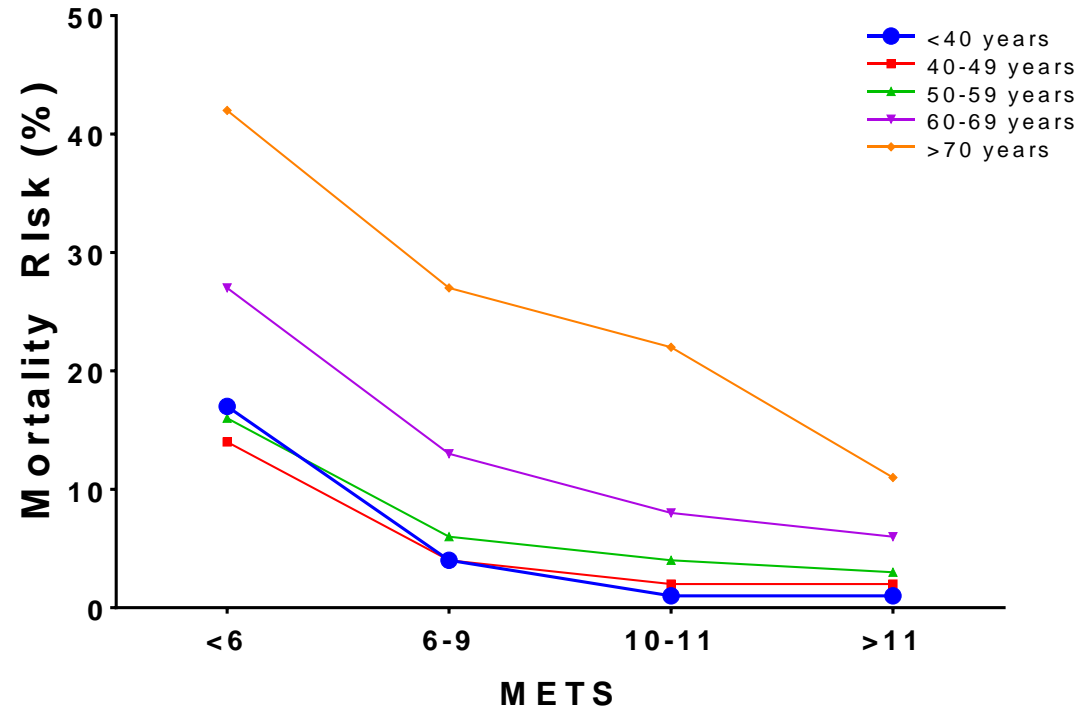
TG: ↓ 3.7%



Exercise Improve Blood Pressure Control and Vascular Function

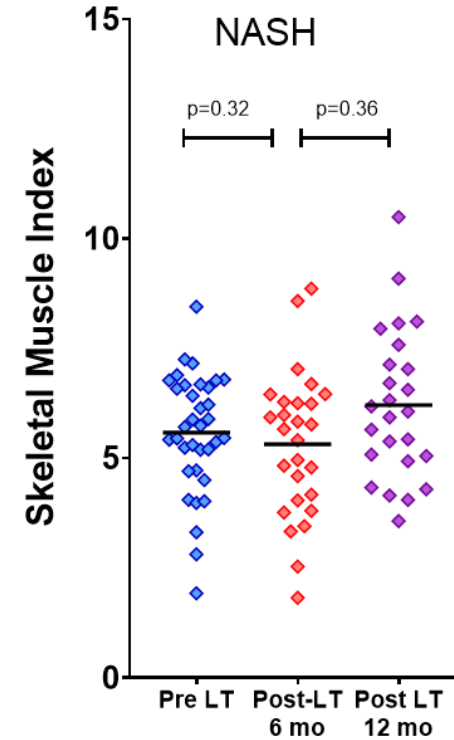
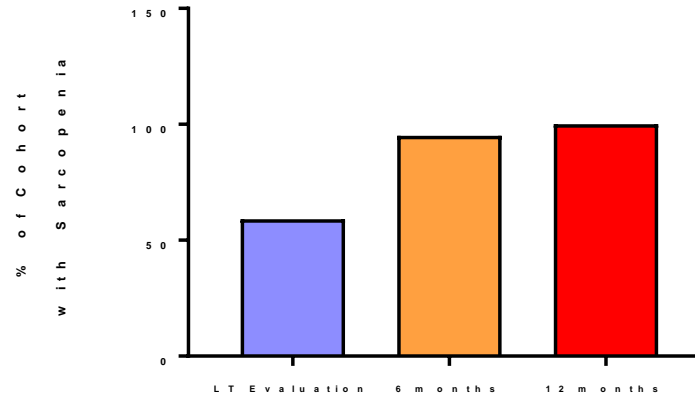
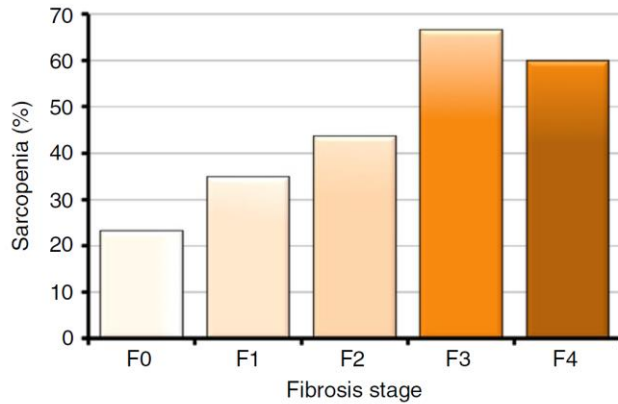


Conventional Approach to Sarcopenia is Suboptimal



Advancing Age

Conventional Approach to Sarcopenia is Suboptimal



Disease Progression

Advancing Age

Conventional Approach to Sarcopenia is Suboptimal

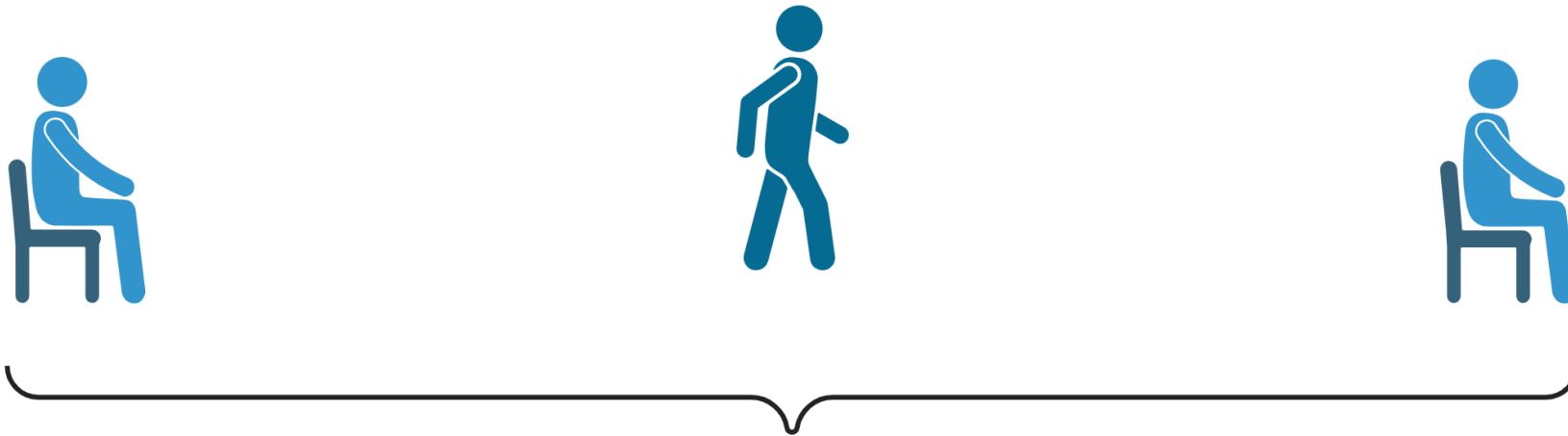


How Can We Improve Patient Participation?



Selling the idea of improving future "metabolic" health

Even Small Steps Can Have Drastic Clinical Impact



Sedentary lifestyle broken with frequent breaks are associated with improved **insulin resistance** and **lipids**

Thank You for Your Attention

